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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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RELIABILITY AND PROBABILISTIC RISK ASSESSMENT (PRA)

SUBCOMMITTEE

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MONDAY, JUNE 8, 2015

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ROCKVILLE, MARYLAND

The Subcommittee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 1:06 p.m., John W. Stetkar, Chairman, presiding.

COMMITTEE MEMBERS:

JOHN W. STETKAR, Chairman

RONALD G. BALLINGER, Member

DENNIS C. BLEY, Member

CHARLES H. BROWN, JR., Member

DANA A. POWERS, Member

JOY REMPE, Member

MICHAEL T. RYAN, Member

GORDON R. SKILLMAN, Member

DESIGNATED FEDERAL OFFICIAL:

MICHAEL SNODDERLY

ALSO PRESENT:

RICHARD DUDLEY, NRR

MARY DROUIN, RES

JOE GIITTER, NRR

DONNIE HARRISON, NRO/DSRA

GEARY MIZUNO, OGC

MICHAEL TSCHILTZ, NEI

ACE HOFFMAN *

*Present via telephone

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P R O C E E D I N G S

1:06 p.m.

CHAIR STETKAR: The meeting will now come to order.

This is a meeting of the Advisory Committee on Reactor Safeguards Subcommittee on Reliability and Probabilistic Risk Assessment.

I am John Stetkar, Chairman of the Subcommittee.

Members in attendance today are Dick Skillman, Dennis Bley will join us, Mike Ryan, Ron Ballinger, Charlie Brown and Joy Rempe.

The purpose of today's meeting is to review the NRC staff's Federal Register Notice 80 FR 27191, Evaluation of a Proposed Risk Management Regulatory Framework and the associated draft document entitled NRC Staff White Paper on Options for Responding to the June 14, 2012 Chairman's Tasking Memorandum on Evaluating Options Proposed for a More Holistic Risk-Informed Performance-Based Regulatory Approach.

The draft NRC Staff White Paper discusses three items that the NRC staff expects to present to the Commission for its consideration, options for enhancing the risk management approach used to ensure nuclear power reactor safety, reevaluations of two improvement

activities from the Fukushima Near-Term Task Force Recommendation 1 that the Commission deferred and consideration of an overarching agency-wide policy statement on using the risk management approach to ensure safety and security.

The Subcommittee received a status of the staff's evaluation of options for a more holistic risk-informed performance-based regulatory approach and plans for responding to the Commission direction on this proposed initiative on February 20, 2015.

This meeting is open to the public. This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act.

Rules for the conduct of and participation in the meeting have been published in the Federal Register as part of the Notice for this meeting.

The Subcommittee intends to gather information, analyze relevant issues and facts and formulate proposed positions and actions, as appropriate, for deliberation by the full committee.

Mr. Michael Snodderly is the designated Federal Official for this meeting.

A transcript of the meeting is being kept and will be made available as stated in the Federal Register Notice. Therefore, it is requested that all

speakers first identify themselves and speak with sufficient clarity and volume so that they can be readily heard.

I'll remind everyone in the room to please silence all of your little communications devices.

We've received no written comments or requests for time to make oral statements from members of the public regarding today's meeting. And I understand that there may be individuals on the bridgeline who are listening on today's proceedings.

The bridgeline will be closed on mute so that those individuals may listen in. And at the appropriate time later in the meeting, we'll have an opportunity for public comments from the bridgeline and from members of the public in attendance.

We'll now proceed with the meeting and I call upon Joe Giitter, Director of the Division of Risk Assessment Office of Nuclear Reactor Regulation to open the presentations.

Joe?

MR. GIITTER: Thank you, Chairman.

Good afternoon. I appreciate the opportunity to provide opening remarks at this ACRS Subcommittee meeting on Reliability and PRA.

Since the Commission issued the PRA policy

statement nearly 20 years ago, the staff has been slowly moving towards a more risk-informed approach to decision making.

In the oversight area, we rely on the significance determination process to determine the appropriate level of inspection effort.

In the licensing area, we have made strides and risk-informing fire protection requirements and in improving changes to allowed outages times and surveillance frequencies.

I believe that there are many more opportunities to leverage the safety benefits of risk-informed decision making in the years ahead.

In the spirit of project aim, it will be imperative that we leverage risk insights to ensure that our collective resources are focused on issues of greatest safety significance and not on issues of compliance at little or no safety benefit.

As many of you know, the current regulatory structure is based on the philosophy that safety is maintained as long as the licensing basis met.

And while that philosophy has served us well, it is important to remember that the licensing basis is derived from stylized accidents that may not be realistic or even risk significant.

Take, for example, the limiting design basis accident for most plants, the double-ended guillotine rupture of the largest pipe coincident with loss of off-site power and signal failure. Even though the probability of this event is extremely low, the philosophy at the time of licensing was that by protecting against this accident, it would be protected against all categories of less severe accidents.

However, the first major risk assessment, the reactor safety study completed in 1975, suggested that we should be focusing our attention on small break locus trains and other more probable events.

After the Three Mile Island accident in 1979 and a host of plant transients such as the Davis-Besse loss of feedwater event in 1985, the benefits of focusing on reliability, availability and risk assessment became clear.

Huge safety strides were made through the implementation of the maintenance rule and similar initiatives. Yet, the licensing basis for the plants and our focus on compliance with that licensing basis is largely unchanged.

We know from experience with risk-informed licensing initiatives such as 50.69 that a significant fraction of safety related structure systems and

components may not be important to safety.

We also know that a small fraction of non-safety related systems may be very safety significant.

Many of us can probably come up with some examples of where resources have been spent chasing down compliance issues that were of low safety or risk significance.

Similarly, you might be able to come up with some examples of where the deterministically based licensing basis didn't always consider higher risk contributors.

We've actually observed the situation in our NFPA-805 reviews where we've seen plant conformance with Appendix R, yet the fire PRA revealed a significant risk contributor.

And while we've identified risk contributors from external events that weren't necessarily identified in the licensing basis, we've also observed that some areas of the existing licensing basis for external events were overly conservative and unrealistic.

This afternoon, the staff will present three options for implementing a risk-informed regulatory framework. We look forward to your comments

on these options.

I believe the fundamental question isn't necessarily which is the best option, the fundamental question is, is our current deterministic regulatory framework good enough moving into the future or should we invest in changes to our regulatory framework that will allow us to focus our finite resources on matters of greatest risk significance.

I look forward to the dialogue on this important issue. Dick Dudley will open the staff's presentation.

MR. DUDLEY: I'm Dick Dudley, the NRC Project Manager for the RMRF for Power Reactors Activity.

On slide two, I have an outline of the staff's presentation this afternoon.

First, I will start with a little background then we will get into the detailed discussion of the staff white paper.

I will speak on the first two topics, the implementation options for power reactors and a reevaluation of Improvement Activities 1 and 2.

But, after I do that, we have Joe Giitter who's going to present to you some of his personal thoughts on how one of the options for power reactors

Option 2 could be implemented.

So, Joe will speak after I speak and then following Joe, Mary Drouin will discuss the example of the potential agency-wide policy statement. Then I will summarize the results of the meeting that we had, the public meeting we had on May 27th and my last slide will conclude with the next steps in this activity.

On slide three, as you heard, the staff is working to provide the Commission with three different items for their consideration, Evaluation of Options to Enhance the Risk Management Approach for Nuclear Power Reactor Safety, reevaluation of two Fukushima Near-Term Task Force Improvement Activities that the Commission deferred and the possible development of an overarching agency-wide policy statement using the risk management approach which would apply across the agency and to both radiological safety and common defense and security activities.

The staff discussed its current thoughts and status of these issues in a white paper which we released to the public on May 6th. Then we published a Notice in the Federal Register on May 12th soliciting written public comments on this white paper.

We're using the Federal rulemaking website, www.regulations.gov and there is the docket

number there. And the comment period was a 30-day comment period and it will end on June 11th.

Now, on slide four, the white paper is divided into three different sections, each section addresses one of the three issues that I've already mentioned.

So, now, slide five, I'm talking about Section I of the policy statement where we talk about options for enhancing the risk management approach to nuclear power reactor safety.

The working group put together to review the risk management regulatory framework concluded that the existing safety goals for the operation of nuclear power plants, the existing PRA policy statement and the extensive experience that we have with risk-informed regulation and risk-informed decision making essentially has already established a de facto risk management regulatory framework for power reactor safety.

Because of that, the staff has decided to, in Section I of the white paper, the staff evaluates three different RMRF power reactor implementation options to determine whether or to the extent that the Commission would like us to increase the use of risk information in the power reactor regulatory framework.

So, Option 1 is to maintain the current framework which would be to not increase the use of risk information.

Option 2 would be establish a risk-informed alternative licensing basis which would be an alternative optional approach that licensees could choose if they wish to increase their use of risk information in the licensing of their facility.

Option 3 would be a mandatory requirement that everyone would have to -- all operating reactors would have to update their PRAs and use them to implement a plant-specific risk management regulatory framework. So, that would be a further increase in the use of risk information.

CHAIR STETKAR: Because you change the slide, when I read through the Section I, I really hung up on that little comment that you have in the middle of this slide that the -- it says in concert with increasing experience with risk-informed regulation and an integrated risk-informed decision making processes, I've already established a de facto RMRF.

You know, if I were reading this as an uninformed person, I would say, why are we discussing any of this? If I was reading it as an informed person who sees how the agency really does things today, I'm

really curious why you can claim that we have a de facto risk management regulatory framework in the context of NUREG-2150 or the issues that are discussed by the Near-Term Task Force? Because I don't see it.

I see an agency that responds to individual events in a focused reactionary mode that is not risk management, it is reaction to individual events.

I see an agency that uses risk information in some of its decisions and doesn't consider it at all in many of its other decisions.

So, why does the NRC have a de facto risk management regulatory framework?

I can read, by the way, I can read policy statements that date back to 1986 for the safety goals, back to 1995 for the policy statement on the use of PRA, and at a very high level, I see the Commission saying the agency ought to do this, but I don't see the agency doing it except in very focused piecemeal.

MR. DUDLEY: I think it's really a matter of degree. The three options that we're looking at under Section I of the paper give us -- we put them together to get guidance from the Commission on the extent to which the Commission wishes us to expand the use of risk information.

The Option 3 would be the -- is the approach

recommended in NUREG-2150 but 2150 also had other options, I think, that they said were -- met the intent of the risk management regulatory framework, it's just the extent to which you wanted the degree to which you wanted to take it.

CHAIR STETKAR: Those were for --

MR. DUDLEY: And Option 3 would be the full implementation of the approach recommended by that task force.

CHAIR STETKAR: Right. What I'm asking about is, the implication that Option 1, the current framework, maintain the current framework, Option 1, as I read Section I, it sets the stage as we already have a risk management regulatory framework.

In other words, I'm already biased in the way that I'm reading this. The staff is telling me, our current framework is already a risk management regulatory framework. Why do we need to change anything because we already have it?

So, I'm already biased to selection Option 1 by this phrasing in the introduction. And I'm saying, I personally disagree with that phrasing. I don't think that the agency has a risk management regulatory framework in any way, shape or form in the sense of treating risk consistently across all regulatory

issues, even if I narrow it down to the application of power reactors.

Even if I narrow it down to power reactors only during power operation, the agency is not consistently treating risk nor is it making decisions that consistently manage that risk under the current framework.

MR. GIITTER: This is Joe Giitter.

I think that's a valid point and but, yes, you could argue we have a de facto framework, but that the framework is broken or is not a very good framework.

CHAIR STETKAR: I'm not saying -- I don't think it's broken. I don't think -- what I'm saying is, I think where we are in the year 2015 has not actively implemented the division, perhaps, if you want to call it that from those policy statements that were issued 20 to 30 years ago where the Commission -- that Commission 20 to 30 years ago was saying we want to see the agency going forward in the future making more extensive use of risk information throughout everything that we do.

And, you know, I don't think that the system is broken. I'm saying that the system has not adopted the vision from those policy statements in a coherent or a consistent manner across all of the agency's

activities.

And regardless of how you slice and dice the different regulatory areas, you know, so I'll keep it focused, if you will for the moment, on power reactors, even there.

MEMBER BLEY: I'd add not only is it in the section, but it was in Dick's introduction.

It feels like a bias saying we're already there and now we could go well beyond a risk management regulatory framework and I don't think that's what you say in detail. But it's certainly up there up front both in the oral presentation and in the document.

CHAIR STETKAR: Essentially, if I were a Commissioner, I'd read this and I'd get to Option 1 and I'd say the staff is telling me I'm already there. Why do I even need to think about doing anything more? Despite all of the good stuff that you do say about Option 2 and Option 3 continuing on because I'm already biased in the sense of it's not broken. I have one of these things that they're telling me I need, why should I do any more?

MR. DUDLEY: I don't really have a response to that.

CHAIR STETKAR: Okay.

MR. DUDLEY: Other than we picked three

options with a varying spectrum of increasing the use of risk information and we need to -- we picked those options so we can get feedback from the Commission on where the Commission desires for us to go in the future.

CHAIR STETKAR: As long as it's a fully balanced presentation of those options where the Commission understands both the benefits and the drawbacks of accepting, you know, any one of those three options.

I mean and it's not just benefits and drawbacks in terms of effect of full power or if -- sorry -- but of person hours, whatever, you know, in terms of resource requirements, it's benefits or determents in terms of how they'd affect, you know, agencies implementation of Commission direction from those previous policy statements.

MEMBER BLEY: I think it would be fair to say that we have the methods and we have the policy guidance to implement a risk-informed risk management regulatory framework but not to say it already lives.

CHAIR STETKAR: Yes, we're not there yet.

MR. DUDLEY: We do have the tools, but I'll have to admit, we don't use them all the time.

CHAIR STETKAR: Yes, well, I mean and that's -- okay. Anyway, enough said.

MR. GIITTER: It's a good comment and we'll take it under advisement.

CHAIR STETKAR: Just read it. All I'm saying is read the front end because that sets the stage for everything and see whether or not you have led to a pre-decisional bias by it.

MR. GIITTER: Okay.

MEMBER BROWN: I have one question a little bit relative to that.

I've been over the white paper, that same kind of thought process. But, it seems like you were arguing that we already do a bunch of risk stuff and we deem it necessary or deem it value added to the processes to the things we're doing and here are some other choices for you to go.

What I didn't see in the white paper when I read it was you talked about that had potential benefits but you didn't enumerate any either a qualitative or even a quantitative this is the value we think going the whole hog is going to bring. What is this going to save?

You implied that there might be some savings. You might have implied there might be some reduced requirements or whatever to be incorporated in a licensing basis.

But, when I read it, it looked like there's a lot of work involved with going to the full bore Option 3 to the industry as well as the NRC.

And, I mean we have a process today that develops plants, there's nobody thinks they're unsafe, at least I haven't heard anybody say that.

So, where is -- why do we -- how do we justify the cost and the value added going forward when we go all the way?

And I'm not arguing one way or the other, I'm just saying I was looking for some way to make a judgment on the thing which I've been struggling with for many meetings in this.

But the white paper helped coalesce some of the thought processes and that's kind of where I ended up after reading today's material.

MR. DUDLEY: Well, the white paper had a couple of purposes. One was to get down the thoughts and the options that the staff was considering.

The second is to get feedback from the public and that's why it's out for written public comments.

The difference between the white paper and the SECY paper that we provided the Commission primarily is it's going to include pros and cons of these different

options. We didn't include those in the white paper. We had them for some of the options but not all.

We decided to take them all out. Maybe they would prejudice the comments. We didn't want it to make it to look like, you know, we had pre-selected a choice.

But the SECY paper will have a discussion of pros and cons for all the options before we give it to the Commission.

MEMBER BROWN: And that -- I presume that pros and cons will address where we think -- now, I'm not necessarily looking at the costs and resources, manpower, whatever you want to call it, the dollars. But, what does it bring in terms of the increased safety of the plant? Where that we spent too much time, too many resources working on something that doesn't add value and what have we missed?

Where are some areas that popped up later that we had never seen because we didn't take that and all of a sudden it popped up later, would we have thought of it earlier? I'm just trying to see where the existing process does not deliver what we would envision in terms of a safe operating regime?

MR. DUDLEY: I think the pros and cons of the different options in the SECY paper will generally

address that issue.

MEMBER BROWN: Okay. Wait and see?

MR. DUDLEY: I fully admit we do not have it in the white paper.

MEMBER BROWN: That's fine. That's not an unacceptable answer.

MEMBER SKILLMAN: Let me jump into this thinking about Joe's very beneficial introductory comments.

The real issue that Charlie Brown was raising was, in my judgment, where's the value? Where's the proof of the value for the three options?

I'm wondering if we were to take a very thick magnifying glass view of the ROP over the last decade and of the SDP, the Significance Determination Process, that's been used since we changed from SLAP to ROP, if there isn't a way to create a metric that says with Option 1, this is the value that would have been gained if we had gone to Option 2.

And if we'd been at Option 2, here's the gain to Option 3.

And I mean gain and value not only in terms of an increase in nuclear safety, but a decrease in the licensees resources.

For this to make any sense at all, industry

has to say, you know what? This is a winner for us. And simultaneously, the staff here has to say this is a winner for us, too.

The flip side is, just to say let's go to Option 3 and mandate a very thorough overarching risk approach sounds like lots of dollars, new PRA, huge investment with questionable increase in value meaning increase in nuclear safety.

So, my question is, is there a way -- we've learned a lot since we changed from SALP to ROP, all the plants are using SDP, you're using SDP. My experience was among the most valuable people we had at the site were our PRA individuals who were remarkably tightly connected to the region specialists for the PRA for, in my case, TMI 1.

There's a huge amount of data for the what were almost a hundred plants. Is there a way to make a value argument that would begin to point to what the incremental steps would give and where industry could say, you know, we can buy this. We can buy into this because we really do get something for it.

It isn't just going to be, if you will, another regulatory mandated program into which we pump hundreds and hundreds and hundreds of thousands of dollars and worker years of toil.

MR. DUDLEY: Option 3 is very similar to an option we evaluated in the Near-Term Task Force Recommendation 1 SECY paper, SECY 13-0132. And, in that paper, the staff stated its qualitative judgment that we did not believe that the benefits of Option 3, which would require everyone, all operating reactors, to upgrade their PRAs and keep them upgraded, we said that we did not believe that that effort would likely meet the back-fit test as a significant safety improvement.

So, we have some information on that. That information will be presented in the SECY paper to the Commission. In fact, we highlight that in the current draft that that was the conclusion we had previously on Option 3.

So, as to your discussion of is there a single metric that you can use to kind of determine the value of one option versus the other, I really can't speak to that.

What we have done generally is try to do qualitative cost pros and cons of the various options.

So, I don't know if I'm answering your question or not, but --

MEMBER SKILLMAN: But it seems to me that --

MR. DUDLEY: -- that's what I can offer.

MEMBER SKILLMAN: -- you know, Joe's opening comment, the thrust of Joe's opening comment was, as a consequence to the TMI accident, the early WASH study, we've learned that there are a lot of smaller systems who's safety significance is much greater than we had originally understood.

The double-ended guillotine might have set hardware requirements but there are a lot of pieces to this riddle that are important in terms of nuclear safety.

It seems to me if we went over the last couple of years, maybe the last six, eight years of ROP data, we'd find that where plants have gotten into trouble really what was down in some of the fine details, smaller systems, the SDP pointed that out.

And whatever it is in terms of the metric to pull together, how the SDP and the region's view of the PRA for that plant might create some form of a metric to say here's how we can get from Option 1 to Option 2. Here's the value and, by golly, from Option 2 to Option 3, it's obvious it's an overwhelming expense that doesn't give a whole lot of value.

But, it just seems there's data that we may not have exploited, but it's there because we've been

dealing with this for a long, long time and we've been dealing with it in significance determination program because that's how the units have been punished.

MR. GIITTER: Dick's looking at me.

I understand your comment and there is value there and I think part of the challenge is when you say there's data there, it's not easily quantifiable. A lot of it's intangible.

So, I can tell you as a Division Director, and I can speak for some of the other Division Directors in NRR, if I look at my last week in the office, I would say a disproportionate amount of time was spent on compliance issues with very little or no safety significance.

And, you know, if you look at the broader picture of how the agency wants to be more effective and efficient, you can kind of, you know, take little shots around the edges. But, if you really want to go to the heart of how we can become a more effective regulator, I think it's going to require us to make smarter decisions based on risk insights.

The problem is how do you actually measure that? And, you know, there's a way to do that, I suppose. We could come up with some estimates.

I think your comment's a very good one and

I think it's one we need to look at because I'm not sure that we do a good enough job talking about the value and these different options. So, it's a good comment and we'll take a look at it.

But, I do think in terms of being able to quantify that, which we like to do when we're talking about a proposed rule, it becomes more difficult to do that because a lot of these things are intangible.

MEMBER SKILLMAN: Okay, thanks.

CHAIR STETKAR: And I think as a final comment so that we get to slide whatever, seven, I need to remind everyone that in a letter that we wrote, the ACRS wrote, November 20, 2013, we basically disagreed with the staff's conclusions on the marginality of the benefits of the risk assessments.

And in particular, our Recommendation Number 5 from that letter said the staff should reconsider the preliminary characterizations presented on the costs and value of site specific and generic probabilistic risk assessment applications.

The discussions appear to be biased toward limited application of PRA and Improvement Activities 1 and 2 and may inappropriately marginalize and inadvertently prejudge the value of proceeding with the risk management regulatory framework for operating

reactors.

So, Dick, when you resurrect the conclusions from NTTF, your SECY on NTTF Recommendation 1, I'd ask you to keep in mind at least our Recommendation Number 5 from that letter.

MR. DUDLEY: The one issue I will raise is that the back-fit rule, when we try to determine if a new requirement such as a requirement issued for all licensees to perform and upgrade PRAs, the back-fit rule only lets us look at safety increases. It doesn't let us look at other -- you have to meet the significant safety threshold first before you can then look at the cost beneficial aspects of it.

So, some of the benefits that licensees could get from PRAs such as saving money on compliance issues or increased operational flexibility of the plant, those are things that licensees can factor in but the NRC cannot use those as things in deciding whether we're going to issue a rule or not. So, that's one of the -- it's just the situation.

And, you're right, there are other benefits and under the back-fit rule, we're not permitted to weigh them to get to the significant safety increase threshold.

MR. GIITTER: And I think for the

regulatory basis for a new rule, you can consider some of those other attributes.

MR. DUDLEY: If it were a forward-fit rule, but anything that's a back-fit, we have to meet that significant safety increase test. And then it has to be cost beneficial.

Okay, on slide six, I'm just going to skip down to the bottom, the last bullet, maintain the current regulatory framework is not a do nothing option.

Even under the current framework, as you all know, we continue to make safety improvements based on risk insights or other judgments, operating events or whatever, where ever necessary using our regulatory processes.

And, in fact, you will see later on in the discussion that even if the Commission chooses Option 1, maintain the existing framework, the staff is still going to recommend some enhancements to it associated with Improvement Activities 1 and 2 from Near-Term Task Force Recommendation 1.

Slide seven begins the discussion of Power Reactor RMRF Implementation Option 2.

Under Option 2, we would maintain the existing generic regulatory structure but we would issue a rule that allow licensees who choose to upgrade

their PRAs to apply for approval of a risk-informed alternative licensing basis for certain deterministic regulations or compliance issues that they might choose as long as they can show from their upgraded PRA that those issues are of low safety benefit for that facility.

So, like I said, licensees could select a plant specific set of design changes or compliance issues but, in addition to getting to -- well, both sides of the sword here, you would let them go ahead and make some changes from our deterministic requirements, but they would also have to go out and search for and mitigate any plant specific risk vulnerabilities that meet criteria that we would specify in the implementing regulation.

CHAIR STETKAR: I'm quite honestly really, really confused about what Option 2 is. And, I understand, I guess, Joe, you said is going to talk a little bit more about Option 2?

MR. DUDLEY: When I'm through my talk, Joe has about a dozen slides he's going to through.

CHAIR STETKAR: I'll wait, but I'm hoping that by the time we're done with this afternoon I'm less confused.

MR. DUDLEY: Okay.

So, if licensees found risk vulnerabilities, they would have to put new information on how they're mitigated into -- we would have to mitigate them, of course, and then include the information in the plant's updated FSAR.

Under Option 2, there would be mandatory monitoring and feedback as described in Reg Guide 1.174 to make sure that the risk changes remained acceptable for the lifetime of the plant.

And, also under Option -- the discussion of the Option 2, we requested public comments on the possibility of requiring perhaps licensees for subsequent license renewals, license renewals that would exceed 60 years, we solicited public -- we requested public comment on a possibility of issuing a requirement that license renewals exceeding 60 years be required to perform PRAs and look for and address risk vulnerabilities as a condition of that subsequent license renewal.

So, that's in there just to get some public feedback on that topic.

CHAIR STETKAR: I'll ask you folks, because you're making the presentations and I want to make sure we get everything covered, should I wait until the end after Joe presents on Option 2 before we ask --

before I start asking the details?

MR. DUDLEY: The details? Absolutely.

CHAIR STETKAR: Okay. I won't keep me quiet but we'll do that.

MEMBER BROWN: I have a question on that slide on your second bullet.

MR. DUDLEY: The major bullet, yes, issue of rule, okay.

MEMBER BROWN: No, no, the small bullet, new information on mitigation --

MR. DUDLEY: Okay.

MEMBER BROWN: -- of risk must be documented.

I guess in the white paper it says one of your requirements for Option 2 that all licensees and applications that choose to adopt the risk-informed alternative would be required to use their PRAs to search for and mitigate.

Now, we have to have a global search to find out once we've done this PRA under Option 2 for whatever we did, we have to go now look at everything and see if we have anything else we need to deal with.

That's pretty extensive to me. I mean that seems inconsistent with the -- let me finish, okay?

That seems inconsistent with the lead in

which said you would use it for selected items that the licensee wanted to take a risk-based. But once you get into it, now I have to hop on that horse and I have to ride clear across the range.

That's the implication I got from reading the white paper.

MR. DUDLEY: Maybe I can explain it with an example.

CHAIR STETKAR: Let's --

MEMBER BROWN: That's on page 2.

CHAIR STETKAR: Let's wait.

MR. DUDLEY: Okay, let's wait, yes.

CHAIR STETKAR: Let's wait because that's one of the -- that's one of my areas of confusion.

MR. DUDLEY: Okay.

CHAIR STETKAR: And I'm hoping they're going to clear that up.

MEMBER BROWN: Okay, all right.

CHAIR STETKAR: That obviously touched a nerve with you, too.

MEMBER BROWN: A big nerve.

CHAIR STETKAR: Okay.

MEMBER BROWN: I even woke up last night when I read it.

MR. DUDLEY: On slide eight, here are a few

of the things we think we know about implementation and the next slide is a bunch of things that we don't really yet know about implementation of Option 2.

But, for Option 2 on slide eight, we believe that we would approve the license amendment likely to authorize the use of the alternative approach. Plants would have to have high quality PRAs to support the effort.

I think you'll hear later the scope of the PRA is going to be -- it's sort of an open thing that we're still trying to figure out.

The regulatory process would likely be similar to NFPA-805 and the licensees are likely to be able to make some changes on their own if the changes and risks are no more than minimal, but changes with facility changes with larger changes in risk would have to have NRC approval.

So, on slide nine, this one addresses the implementation uncertainties and, as I said, we don't know exactly how it's going to work. We intend -- first of all, we know that we're going to have to review all the power reactor regulations and go through them and sort them into a list of rules that is amiable to risk-informing under Option 2 and those rules like, I don't know, maybe fitness for duty or something like

that that really aren't amiable to risk-informing.

But there are other uncertainties on implementation and the minimum scope and the technical accuracy of the upgraded PRA to enter into the approach, that's an issue and Joe will give some thoughts on that.

Do you have review of the PRA? Do you do certification? Is it just peer review? You know, how do you do that?

The selection and scope of permissible design changes, the process that the staff would use to review the design changes, reporting documentation requirements, we haven't figured out. And this whole thing needs to be done in an approach that is transparent both to the NRC and to the public.

So, these are some of the things that we have to work out associated with Option 2.

That, for the time being, concludes our discussion of Option 2. Joe will give you some thoughts on it later on.

But, now on this next slide, I'm going to start -- Chairman?

CHAIR STETKAR: No, no, we'll wait for Joe. I'm trying to --

MR. DUDLEY: Unless, Joe, you --

CHAIR STETKAR: I'll be calm.

MR. GIITTER: If you'd like, I can go ahead and go through it.

MR. DUDLEY: Did you want to do it now?

MR. GIITTER: I might as well.

CHAIR STETKAR: I think it's probably better. Why don't we sort of cover each of the options in detail.

MR. GIITTER: Okay.

CHAIR STETKAR: That might help us.

MR. GIITTER: That would be fine with me. I'll just sit here if it's all right.

CHAIR STETKAR: Sure.

MR. GIITTER: Okay, just in the way of introduction, as you know, the discussion of Option 2 in the white paper is very high level and, you know, we wrote the white paper back in February and there was some struggles trying to get the paper issued. And I apologize for that.

I did ask my staff, and the reason I'm asking my staff is my staff are the folks that on a day to day basis have to work with the risk-informed licensing applications. We're in the fire, so to speak.

And so, I felt it was important to get their input on some out of the box thinking in some cases on

how we might do things differently in the future.

So, we also received feedback at a public -- the recent public meeting on RMRF that there really needed to be more detail in Option 2. And I appreciate that. I agree and it's something we intend to do and put in a SECY paper.

We also plan to get some stakeholder input on that, not just at the rulemaking stage but I'd like to have at least one other public meeting with industry to have more dialogue in Option 2 and to further vet some of our thinking on it.

Next slide, please?

So, the first aspect of Option 2 is that it would be implemented by a rule. Now, it's possible given a little bit of thought to this, and we've done this before, it's possible that on a piloting basis, we could actually have somebody pilot this and use the exemption process as opposed to a rule.

We did that with 50.69 in South Texas and I think that worked pretty well. So, that's certainly a possibility.

But, in terms of large applicability to the operating fleet, the implementing by rule would make the most sense.

We're calling in an alternative to the

current deterministic regulations where, apparently, we used the word voluntary before and I think that caused confusion talking about a voluntary requirement. So, we use the word alternative now which means the licensees may elect to do it or they may not.

It would require a suitable model and what we mean by that, for example, for NOP-805, obviously, we've required a fire PRA.

If you are going to risk-inform GDC-2, let's say for example, you had ten items in scope and one of them included GDC-2 then we would probably require that you have PRA models for external events, at least those external events that are conducive to modeling, flooding may not be a this point.

It was design basis, you might just have an internal events at power PRA, so it depends on what the scope would be.

Next slide, please?

MEMBER SKILLMAN: Joe, let me ask, it seems to me that when you begin to talk about risk-informing the GDC, you've just jumped into an ocean of permutations and combinations. What's to keep you from getting into a fire fight on the general design criteria regarding electrical power systems or DK heat removal?

It just strikes me that the GDC have

provided stability throughout industry. And if we being to say, well, golly, we can kind of risk-inform whether or not we wanted that type of spent fuel cooling system or that amount of DK heat removal, we've begun to chip away at some of the foundational issues that have kept us safe for 50 years.

MR. GIITTER: I think it's important to point out that what we would be doing is we'd be risk-informed. We're not going to throw the baby out with the bath water.

So, you have safety margin and defense of depth in a risk-informed decision that you would still retain.

But, I'm going to pick on something, I'm getting a little bit ahead of myself. But when I referred earlier to spending a lot of time on issues of compliance, of low safety significance, probably one of the more recent examples is tornado missiles.

And if you read GDC-2, you interpret it, you have to provide protection against tornados and the safety related structure systems and components have to be able to perform their design basis function, which, in this case, is a double-ended guillotine rupture of the largest pipe coincident with the loss of off-site power, et cetera, et cetera.

The compliance issue we're dealing with, in many cases, the structures themselves are protected. The diesel generators may be protected but you might have an exhaust stack that's not protected.

And, the way we've been treating that in compliance space is if you have a diesel generator exhaust stack that's unprotected, the diesel generator's incapable of performing its required function.

Now, if you look at that -- so, you know, if you look at that in risk space, even for the areas of the country that have the highest tornado frequency you're talking about a 1E-4 event, you're looking at the probability that the tornado missile actually is big enough, large enough and it actually strikes the target.

And then it would have to fail that diesel generator exhaust stack, if it shears it off, it's okay, it would have to crimp it so that it would prevent exhaust from coming out.

Now, by the time you look at -- you play this scenario out, you realize this is extremely low probability event.

Plus, we have a lot of operational experience to show there have actually been I think seven instances where tornados have hit plants and not

a single safety related SSE has ever been affected.

So, on one hand, you have a deterministic criteria that is extremely difficult to meet and if you strictly look at that without looking at it through a risk lens, you can spend a lot of time, you can make decisions to shut plants down over issues that are of very low safety significance.

So, I understand what you're saying but I think a lot of our deterministic criteria lends itself to a better decision if you can bring risk insights into operability determinations and even licensing determinations.

MEMBER BROWN: So, seven plants have been hit and there wasn't a single safety system that got damaged but, yet, they were designed deterministically. So, isn't that an indication that that system works?

MR. GIITTER: Yes, and we're not talking about rolling back deterministic requirements entirely, it's a matter of looking at the -- in making decisions is really what we're talking about. Making decisions about whether something is safe enough, brining risk insights into that decision making process.

CHAIR STETKAR: By the way, before you continue, Joe, for the record, we've been joined by

Member Dr. Dana Powers.

MR. GIITTER: Okay, I'm going to go ahead to the next slide. We're on this slide, okay.

The benefits of Option 2, we believe there is increased safety benefits to the public. Certainly, if you identify and mitigate plant specific vulnerabilities that can improve plant safety.

Reduced burden, there is some non-risk significant portions of the licensing basis that we may determine is no longer necessary.

Increased resource efficiencies, licensees may be able to expand self-approval of some changes that might be similar to what we do for NFPA-805. If it's less than 10-7, for example.

And, although good peer review should obviate the need to review the base PRA, what I'll be talking about in a minute may make that review even more straightforward.

Operational flexibility, we know from risk managed tech spec -- Risk-Informed Tech Spec 4(b), for example, that licensees can make decisions that provide better operational flexibility without increasing or significantly increasing the risk of a plant.

For example, we spent a lot -- the staff spends a lot of time and licensees spend a lot of time

in Notice of Enforcement discretion. It seems like it always happens on a Friday afternoon at 4:00. We'll get a call and it seems like every couple of weeks at least we get a notice. I don't know what the actual statistics are, but that's --

My staff is the -- we have somebody on call all the time who does NOAA evaluations. As licensees move to Risk-Informed Tech Spec 4(b) which will allow them to control their allowed outage times and they'll be able to make decisions on how much to increase an allowed outage time based on the plant risk profile at that point in time.

We won't need to have a Notice of Enforcement Discretion, the licensee will be able to make those decisions without coming back to the NRC.

The whole point of this is that not only does it allow licensees greater operational flexibility, but it allows the staff to ideally focus on those things that are more risk significant and not spend a lot of time on those things that aren't.

Next slide, please?

MEMBER SKILLMAN: Hey, Joe? Joe, I want to go back to your word picture regarding protection of the exhausts on the emergency diesel generators against a tornadically hurled missile.

I was part of a team that put those protections on a plant and our design case was a Buick coming over the fence at about 50 miles an hour. And when we were doing that modification, we had people laughing at us until about two years later there were pickup trucks sitting on buildings not too far away.

You know, so people began to realize, you really can hurl a Buick and you can hurl a Silverado or a Sierra. They'll fly.

And I'm reminded of an argument that I've used with John Stetkar or with Dennis Bley. It's the passenger ship that has 5,000 people and it's got a seat on the lifeboat for every soul on board, but when you look at the data, there hasn't been a large cruise ship sinking for many years.

So, one can say, well, if it's 5,000 people and so many trips per year, the likelihood of having the need for one of those seats for a soul has diminished to 1-8, 1-9, 1-10. So, let's get rid of all lifeboats and all life preservers.

But, of course, the flip side of the argument is if there is a hull loss, you can have a huge consequence event.

So, I guess I'd like to push back a little bit on the idea that taking the case of the protection

on the diesel engine exhaust, you'd really have to have the missile in the right location and it would have to crimp the exhaust so that the engine would no longer be operable.

The flip side is, no matter what happens, if you've got a great big cage up there, you're protected and you can count on that engine presuming that it starts.

Where in the discussion is there a recognition of the value of simply having defendable, defense in depth that the operators know is there for the event, whatever it might be?

I understand you can whittle away with a probabilistic argument and say, you know, we can get by. We can probably wing it here. We can make it.

Then there's the other side of that that says, I know I have the protections in place that I need for whatever the event might be whether it's a tornado or a straight wind or whatever it might be.

MR. GIITTER: Yes, I just want to go back to something I said earlier and what we do is risk-informed. So, we don't throw out those aspects. We retained events in depth. We look at that safety margin.

So, let's use the same example, let's say

that you do have a situation where a Buick or whatever gets hurled and it crimps the exhaust stack. It's possible and I think, you know, I would agree with you, that's a concern. You can't just say, well, our diesel generator doesn't function.

So, then you have -- and I'm just making this up -- but you might have procedures that have somebody go out to the building with a saw and saw the exhaust stack so that it functions.

Or, you want to make sure -- that's probably a terrible example. That's more --

But, probably a better example is you look at it from a risk perspective that if I do lose that particular diesel, do I have a station blackout diesel? You know, do I have FLEX equipment that I can bring in to provide backup power?

I mean that would be looking at it from a defense in depth perspective.

Looking at it from a safety margin perspective, you might find that there's only a certain class of missiles that would actually be large enough to actually to crimp that stack. Okay?

And it might be that you run the TORMIS code or you look at it, you know, from, again, maybe from a probability perspective. You can get a better idea of

what that risk might be. It may be that you -- I know you can't completely protect against tornado missiles, but it may be that exhaust stack is behind a building and that it's impossible for the Buick to make it past the building and that the exhaust stack, even though smaller missiles would be able to hit it, you know, it's unreasonable for larger missiles to hit it and the smaller missiles aren't capable of crimping it.

I mean that's sort of an analysis. But it's not just kind of blindly saying well, it's not protected, it's inoperable sort of approach.

So, I don't know if that helps or not.

MEMBER SKILLMAN: I understand your response. Thank you.

MR. HARRISON: This is Donnie Harrison. Can I make a comment? If I'm on. There I am.

Donnie Harrison from the staff.

I'll just point out there's some of the risk staff that actually disagree with Joe's position partly because the frequency of the event. He's using 10-4 as the design basis but you can have straight winds in the 10-2 range that could pick up some of this stuff to crimp the piping and it's likely to crimp because it's up against a wall.

So, you're going to have to look at it at

a site specific. But to generically say the design basis is the starting point for the analysis, I think some staff would disagree with that. You'd have to look at the whole spectrum including the straight winds in the 130 mile an hour range, which are much more likely to occur.

So, if you take that perspective, you actually might not be able to screen these hazards out.

I'll also point out, and this goes back to Option 1, there already exists a 1983 safety evaluation that allows licensees to use the TORMIS code in those situations to come in and have those things removed from their licensing basis if they can show the risk is small enough.

So, there's already a framework for addressing tornados. So, anyway.

CHAIR STETKAR: I think the danger that we're getting into is as soon as you bring up illustrative examples are always good and as soon as you bring up a single example, everybody wants to focus on it.

I like to use the examples of Godzilla and meteorites because I've seen Godzilla in a movie so, therefore, perhaps Godzilla exists. But in more practice, we don't design against meteorites. We don't

design against meteorites.

Does that mean meteorites have zero frequency of occurrence? No, it doesn't. They might be more likely than a Buick flying in a tornado or a straight line wind and bouncing off a building and hitting an exhaust stack at a particular plant.

The fact of the matter is, we don't design against meteorites. Why don't we? Because everyone accepts the fact that the frequency and the consequences of a meteorite strike on a nuclear power plant must be acceptable, except nobody's quantified that.

So, when you talk about your design criteria and your deterministic defense in depth, there are de facto -- bad term -- there are things that people accept as fundamental notions that may not have a quantitative basis.

Where there are other things that people accept as absolutely required that may be quantitatively so small that you're really wasting your time on them. And that, in a general sense, is what, I think, Joe's talking about rather than arguing about whether it's a straight line wind or a tornado or whether it's a Buick or whether it's a, you know, part of my grandmother's house or something like that.

MR. GIITTER: Yes, and I agree. You have

to look at it on a plant specific basis. It's hard to generalize the risk without looking at it on a plant specific basis.

Okay, so, I kind of lost track of where I was.

In terms of the desirable features of the implementing regulation, it would be performance-based. It would allow risk amendments to the license without the need for an exemption. We talked about that already.

It would have objective acceptance criteria for risk defense in depth and safety margin going back to the risk-informed aspect. And it would allow licensees to fully achieve the benefits of burden reduction commensurate with the risk significance.

And examples of that would be what we've done with 50.69 and the ISI, risk-informed ISI.

And then, finally, it would require licensees to address vulnerabilities without requiring the NRC to impose a back-fit.

Now, let me give an example of that because I know there was some questions about the vulnerabilities issues and I'll talk a little bit about that in a future slide. But, I would fall back on the experience that we had with NFPA-805.

We did have some licensees that were in compliance with Appendix R. But when they did their fire PRA, they found significant risk outliers.

One example I can think of was where there was an inverter right below some cables and a remote shutdown panel nearby and it was a very highly risk significant configuration at the plant.

And so, what they identified was moving the inverter and adding incipient detection to that room or to that area to reduce the risk. But it was such a risk significant configuration that my staff jumped on a bus and along regional staff and went to the site to make sure we really understood what the risk significance was.

And those are insights we wouldn't have had without doing the fire PRA, you know. So, technically, they were in compliance with Appendix R, yet, there was this risk vulnerability that revealed itself.

So, these are the kind of things we're talking about as they were to do a PRA and identify a significant risk vulnerability, we would expect them to take some sort of an action to address that.

Possible rule content, scope, the current regulations and aspects of a licensing basis that might be risk-informed, it would just be, you know, as Dick

mentioned, there are some things that aren't conducive to risk-informing and there are some areas where we think some current regulations that can be risk-informed.

For each item and scope, you would identify the PRA scope, level of detail and technical adequacy, the appropriate risk metrics, defense and depth elements and safety margins.

In other words, it would be composed of a number of different, for example, risk metrics or defense in depth elements that would define what that has to include, what has to be looked at.

And then, the third item, acceptance criteria for risk defense in depth and safety margin is, what would be acceptable? What would be our criteria for accepting that?

To a certain extent, the improvement activity, too, that Dick talked about will help us define what the appropriate risk metrics defense in depth and safety margins would be.

The next slide, please?

CHAIR STETKAR: Joe?

MR. GIITTER: Yes?

CHAIR STETKAR: Before you leave that one, and again, this is, I'll admit, picking on examples but

sometimes examples help.

In the description of Option 2, in this particular area where you talk about the scope in which parts of the regulations may be applicable, which parts may not be, there's a footnote that says not all NRC regulations are amiable to being risk-informed.

MR. GIITTER: Right.

CHAIR STETKAR: And the examples, you say, for example, occupational radiation exposure requirements in 10 CFR Part 20, Fitness for Duty Requirements in Part 26 and Emergency Preparedness Requirements in Section 50.47 and Appendix E would not be subject to alternative risk-informed compliance approaches.

And I guess, you know, thinking as hard as I could, it's not immediately clear to me why fitness for duty could be risk-informed. Although I suspect some people might argue that, perhaps, some elements could.

But, it's not at all clear to me that why occupational radiation exposure requirements couldn't be risk-informed and it's certainly not clear to me why emergency preparedness requirements couldn't be risk-informed.

So, where you're thinking --

MR. GIITTER: I think probably a better qualifier would be that they can't easily be risk-informed. And I'll maybe go through the examples, emergency preparedness, I would think you'd want to have a Level 3 PRA for that to do that.

CHAIR STETKAR: But I think, in my sense, what you're talking about, again, trying to keep the conversation as broad in terms of rulemaking and policy, is that there may very well be certain parts of the regulations that are extremely difficult but some of the examples tend to keep focusing me back to that Level 1 internal event at power, you know, mind set that might be a trap.

MR. GIITTER: Okay. That's a good comment. I understand your comment.

So, I think we probably need to explain that a little bit better.

CHAIR STETKAR: Again, sometimes if you put, you know, examples in they might detract from the general thought.

MR. GIITTER: Yes, yes, okay. Good comment.

Okay, so the definition of vulnerability in terms of defense in depth or safety margin, the criteria would include at first identifying the vulnerabilities.

And I think to a large extent, they're going to be self-evident when you do the PRA.

And then, once you've identified the vulnerabilities, you'd have to add an event or accident sequence possibly to the plant licensing basis if it revealed something that should be designed against.

And then, the next step, of course, is what action do we take given that it's not part of the licensing basis? Would it require an analysis, plant modification? Procedure change?

And then, finally, determining the pedigree of the engineering analysis and treatment of the SSE. So, it may be that if you do find something that's a risk outlier as part of your new licensing basis, you would address it but it may not necessarily be using the same conventional approach you did for a design basis accidents under the deterministic approach.

CHAIR STETKAR: A concept similar to regulatory treatment of non-safety systems?

MR. GIITTER: Yes.

CHAIR STETKAR: Or some of the new design certifications, something like that?

MR. GIITTER: Yes.

CHAIR STETKAR: Okay.

MR. GIITTER: And, in fact, this is actually an idea that was envisioned in NUREG-2150, the idea that you might identify accident scenarios that aren't currently addressed by your licensing basis. And the treatment for those might be a little different.

And, you know, some examples, NFPA-805 example I used, I think it was an IPE that was done for a plant that was discovered there were safety related switch gear in the turbine building that was below lake level. You know, you can find those kind of vulnerabilities as a result of PRA.

And, in that case, the licensee made design modifications to address it. That's the kind of thing we're talking about.

Next slide, please?

The criteria for self-approval of changes, we talked a little bit about this to the licensing basis. Could use a risk-informed 50.59 process, possibly a risk-informed definition of operability.

It would also specify the update of the PRA periodicity. A corrective action and reporting requirements we expect would be part of that.

Next slide, please?

The staff has learned a lot of lessons from doing the NFPA-805 review and I think we've had some

discussions in the past about some of those lessons.

And so, as we look forward, I think it's important to try to make changes based on those lessons. We don't want a repeat and we know for sure that if we don't change some things that nobody's going to be interested in going with an approach where you'd risk-inform a larger set of the currently deterministic requirements.

So, there is two approaches I'm going to talk about. The first is an effort that's been undertaken by separate NRC and Industry Risk-informed Steering Committee working groups on PRA technical adequacy.

And the third one is kind of an out of the box thought on the PRA certification concept. And I'll talk about both of those.

Next slide, please?

Under objectives, there were three different objectives that the Risk-informed Steering Committee looked at. This is both the internal NRC Risk-informed Steering Committee and the industry Risk-Informed Steering Committee, and the way it works is they have -- we have separate working groups, but they have common public meetings on a regular basis and they report back to a Risk-Informed Steering Committee

that's headed by Bill Dean, the NRR Office Director and it has Deputy Office Directors on the committee.

One of the biggest lessons learned from NFPA-805 is that we had difficulty dealing with new methods, what we call new methods. In essence, a new method, at least a simplified way of explaining, is one that the NRC hasn't reviewed.

So, the process that the working group has envisioned, and this is really almost a subject of a separate briefing so I'm going to provide discussion of it at a high level, but the process involves a vetting panel that would consist of senior technical experts from NRC and industry that would evaluate the method and decide which acceptance process would be used.

There's four criteria that were considered, the source, whether it's from NRC, EPRI, utility, an owners group.

The pedigree, whether it's undergone -- has been formally accepted by the NRC or it hasn't gone, on the other extreme, there would be no independent peer reviews, so, there's a range of pedigree possibilities.

Maturity is the method new, never been applied or is something that's commonly used in complexity. Is it a simple, intuitive method or is it complex that requires integration of multiple

disciplines?

So, based on a combination of these four criteria, the vetting panel would make a decision in which process to use.

The second objective regards the facts and observations that the peer review identifies. And right now, the NRC and industry guidance really don't tell you how to close out an observation from a peer review.

The idea is that the licensee would retain and report the F&Os or they would retain the F&Os, report them out to NRC and until they're reevaluated by another peer review, they wouldn't be closed out.

And, it's because of that, the NRC generated a lot of RAIs during the NFPA-805 review asking licensees how they dispositioned their F&Os. In fact, that was a source of a number of the RAIs.

So, this second bullet, the working group is looking at options for more efficient and effective meanings of closing out F&Os.

And then the third, is --

MEMBER BLEY: Can I ask you a little about that?

You indicated you've had trouble dealing with new methods. But some of that trouble strikes me,

there is a difference between a large scale method methodology and some calculational model.

And I can see for the large scale models you really need to get a review to fully understand what's going on.

But for some of the calculational schemes, and some of which I think came up in 805, although we haven't reviewed that directly, a plan like you're talking about might really help because there are things that good engineers ought to understand and be able to evaluate without having had a formal review process on the calculational scheme.

I'm calling it that but it's kind of any small scale part of the calculation.

MR. GIITTER: Yes, and that's the idea here as we're trying to come up with a moire efficient and effective way of dealing with F&Os. And, you're right, some of them may be -- that's one of the options that's being looked at is some of the F&Os might be addressed by the licensee or could actually be addressed by the initial peer review.

But, a lot of times, the peer review will just identify the F&Os and nothing will come of them. It'll be open-ended.

Sometimes the licensee will address them,

but maybe not do a very good job documenting how they address the F&Os.

So, really, what we're looking at is a better process, a well understood and defined process for dealing with F&Os.

MEMBER BLEY: I like that you're doing that. If memory serves me right, much or at least some of the review problems on 805 happened when you hadn't even had the peer reviews yet, I think. I'm not sure if that's true, but I think that's what we'd heard.

MR. GIITTER: Yes, usually before we -- a requirement of submitting an application is the peer review would have been done for the fire PRA and possibly the base PRA.

And then the last point here, evaluate additional gaps in peer review process, one of the gaps I'll talk about is a reviewer quals. A lot of times we found out that the peer review reviewers weren't qualified, or at least we had questions about their qualification.

So, the idea is that by implementing these three recommendations, and we actually have on Thursday another internal Risk-informed Steering Committee meeting where we're going to discuss the white paper and hopefully make some decisions on where to go forward.

But, by implementing these recommendations, we hope that the regulatory processes associated with verification of PRA technical adequacy for risk-informed licensing applications will be improved.

MEMBER BLEY: What does it take to make this happen? This doesn't require the Commission to come down and say --

MR. GIITTER: No, no, no.

MEMBER BLEY: Okay.

CHAIR STETKAR: I was just thinking, Joe, we need to be a little bit sensitive to time this afternoon, but a month ago, May 5th, we had a briefing from the Working Group on Uncertainty.

MR. GIITTER: Right. That's what we call Working Group Number 2.

CHAIR STETKAR: That's right.

MR. GIITTER: This is Working Group Number 1.

CHAIR STETKAR: This is Working Group Number 1. We've not been briefed by Working Group Number 1 --

MR. GIITTER: Right.

CHAIR STETKAR: -- primarily because what I had heard was, well, Working Group Number 1 was sort

of just working on fairly straightforward details and there seemed to be a pretty general agreement on how to come to closure there. Is that -- I'll put you on the spot -- is that correct?

MR. GIITTER: I won't say an overall yes, but certainly, if you'd like a briefing, we can do that.

CHAIR STETKAR: Well, I don't want to waste peoples time, but if you think -- we'll discuss it offline to see whether or not it's worthwhile. It might help reduce some of the discussion going forward in this area if we understood a little bit better where that working group is heading. But we can talk about that offline.

MR. GIITTER: The next slide talks -- so, the out of the box approach that my staff came up with, and I'm going to just kind of warn you that this idea really hasn't been fully vetted with the working group or even some of my counterparts in the other division, the risk divisions.

But one of the ideas is a Certified PRA model. And it's really a more robust approach to PRA technical adequacy than anything else we've attempted or thought about, I should say. So, it's really more revolutionary than evolutionary.

The NFPA-805 experience shows us that an up

front agreement on methods would be very beneficial. So, part of that would be identifying the methods up front with some sort of a process for introducing new methods. And it could be the process that we're working through the working group.

The other ideas that the industry peer review, the way we're currently doing them anyway, may change dramatically in that the PRA would actually be certified. And I'll talk about that in the next slide.

So, to fully realize the benefits, it might be necessary to have a better defined process for addressing how new methods are addressed or have them approved up front to require PRA analysts to meet the minimum qualification experience requirements. That goes to the third point that the Risk-informed Steering Committee working group was looking at.

And then, PRA certification, if you go to the next slide, I'll talk a little bit about that.

It's really more in depth than a normal peer review. It would be preferably done by an independent body. Now, that could include NRC people. Actually, this concept is somewhat consistent with, if you're familiar with the phased approach to PRA quality concept that the Commission supported, it's consistent with that idea that you would basically have an approved PRA.

But, it would have to be in depth. It would have to cover the entire model. It would have to ensure that, as I said before, approved methods are employed.

And then, you have satisfactory resolution of the review findings, the F&Os, in other words. It would have to be done by this independent body so there wouldn't be any open-ended questions about the F&Os.

And then, once it was reviewed, it would become a certified PRA model that a licensee could use to make licensing decisions without the need for further NRC review and approval unless certain thresholds are reached. So, similar to some of the concepts we've talked about earlier.

Next slide, please?

So, the example scope of an Option 2 rule, this is fairly high level still, but a set of design basis events could be included in the plant specific licensing basis which would reduce the current list of licensing -- excuse me, of design basis events. Or at least you could have some that were risk-informed. And you might add new ones based on new risk information.

The other thing that we're looking at is the idea of risk-informing operability determinations.

CHAIR STETKAR: Joe, let me -- well, go on, finish the other two bullets. We'll go back to this.

MR. GIITTER: One of the problems you have when you're making an operability determination is you're looking at operability based on deterministic requirements. And this goes back to what I was saying before. I believe that you can, in many cases, use the risk insights to better determine whether something is operable or not.

Because when we talk about operability, we looked at it in a relatively narrow and strict sense.

The other possibility with the Option 2 rule is it could subsume some of the existing risk-informed regulations such as 50.69, 50.488 and others.

For example, you may not have to come in with, let's say you wanted to go submit an NFPA-805 application or a 50.69 application, rather than submit separate applications, you could submit an application under this new rule envisioned and be able to get the same benefits, if you will, under these other risk-informed rules.

In other words, it would be one approach to a number of different areas of the regulation that are currently risk-informed.

So, let me go to the conclusion.

MEMBER SKILLMAN: Joe, I've got to jump in

here.

On this slide 13, risk-informed operability determinations, this -- maybe I'll insert some humor here, but perhaps it's tongue in cheek, but perhaps it's serious.

Number one, seal leak off on a PWR kind of a pernicious problem, we've dealt with it for years, I think that the basis for the maximum leak off and tech specs is really dependent upon the manufacturer's testing of the seal package.

Most of us know that the seals are robust for probably twice that amount of leakage.

CHAIR STETKAR: Were they seal leak off rates in your plant tech specs? There weren't in any tech specs I've ever seen.

MEMBER SKILLMAN: Yes, we had a limit.

CHAIR STETKAR: You did? Okay.

MEMBER SKILLMAN: But where I'm going with this is, I can kind of conjure up in my mind a call to the region at 5:00 on Friday afternoon saying we've got one pump and it's pushing the limit.

But guess what we've got? Three more pumps and we've got bookoodles of make up capability and we don't really think we're facing small break LOCA or seal LOCA because we think at the rate at increase of the

leakage, we can probably make it to the next outage, which is an argument you probably heard or something like that in times past.

That sounds to me like a very slippery slope. Operability determinations, at least in my mind, need to be crisp. They need to be defendable. They need to be based on not just a realistic assessment of what you're reserve capabilities are, but a very sober assessment of what the consequences are if your risk determination fails.

So, when you say risk-informing operability determinations, it seems to me that that is opening a Pandora's box that could just really undo some of the foundations that we've come to depend on.

And I guess I'd just like to illicit your thoughts on that.

MR. GIITTER: Well, I actually agree with everything you said. I think if you did a risk-informed operability determination, it would have to be realistic.

I think some of the problems are that when we look at operability that sometimes we're doing it in a way that's not realistic.

In terms of defense in depth and safety margin, that's all part of our decision making criteria

and that would be an essential aspect of how we would decide whether or not something we'd be supportive or not.

It's not just on the numbers. In fact, one of the things I try to emphasize is let's not put a lot of emphasis on the numbers. Let's look at it, you know, the numbers give us insights into the relative magnitude of the risk. But, let's look at defense in depth and safety margin.

So, hopefully, we're not going to use an argument of numbers to make a decision like the one you came up with without a strong safety basis for it and without it being realistic.

MR. HARRISON: This is Donnie Harrison of the staff again, if I can just give a perspective.

Risk-informing operability was a topic that came up about a decade ago in response to a licensee that had a poor performing diesel generator. And at that time, it was discussed, could you use a risk-informed approach?

And the answer was no. And the reason it was no was operability carries, if you will, a legality to it. If I do a test of a diesel and it passes the performance test, it's operable. That's a designation. It doesn't carry a probability of being

operable, it is operable. If it fails the test, it's inoperable.

And so, there's some legality to that. So, unfortunately, Joe didn't have the benefit of vetting some of the slides.

So, again, the staff would probably have to go to OGC and have this discussion with them if we were to pursue this because of the tech spec requirements and issues you might get into about operability.

You definitely don't want to test a component to failure because you're worried about operability from a risk standpoint that has a high unavailability or a high unreliability. You don't want to them test it until you prove your point.

MEMBER SKILLMAN: Yes, and this, I my case, it was just over 10 gallons a minute identified seal or whatever else, down you go.

MR. GIITTER: And nobody's proposing we do that. Again, I think there's maybe a misunderstanding about what we mean by risk-informing operability determinations.

Right now, when we look at whether a system's operable or not, largely, it's a black and white issue. And largely, it's based on criteria that may not be actually that realistic or that risk

significant.

And that's the point is we need to bring realism to our decision making processes. And, you know, what Donnie said is right, we haven't fully vetted this with OGC, that's something we're going to have to do. I understand that there may be, you know, some legal issues. But right now, what I'm proposing to you is the staff's kind of out of the box thinking on an approach to go forward.

So, as long as you look at it in that context, yes, we have more work to do, but I think it's important to talk about some of the thinking we've done.

CHAIR STETKAR: But, again, and I'll try to be brief, but whenever you bring up specific examples, you always get discussions about specific examples.

I'll bring up. The supervisor that designed nuclear station, I can say it's name because it doesn't exist anymore, we had a completely shared component cooling water system between the two units, five pumps. One pump could be in operable indefinitely, two pumps could be inoperable for seven days. If we had more than two pumps inoperable, our technical specifications required us to immediately shutdown and go to cold shutdown.

You couldn't do that with two pumps

available. Therefore, from a risk perspective, the worst thing that we could do --

MR. GIITTER: Is shutdown.

CHAIR STETKAR: -- is shutdown.

If I had done a risk-assessment, I could justify operating for a long period of time, not indefinitely with three pumps inoperable.

So, there's an example where some holistic risk perspective can help you make better judgments, you know, give -- and I'm just saying, black and white something inoperable.

MEMBER SKILLMAN: But that's a case where the tech specs are out of sync with the real configuration that's required to operate to the plant.

CHAIR STETKAR: And I think that's some of rather than saying black and white is it operable or inoperable, given the fact that it's inoperable, you know, what ought you to do in terms of a risk perceptive? Is it better to shutdown? Is it better if the diesel's inoperable to operate for the next eight hours because the risk of losing off-site power is relatively low rather than shutting down where you have a chance of losing off-site power because you lose the generation?

MEMBER BLEY: I know we have somebody waiting to talk, but I would toss in I'm glad to see

you're thinking about this. And I understand all the points that have been made.

Burt often -- not often -- always those operability requirements are designed against design basis accidents. And something, and there are lots of examples you can cite, something might not be operable for that purpose, but operable for anything short of that.

And I mean that distinction well thought out and known and could be very helpful when you don't get the design basis accident but something else is going on.

MR. GIITTER: And a lot of times when you look at operability, it's against the tech spec requirement.

I'm not going to name the plant, but one of the issues we've dealing with lately is a plant was vulnerable to some tornado vessels --

CHAIR STETKAR: That seems to be the theme today.

MR. GIITTER: It's the common problem right now.

But this had to do with they credited some fans in their non-safety mechanical draft cooling tower to be able to get to cold shutdown within a certain

number of hours. And because of this vulnerability, it would have required them a greater amount of time to get to cold shutdown.

So, the question was, were they operable or not? And we spent countless number of hours looking at contingency plans in case they considered themselves to be inoperable.

The net effect would have been, it would have taken them maybe an extra day or so to get to cold shutdown. Did it affect any critical safety functions? No. It was just, it was because their licencing basis specified that they would be able to achieve cold shutdown in a certain number of hours.

So, it's not always, you know, you need this structure system and component to defend against a design basis accident, it may be a matter of you make some assumptions in your licensing basis about how long it takes to get to cold shutdown and you may not be able to achieve that.

MR. MIZUNO: Is this operating?

This is Geary Misuno, Office of the General Counsel for NRC.

And I did want to provide a little bit of historical perspective on the advice that OGC had given to the staff on operability which is, first of all,

there's no legal reason why the NRC could not move from a deterministic approach in terms of defining operability to something that is more risk-informed.

The only question is, how one is going to explain that and making sure that we are consistent across the board and that we get a Commission buy in on that given the long history of the interpretation.

But, I think in the short discussion that you had here, one has to wonder whether, in fact, a reinterpretation of what operability means is, in fact, really necessary.

Because we also told the staff that, really, the question is, given that, if you determine that something is inoperable from a deterministic standpoint, it still remains for the staff to be able to say what is necessary in order to -- once you've made that determination that something is inoperable.

And that could be risk-informed. And that can be done right now without any change to our current regulatory approach or inform the Commission. Because the Commission has already told us, we can be risk-informed in dealing with these kinds of things.

So, for example, with our tech specs, we could move to a risk-informed concept of what would be the action statement once you've made a deterministic

finding that your SSC is operable?

So, there's a lot of flexibility and I think it's ultimately up to the staff and ultimately to be brought to the attention of the Commission to consider what aspects of our regulatory infrastructure we want to call risk-informed and how we're going to explain that.

MR. GIITTER: So, let me just conclude real quick.

CHAIR STETKAR: Before -- go back to 13 because this, if you can answer the question now, it'll help my fundamental confusion.

As I read the discussion of Option 2 and as I listened this afternoon, I'm still confused.

The first bullet on this slide says, set of design basis events included in the plant specific licensing basis. The current list could be reduced, new events could be added based on risk information.

That seems to tell me and some of the stuff that I read in the white paper seems to tell me that Option 2 says on a -- the rule would be written that on a voluntary basis, I, as a plant, could risk-inform my entire licensing basis.

In other words, my entire set of licensing basis events, my technical specifications, everything.

Is that the concept of Option 2?

MR. GIITTER: I'm going to stop just short of saying the entire licensing basis because I don't think we've evaluated it that much.

CHAIR STETKAR: Okay.

MR. GIITTER: But I do think there would be a significant subset of a licensing basis, a current licensing basis that may be risk informed.

CHAIR STETKAR: Okay, thanks. And let me interject because other things that I read and what other things that I heard this afternoon seemed to say no, Option 2 is targeted only at a selected set of issues like fire protection, like tech specs, like, you know, any other identified focus set of issues but it's not the broad brush.

And the reason I bring this up is that if it is the broad brush, if it's intended to be the broad brush, then Charlie Brown's question about the search for additional vulnerabilities, and my comparable question about the search for additional vulnerabilities, to me, makes sense because you're opening up everything.

MR. GIITTER: Right.

CHAIR STETKAR: If it is only intended to be a selected set of targeted applications, then that

search for additional vulnerabilities, to me, doesn't make any sense at all because you're adding burden --

MR. GIITTER: Without, yes.

CHAIR STETKAR: -- without any commensurate benefit.

MR. GIITTER: Right.

CHAIR STETKAR: You know, you're adding benefit, perhaps, in one focused application, but, you know, for NFPA-805, you don't require people to look for seismic vulnerabilities, for example.

MR. GIITTER: Right.

CHAIR STETKAR: So, if the intent is indeed to be closer to addressing, I'll use the word entire just for an example, to address the entire licensing basis then I get it.

But when you -- I'm not speaking very well this afternoon -- in the white paper, I'll tell you, that doesn't come across.

MR. GIITTER: Right.

CHAIR STETKAR: It seems to in parts, but in other parts, it seems to be --

MR. GIITTER: And maybe it's a little confusing --

CHAIR STETKAR: -- focused on application.

MR. GIITTER: -- because the concept is that you have a list of things that you could risk-inform. And the licensees may decide they don't want to risk-inform everything. There may be some subset of that.

And, you're right, if it's broad, though, you would expect to look for vulnerabilities.

CHAIR STETKAR: If this is cast in the sense of rulemaking, we're going to write a rule that says on a voluntary basis, licensees can adopt this however it's characterized, alternative license, risk-informed alternative licensing basis. Then, I, as a licensee, can obviously select which particular areas I feel I might have the most benefit, recognizing that if everything is on the table, I should also, in fairness, look for additional vulnerabilities.

And that's fine, that's my value judgment whether I want to adopt this voluntarily, recognizing that everything is on the table.

MR. GIITTER: Right.

CHAIR STETKAR: It's different, though, than if you say we're going to write a rule that allows licensees on a voluntary basis only to address certain issues that the NRC will identify.

MR. GIITTER: Oh, I see. Okay.

CHAIR STETKAR: Which, reading the white paper, I could be led to that conclusion.

MR. GIITTER: Okay.

CHAIR STETKAR: The NRC will identify certain issues that will be under the scope of Option 2 that will then be available to licensees to address. And, oh, by the way, if you address any of these, you have to look for additional vulnerabilities.

MR. GIITTER: Yes, that's a good comment.

CHAIR STETKAR: So, be careful when you read that.

MR. GIITTER: We need to make that clearer, yes.

CHAIR STETKAR: Because that was my fundamental area of confusion in the scope of Option 2.

MR. GIITTER: Okay.

Okay, so just to conclude real quick because I know we're running out of time, the conclusion, I talked about some of the preliminary factors that could be considered in developing an RMRF rule.

We envision extensive stakeholder interaction to ensure that benefits are realized but also that unintended consequences are minimized. And, as we just talked about, Option 2 could range from a very

limited application to a fully risk-informed approach.

So, that concludes my remarks.

CHAIR STETKAR: Are there any other questions regarding Option 2? Comments?

MEMBER BLEY: I think I have a question.

Let me back up to the one John was just asking about, you don't need it up there.

CHAIR STETKAR: Slide 13.

MEMBER BLEY: Set of design basis events in the licensing basis, once we start digging into this, we're getting awfully close to what was in the RMRF, I think. And I guess I'll wait until you talk Option 3 to clarify for me the real difference between 2 and 3.

MR. GIITTER: Yes, I mean I can tell you right now the biggest differences that Option 2 is voluntary, excuse me, bad word, alternative and that it could be implemented, you know, on a graded approach, it's not all or nothing.

MEMBER BLEY: Okay, and Option 3 is you're all in?

MR. GIITTER: Yes.

MEMBER BLEY: Everybody's on?

MR. GIITTER: And they're required to be in.

MEMBER BLEY: Okay.

CHAIR STETKAR: Anything else on Option 2?

If not, I'm going to call for recess and we'll regroup in terms of timing and you may want to think about how you organize the rest of the afternoon.

We will recess until 3:05.

(Whereupon, the above-entitled matter went off the record at 2:51 p.m. and resumed at 3:06 p.m.)

CHAIR STETKAR: We are back in session and we'll continue with the discussion on Option 3, I guess.

MR. DUDLEY: Option 3, I'm on slide ten. I'll try to -- we're a little bit behind schedule, so I'm going to try to go through these fairly quickly.

Power Reactor Option 3 is to implement the plant specific RMRF approach as described and recommended in NUREG-2150. We would issue a regulation that required all operating reactors to perform an update PRA of a certain quality.

And then they would use these PRAs to establish a plant specific licensing basis based on the plant specific risk profile, an NRC specified risk management objective.

And so that it's risk-informed and not risk based, we would have an enhanced criteria for determining the adequacy of defense in depth and safety margins and other non-risk factors if, you know, if

there are any.

So, based on the risk profile, a licensee would implement the plant specific licensing basis by deciding how the risk objective would be met. They would then have to ensure that the necessary protections are in place to meet the risk management goal, demonstrate the adequacy of defense in depth and safety margins.

They'd have to establish a risk-informed decision making process and establish a monitoring feedback and a reporting process.

On continuing Option 3 on slide 11, so, each plant's licensing basis would consist of technical requirements based upon plant specific attributes and applicant selected design elements and rationales for why their technical requirements adequately address risk and defense in depth.

It would have an FSAR level description of the plant specific attributes and the design elements and constraints that must be maintained. And it would have a process for maintaining the validity of those rationales or the technical basis throughout the facilities operating lifetime.

It would -- Option 3 would require both the NRC and licensees to use a structured risk-informed

decision making process. And licensees would be required to use that process with monitoring and feedback to ensure that the plant specific licensing basis was consistent with the risk profile of the plant which could change over time.

So, that's my discussion of -- that's the discussion of Option 3. And so, we've discussed right now the three different RMRF implementation options for nuclear power reactors.

Are there any additional questions? We've already had quite a few on Option 2.

CHAIR STETKAR: Yes, and only one. And this is, again, to try to better understand the distinction between Option 2 and Option 3.

I wanted to ask Joe when he was up, but I understand what Option 3 is.

Let me phrase it this way, Option 3 discusses the design extension or sometimes it's called design basis extension, in some places it's called design enhancement, you know, that category of events.

And those events, as I understand it, could be current design basis events that are determined to be less risk significant. They could be additional events that are identified by licensees that weren't in the current design basis event category.

But, anyway, it's that intermediate treatment category of events.

Option 2 doesn't discuss that notion but wouldn't it also apply under Option 2 if indeed Option 2 has an intent to examine, I used the word before and I'll keep it up, the entire licensing basis of the plant?

MR. DUDLEY: Well--

CHAIR STETKAR: So, wouldn't that intermediate category of events by implication also apply under Option 2?

MR. DUDLEY: I think it would, yes.

CHAIR STETKAR: Thanks. That's all I wanted to make sure is that I was understanding.

MR. DUDLEY: It may be, depending on the scope of the PRA under Option 2, you might identify more or less.

CHAIR STETKAR: Sure, absolutely. As I said before, it's up to the particular licensee who wanted to adopt Option 2 to define what the scope of applications or events, whatever they want to do.

But, in principle, if a licensee came in and said I want to redefine my set of licensing basis events, they could indeed have a set of design basis events, a set of whatever you want to call them, other events and ones that are not subject to any oversight.

MR. DUDLEY: Right.

CHAIR STETKAR: Okay, thanks. That helps.

MEMBER BLEY: That little discussion got me thinking a little more.

You know, under the RMRF, I see how you come up with the complete set of licensing basis events and the next category as well.

Under Option 2, if you go in and start looking at design basis events, what I'm hanging up on is the current process we have comes up with those from a variety of original sources. It came up with this as a reasonable set of design basis events.

And that thinking gives us some confidence that it's complete and a good enough set to cover us.

Under RMRF when you develop the full set, there's this structured process to come up with them so that you, again, you have confidence you have a complete set.

If we go in and start going after them one at a time, either adding something or taking something away, you probably haven't worked this out, but what kind of process would we envision to make sure that we're not just whittling away, but we're being balanced about it and we're keeping a complete set of the important

events or something that approximates a complete set of the important ones?

MR. DUDLEY: I mean, if a licensee shows that certain design basis events are not risk significant, then I think, and demonstrates that clearly with a quality upgraded PRA, then I think we would probably be amiable to reducing or eliminating some of those requirements.

MEMBER BLEY: The thing I'm kind of hanging on is --

MR. DUDLEY: On the other hand, it would have to be the search for vulnerabilities and so, and this is -- none of this has been vetted or just thoughts.

MEMBER BLEY: Right.

MR. DUDLEY: But, it seems like maybe under Option 2, there's a minimum scope of the PRA upgrade that you would have have for entry into the process so that if that, say you only wanted to change three things in your plant but you might have to do a little bigger PRA update than just for those three things.

So that then the search for vulnerabilities that you performed had some meaning and you had indeed done a well intended search for, you know, vulnerabilities such that if we let you reduce some requirements, you either looked and found some other

ones that you needed to mitigate or you showed that you didn't have any other things that needed mitigation.

MEMBER BLEY: Yes, I think that's going to be important to work out if we should ever go this route.

MR. DUDLEY: Yes.

MEMBER BLEY: Because, you know, we want to make sure we look and if we start using the PRA, we want to see what else it told us and there might be things that are there that we should be paying more attention to before we start whittling away on one after the other.

MR. DUDLEY: Right, right.

MEMBER BLEY: Okay.

MR. DUDLEY: I'll go next -- yes, the next topic goes to Section II of the white paper. This is almost, well, it's a different subject but it is yet related.

Section II is the reevaluation of power reactor improvement activities from Near-Term Task Force Recommendation 1. And Recommendation 1 was to establish a logical systematic coherent regulatory framework that appropriately balances defense in depth and risk considerations.

We provided our recommendations to the Commission in SECY-13-0132 in December of 2013. This SECY paper recommended three regulatory framework

improvement activities and they are.

To establish a new design basis extension category of events and associated requirements and to ensure that design basis extension rules address all the regulatory attributes that are not specified in advance like they are for design basis requirements.

And this would mean performance goals, treatment requirements, documentation requirements, changes of processes and reporting requirements.

Improvement Activity 2 recommended in SECY 13-0132 was to establish Commission expectations for defense in depth. And this is power reactor safety.

A definition of defense in depth and criteria for the adequacy, determining when you have adequate defense in depth.

And Improvement Activity 3 was to clarify the role of voluntary initiatives.

The Commission's SRM in response to SECY 13-0132 did direct the staff to evaluate the implementation status of certain safety significant voluntary initiatives. So they took some action on Improvement Activity 3.

But the Commission, on Improvement Activities 1 and 2 deferred their decision to be made later on in the context of the Commission direction on

risk management regulatory framework.

To kind of accelerate this process, the staff is going to make recommendations for a risk management regulatory framework and associated recommendations for how Improvement Activities 1 and 2 should be addressed under each of the options for the RMRF.

So, slide 14 is the reevaluation of the design basis extension category. The staff's thinking now is that it really isn't necessary to create this design basis extension category.

And for Option 1, RMRF implementation Option 1, maintain the existing framework and implementation Option 2, implement the risk-informed alternative licensing basis, what the staff has decided it could do is to develop clear internal rulemaking guidance to ensure that we had consistent criteria for specifying all those different regulatory attributes that I mentioned previously, whenever any regulation, whenever we write any new regulation.

And this would, of course, it's most useful for beyond design basis requirements. But, if we had internal guidance that just said each rule has to address these criteria, then it would make -- then the staff would be sure that whenever we were regulating

beyond the design basis, that we had the rule specified all the appropriate regulatory attributes that the licensees really need to know to fully implement that regulation.

We believe we could do this internal guidance using existing resources as part of routine guidance updates. And, if we did that, there's really no need to go out and spend resources to formally define this new category because the major purpose for having the category is just to make sure that rules that were beyond design basis were complete and consistent and specified all the appropriate regulatory attributes that needed to be dealt with for regulations that are not within the design basis.

But for Option 3, implantation Option 3 which is the NUREG-2150 approach, 2150 said we should establish the design enhancement category instead of a design basis extension category. So, if the Commission chose Option 3, then we would go forward and we would implement the design enhancement category as specified in NUREG-2150.

But, since Option 3, with everybody having to do a PRA and it would take a long time to implement that option, probably more than ten years, the staff would still go ahead and write this internal rulemaking

guidance so that we had something to make sure that any rules that we issued in the interim period, that they were complete in terms of all necessary regulatory attributes.

Slide 15 is -- yes?

MEMBER BLEY: If you have the authority and decided to do Option 3, how would you get there? Would you end up doing something just like Option 2 for the first many years or would it be some other approach? How would we possibly transition from where we are now?

MR. DUDLEY: From where we are to Option 3?

MEMBER BLEY: Yes.

MR. DUDLEY: Well, we'd write a rule that says every plant has to complete a PRA by such and such a date and it would certainly not be a short term. It would be in some number of years in the future.

And then we would also include in that regulation how we have to include the criteria, the risk management criteria that licensees should ensure that their plants meet.

And it would be difficult to like write a regulatory guide that tells licensees how to go about implementing this.

MEMBER BLEY: The part I can't quite envision is how we go one day from the way we are now

to now we've got everything in place, we've got all the things worked out and tomorrow, we're in the new regime.

It almost seems to me you would do something like Option 2 to get there and you'd go after the design basis events kind of a few at a time and work this out.

MR. DUDLEY: It would be a tough, you know, you make a good point. That's a tough hurdle. You almost can't get there from here. You have to go somewhere else first.

CHAIR STETKAR: It's a little bit, if I look at your second sub-bullet, you know, under -- it said for Option 1 and Option 2, we don't need to establish a design basis extension category. Or I'll call it a design enhancement category because I'm not -- I don't want to quibble over words, semantics.

But, you're asserting that under Option 2, you believe that the staff, I think if I interpret that second sub-bullet correctly, that the staff could develop appropriate regulatory guidance for someone who adopts Option 2 to determine how that middle ground set of events would be populated.

And Dennis raised the concern about, you know, the search for other risk significant events. I talked about dropping design basis events into that category.

You seem to say that, well, if I -- under Option 2, we don't need specific rulemaking to do that because the staff could develop guidance on how to do that. You'd have to do that for Option 3, too, wouldn't you?

That's part of, I think our problem in terms of how do you get from where we are today to Option 2, I can see a little bit better path. Option 3, I don't know how you get there without going through something that looks like Option 2.

Because as soon as you say that Option 2 indeed will allow someone to develop that middle set without putting any specific words on it of events, then the staff and the industry will have to understand some basic guidance on what it means, right?

MR. DUDLEY: We've specified criteria for risk criteria and if a design basis event was not risk significant, it could then be removed into that --

CHAIR STETKAR: Next category?

MR. DUDLEY: -- other category that we're not going to formally establish.

And, but if, also, if there were vulnerabilities, plant specific vulnerabilities of a particular threshold, then they would also become regulated in the equivalent of that same category.

But, I mean we just don't really need to define formally that category as to -- and how to -- well --

CHAIR STETKAR: You don't need to define specific -- are you saying you don't need to define specific events that would go in that category?

For example, station blackout event would be in that category but Event X and Z would not be in that category.

MR. DUDLEY: This is plant specific, so I mean by establishing the risk criteria, the category would implicitly be defined.

CHAIR STETKAR: Right, okay. But you would have to do that for Option 2 also, wouldn't you?

MR. DUDLEY: Yes.

CHAIR STETKAR: Okay.

MR. DUDLEY: Yes.

CHAIR STETKAR: Okay.

MR. DUDLEY: Okay, on slide 15 is our reevaluation of Improvement Activity 2 which was establish Commission expectations for defense in depth.

Right now, the staff recommends that the Commission authorize the resources for the staff to go out and establish the Commission's expectations for defense in depth under all three options.

Under Option 1, the existing framework, we need better defense in depth guidance.

Under Option 2, when you rely more on risk informed activities, you even more need good guidance on defense in depth.

And, under Option 3, when you rely fairly heavily on risk activities, you need even more to come up with better criteria for the definition of and the adequacy of defense in depth.

So, we believe that the Commission should approve this activity consistent with the approach that the staff recommended originally in the Recommendation 1 SECY paper. We are, though, going to reevaluate the Recommendation 1 paper, said we would do this in a policy statement and right now, we'll just kind of sit back and I think we'll reevaluate and determine if a policy statement is the best vehicle to do that or if some other regulatory tool or regulatory guide should be what we use to establish the Commission's expectations for defense in depth.

Clearly, the Commission would have to approve this and we would make some -- and then we would need to make conforming changes throughout the rest of our regulatory guides and I think regulatory analysis guidelines also that mention defense in depth to make

sure that all of our guidance is consistent with these well defined Commission expectations.

And those are Improvement Activities 1 and 2.

Okay, next, Mary Drouin will talk about Section III of the white paper which is the agency wide risk management policy statement.

MS. DROUIN: Okay.

CHAIR STETKAR: Mary, before we go through this, back in -- I've lost my notes here again -- February of this year, we had a briefing on a white paper that had a conceptual example of this policy statement that was produced in November of 2013.

This white paper, seems to me, much less informative than the previous white paper. I'm assuming that was intentional.

MS. DROUIN: Well, let me tell you the difference of the two.

The thing that we produced a year ago, you know, we get caught up with the words policy statement.

We get caught up with the term policy statement. And if you look at the document that gets published in the Federal Register and we call that entire document a policy statement. In essence, only a very small part of it is the actual policy statement.

So, when we created that document over a year ago, we were creating the whole thing. You know, we were giving you the background discussion. You know, all of those kinds of things that you typically find in that entire document.

And when you looked at the part that was the actual policy statement, it really wasn't all that long.

CHAIR STETKAR: That's right.

MS. DROUIN: So, a lot of the information you found interesting, which I thought was also interesting, was in all these other discussions.

CHAIR STETKAR: That's right.

MS. DROUIN: And that policy statement was focused strictly at defense in depth. It was not a policy statement --

CHAIR STETKAR: No, not the defense in depth, we've seen a couple of presentations. This is in particular a briefing we had on something called White Paper on a Conceptual Example of a Proposed Risk Management Regulatory Framework Policy Statement Draft Work in Progress dated November 8, 2013, ML 13273A517.

And that was risk management regulatory framework policy statement with -- it was relatively short but with the background information surrounding

it.

MS. DROUIN: You know, you caught me completely off guard, I'll just have to be honest, because I'm trying to remember. I mean I was probably, I'm sure the primary author and I am just totally forgetting.

CHAIR STETKAR: Okay. I was -- the only reason I wanted to bring it up, and I'm not trying to be -- I was curious because many of the concepts that we're going to be discussing here shortly were in that other white paper, but they were presented more crisply as if they were prepared for a Federal Register Notice. And it did, in fact, include a draft policy statement, which, as you said, is relatively short.

MS. DROUIN: Okay. What you will --

CHAIR STETKAR: It was focused -- however, it was focused on power reactors, not the broader -- no, no, as a matter of fact, it also addressed the broader issues.

MS. DROUIN: It was an agency wide.

CHAIR STETKAR: It was agency wide.

MS. DROUIN: I'm going to have to go back and look at it. But maybe what has happened is that what you see here, it's in the form of, well, it's in everything.

CHAIR STETKAR: It is.

MS. DROUIN: However, if you took out everything that's on those slides and collapsed it down into text and almost took it word for word, that is what would be the actual policy statement.

CHAIR STETKAR: Except in the white paper itself, it's still primarily bulletized, if you will, without bullets. A policy statement could include something like this. A policy statement could include something like this.

These additional considerations could be made without the kind of coherent presentation that was in that previous white paper. And I was just curious whether, you know, that was a conscious -- it seemed to me stepping back from something that seemed to be focused down to an actual statement and stepping back from that to say, well, perhaps we need to think about these issues before we get around to writing something.

MS. DROUIN: Well, it's more of the Commission has not given us the approval to develop a policy statement yet.

CHAIR STETKAR: That's true.

MS. DROUIN: So, that's kind of, you know, this thin line we're walking on of giving them enough information so that they understand, you know, when we

recommend that a policy statement be developed, what we mean by that.

So, trying to give them enough information and, you know, we have the option and has not been decided, you know, whether we take, you know, what we put in bullet format and actually translate it and say, okay, here could be an example of such a policy statement. So, we've presented it more in bullet format.

CHAIR STETKAR: Okay. I just got confused because the title of that enclosure, too, is an example of an agency wide risk management policy statement. And I thought we had one, but it seems like we backed off from that.

MR. DUDLEY: You know, I --

MS. DROUIN: I don't think we've really backed off. We've just gotten more focused.

MR. DUDLEY: I thought you got less focused is my point. I thought didn't take the 2013, talked about risk management regulatory framework and it talked about defense in depth. And it kind of tried to formulate defense in depth as something across the agency.

And I thought we kind of took that out of the more recent example because we got some comments

about how are you doing to do defense in depth even, you know, consistently across all regulated areas and are these concepts all applicable?

And so, I thought that the current example kind of downplays defense in depth and it just says we're going to have to specify defense in depth. But, we didn't get into the level of detail that the previous one did.

MS. DROUIN: Well, the guidance we got from senior management was to step back but not -- but only step back right now to start at a higher level.

CHAIR STETKAR: Okay.

MS. DROUIN: And give a more higher level visional aspirational type of statements. And that's where we should start from.

CHAIR STETKAR: Okay, okay, good.

MS. DROUIN: So, it's not that every star has been lost.

CHAIR STETKAR: We probably pushed you that way, too.

MS. DROUIN: But it is let's start more with this visionary aspirational type statements which is what we've done.

CHAIR STETKAR: Okay. Good. And you're right, that the current version of this does not spend

as much energy discussing defense in depth, that particular issue.

MS. DROUIN: That is correct.

CHAIR STETKAR: Thanks, that helps. That helped me, thanks.

MS. DROUIN: Okay. So, you know, that gets immediately into, you know, the third bullet which we're viewing, you know, one of the biggest things is that this policy statement would establish by policy.

You know, we had earlier discussions where, you know, today, we have various aspects and elements of a risk management of a regulatory framework. But we really don't have a true risk management regulatory framework and a policy statement.

Again, it states by policy, it's a major tool for communicating to all our stakeholders, both internal and external, this is the Commission's policy.

So, then given that, this is what, in trying to capture this visionary aspirational type of policy of what would constitute not in getting to the details, but to, you know, tell our stakeholders that we have this risk management regulatory framework. You know, what does that mean?

And so, starting at the highest level, you know, it would be applicable to all regulatory programs.

It would be an approach to ensure adequate protection. And in a risk management approach, safety and security, you know, they're ensured by understanding the risk, using that risk information, ensuring that defense in depth is adequate.

So, it's not that we deleted defense in depth, again, we're starting from these very high level type of statements.

So, then going on to the next level, and there are five elements to the risk management approach, you know, what was used as structured process and these are the things that you saw directly out of, you know, 2150.

It's things that we use today. You would identify your issues. You identify options, et cetera. We would ensure that we have appropriate regulatory controls and oversight.

The risk management approach would employ risk-informed decision making, you know, in which risk insights are considered together with other factors.

So, these are not surprising statements but, you know, we're now making these statements as part of policy.

Slide number 20, and this is probably one of the more significant statements is that it would

recognize, you know, the difference of there's different risk methods and tools, you know, that can be used here, depending on the program area whether you're dealing, you know, with reactor safety or you're dealing with medical devices, et cetera.

And some of these, you know, they have to be commissariat with how you're going to use it. And so, the policy statement, you know, would, you know, acknowledge that.

And the approach, you know, would consider input from stakeholders and other interested parties would be a major piece.

So, then the last --

CHAIR STETKAR: By the way, Members, make sure you do turn your mics on when you -- because everything we do say is on the record and the only way we can pick it up is when you turn them on. But leave them off normally.

MS. DROUIN: So, the next level, you know, gets into the technical analyses to support the risk management approach. And, you know, again, restating by policy, it would be based on saying sound data, information and methodologies including consideration of uncertainties.

You know, it would use techniques or

combinations that are appropriate for the hazard and the complexity of the issue. It would be realistic as practicable. You know, and it would promote and utilize advances in science and technology as practical.

And then, you know, again, bringing us back, the risk management approach, when implemented, would be tailored to the specific regulated activity as appropriate.

So, you know, this is first coming back to the Commission to give them an idea at a high level what this policy statement would entail.

In implementing that, you know, we would envision that there would be perhaps some implementing policy statements. I mean there could be, for example, a defense in depth policy statement implemented to support this.

You know, the different program areas might have implementing policy statements. Or, you know, it may just go directly to regulatory guides or whatever. But the main purpose of this policy statement, again, is to just to state by policy, and I can't emphasize that enough, that the NRC uses a risk management regulatory approach.

CHAIR STETKAR: My only question when I

listen to you is, I think there is a danger in issuing numerous policy statements because we have examples of policy statements that have been issued by the Commission going back 20, 30, 40 years, 30 years anyway, that kind of get lost.

And the more policy statements that you issue, I think the less weight is assigned to them and they do tend to get lost in the fuzz after a while. So, when you say perhaps there might be several policy statements issued, I'm not sure that necessarily a good idea.

MS. DROUIN: Okay, when I say --

CHAIR STETKAR: That's my own opinion.

MS. DROUIN: Okay, when I say several, what I mean is that in implementing such a policy statement, you know, how materials would do it versus how reactors would do it could be quite different.

And so, the materials arena may elect that, you know, I need to get into a policy statement that is strictly unique and associated only with materials.

MEMBER BLEY: I think I tend to lean toward what John said and I would think those things, if you have a really good high level policy statement, those things could be almost implemented as guidance rather than going --

MS. DROUIN: Yes, they could.

MEMBER BLEY: You wouldn't need new policy statements as long as this one's thorough and, you know, global in its structure. And I think the things --

MS. DROUIN: I'm saying we just haven't closed the door there.

And so, last, because this does not just affect reactor safety, this is a global policy statement for the agency, you know, we do have to -- oh sorry, I skipped slide 22, I was going directly to 23.

In 22, again, if the Commission, you know, does tell us to go forward, you know, we will follow the normal process for doing a policy statement. You know, we will have numerous interactions with the public. We will have formal public review and comment period.

So, we're not going to do anything different in how we would go forward in doing the policy statement.

Then, in the last slide, because, again, this is across the agency, we had to interact with the Agreement States and we gave them a copy of the white paper in advance. And the organization did provide us with some comments.

They thought that the policy statement would be a useful way. They couldn't endorse -- state

or -- they couldn't state of endorse the concept that there is a general understanding of the terms risk-informed and defense in depth. And I'm not surprised by that but these are, you know, issues that, you know, are easily overcome.

Also, a risk management approach is already being performed with our current regulatory system. Good news.

And then they had a specific comment on some of the words in there about the policy statement should say to review current risk and practices and provide recommendations for enhancement.

So, these, of course, would all be comments that we would take into consideration and, of course, we would be working with the organization as a policy statement would be developed.

And so, that's all I had to say really on the policy statement part.

MEMBER BLEY: Gong back to the Organization of Agreement States comments, did this come out of a public meeting or is this just something they sent to you?

The reason I'm asking is I'd be interested in the discussion. I would hope a fair number of the individual states understand this very well and maybe

the smaller ones maybe not so much.

And I wondered if you had a feel for that?

MS. DROUIN: Again, this came in via writing.

MEMBER BLEY: It was a written comment?

MS. DROUIN: Yes.

MEMBER BLEY: Okay.

MS. DROUIN: They have certainly been invited to the public meetings. And once again, if we do move forward, whatever our process is to interact with the Agreement States, I'm not the right person to ask that. We will do what's necessary.

MEMBER BLEY: Okay. I mean I've run across some of those. Some of them are pretty sophisticated about this stuff and that some of those statements really would surprise me. Others no.

And maybe it's the preponderance of them who were the no.

MEMBER RYAN: The Organization of Agreement States really kind of is a coalescence of all the Agreement States. And they're very active and they meet on a regular basis and they discuss these and similar issues I think they're in agreement in some the same meetings I've been to.

So, I think the sense of it, Dennis, is just

right. They're very active in trying to understand what regulations may be floating down their way and then how they need to prepare for it or not prepare for it based on that.

And the other part of it which you hit on, too, is that Agreement States vary quite a bit in their programs based on their individual activities. I mean you'd see a lot different program for a metropolitan hospital area than you would from an environmental mill tailings pile. You know, so that's a broad range of things to think about.

So, I second your view that, you know, just making sure that you understand that range of activities and, you know, do you cover it well and do you cover them all the same? Or how do you get that done would be a good thing to think about.

CHAIR STETKAR: I think Dennis's point beforehand, if the policy statement, again, policy statement's pretty high level, if that's crafted very carefully to elaborate the agency's, the Commission's policy, then many of the details about how that policy implemented, whether it's a mill tailings issue or medical isotopes or whatever, you know, is worked through in terms of specific guidance for particular applications.

You don't necessarily have to put in a policy statement, you know, all of that detail.

MEMBER RYAN: That was my point, you don't have to parse it out into little bits. You can kind of have it --

MS. DROUIN: And that's our aim and that's what, you know, we're trying to do here and when we craft it, what we have here, that was -- it wasn't just the reactor people looking at it, it was all the program areas had input to what you're seeing now.

And we all of us felt it was high enough level that it could be implemented by any of the program areas at the agency.

That's all I have.

CHAIR STETKAR: As always, interpret 30 seconds of silence or less as move on.

MR. DUDLEY: I just have a few slides left in the staff's presentation.

We held a public meeting on RMRF on May 27th. We had about 40 total people, 26 in person and 14 in the webinar to participate.

There were a number -- I'm going to give you -- summarize some comments made by NEI. But NEI is here, maybe they'd rather tell you themselves.

But NEI at that meeting, as Joe has already

told you, was concerned about the lack of implementation details on Option 2. And without those details, it's really hard for them to know what safety benefits and costs would be associated with Option 2.

And at that meeting, they also suggested that we not present our recommendations to the Commission without having more details on the how Option 2 processes would work.

NEI also stated that they didn't think Option 3 should be implemented at existing operating reactors.

And regarding the agency wide policy statement, NEI said that they didn't believe that the development of the policy statement appeared to be an efficient use of existing resources.

We also -- pardon me?

MEMBER BLEY: Is there more to that statement?

CHAIR STETKAR: NEI will be up.

MR. DUDLEY: Mike Tschiltz is nodding his head, I'll let him.

MEMBER BLEY: That'll be good.

MR. DUDLEY: I'll let him provide that to you.

Let's see, okay, so the -- also the Union

of Concerned Scientists had some comments and Dr. Lyman who represented them was concerned that he didn't want Option 2 to be pursued because he thought it would result in inconsistent requirements being applied to individual plants across the country.

And to him, this would exacerbate the patchwork of different requirements that he believes NTTF Recommendation 1 was supposed to eliminate. He thinks that Option 2 would make it worse.

He also suggested that clear and consistent requirements could be applied across the industry by a new effort to kind of reevaluate the Independent Planning Examinations, the IPEs and the IPEEEs, but on a consistent and disciplined basis across the industry.

So, those were his comments.

MS. DROUIN: Can I just -- I would like to add a clarification.

We did have other comments by other individuals and I don't want people to think that the other individuals who made comments that, you know, we did not hear their comments or not take their comments in consideration, we certainly will.

These were the more significant ones in terms of really affecting, you know, what we needed to go back and look at.

CHAIR STETKAR: Well, at least as I understand it from this final slide, at least the comments you received orally at that public meeting?

MR. DUDLEY: Yes, I mean --

CHAIR STETKAR: You're still three days away.

MR. DUDLEY: Right, right. Hopefully, they're resubmitted in writing. But, so, the 30-day public comment period that we Noticed in the Federal Register will expire on June 11th. We will then review thoroughly all the public comments.

We'll meet with this subcommittee in October and I believe now the full committee meeting is in November. We will get a letter from this committee and our plan is to provide the RMRF SECY paper to the Commission by December 2015.

Now, Joe Giitter mentioned today that we might have another public meeting. So, that's not really factored into these slides and I don't know whether that will affect our schedule or not or whether we will actually get approval to have another public meeting.

But that, I guess that completes the staff's presentation.

CHAIR STETKAR: Great. And miraculously,

we're back on schedule.

Are there any other comments or questions for the staff?

If not, thank you and I know this -- honestly, this presentation helped me an awful lot for questions that I had reading through the paper. It was very useful. I learned quite a bit from it. So, thank you.

If there are no other questions or comments for the staff, we'll have NEI come up and let Mike --

Let's recess for five minutes-ish. That's an appropriately vague period of time.

(Whereupon, the above-entitled matter went off the record at 3:55 p.m. and resumed at 3:58 p.m.)

CHAIR STETKAR: We are back in session.

We're going to hear from NEI. Mike?

MR. TSCHILTZ: Okay, thank you.

My name is Mike Tschiltz. I'm the Director Risk Assessment at NEI and I coordinated the industry's comments on the paper, so I'll go over what our issues are.

We basically tried to cover all of the issues that were discussed in the white paper.

So, first of all, Option 1 for maintaining the current framework. At this point in time, I think

it's the industry's preferred option based upon the current available NRC information.

We think that there can be benefit to enhancing the guidance for determining the adequacy of defense in depth in the integrated decision making process. That's something that I think Doug True talked the ACRS about not too long ago about Working Group 2's efforts and we think this fits in well with that to deal with defense depth, uncertainty and aggregation.

We think that there could be benefit to streamlining the current approval processes for risk and formalize this amendment request.

And we don't believe that there's any additional work needed in this area for development of the design basis extension category. We agree with the staff's recommendation on that point.

For Option 2, the risk-informed alternative licensing basis, I think that there was initial interest in this as being an option for operating plants.

But, based upon the current information, people are unwilling to say that they would pursue this.

I guess it could be a preferred option for some new plants where a full scope PRA is already

required. But we found that the white paper lacks sufficient detail concerning the scope and process for how Option 2 would be implemented.

MEMBER BLEY: Can I interrupt you on that?

MR. TSCHILTZ: Certainly.

MEMBER BLEY: I'd be interested in learning a little more. I mean we certainly have raised issues with the detail in Option 2. But, you know, under the different ways it could come out, are there -- do you have any hint about, you know, are there one, two, a few utilities, a fair number, who might be interested in that if they better understand it?

MR. TSCHILTZ: Well, I don't really have a good feel for that. I would say that the utilities that are more risk-informed and are pursuing the risk-informed applications at this point would be more likely to be inclined to accept this approach.

So, I would judge my response based upon those groups of utilities that are doing that. So, I don't think it's widespread.

That being said, I think there is -- we are seeing some resurgence in interest in risk-informed applications for Tech Spec 4(b) Initiative for 50.69. And I think that's because some of the pieces are in place now for the portions of the PRA that is necessary

to perform those applications and people are trying to get the full benefit of the effort that's been put into developing the different parts of the PRA to support those applications.

MEMBER BLEY: Okay. I guess I'm not trying to paint you into a corner at all, I'm just curious because I never know quite what it means as spokesman for the industry when you give us results sort of like these and how broad the base is for the comments.

Is it the licensees send you comments and then you kind of coalesce them or are there meetings --

MR. TSCHILTZ: So, for this --

MEMBER BLEY: -- that lead to this?

MR. TSCHILTZ: For this specific activity, we had a rather short time frame to establish our working group. There was a public meeting on May 27th and now this meeting and the comments are due on June 11th. So, we really don't have the opportunity to put together a large group.

I solicited representatives from the PWR and BWR Owners Groups to provide comments as well as several other well recognized people in the risk community that could provide meaningful insights about the white paper.

So, it was a relatively small task force

that was put together to develop these comments.

MEMBER BLEY: Okay.

MEMBER REMPE: But to go back to what's on the slides --

CHAIR STETKAR: Joy, Joy, turn your mic on.

MEMBER REMPE: What's on the slide says not preferred option at this point for the operating plants.

And what Dennis asked was a bit different and your response implied, well, maybe someone might be interested. Did any of the folks you talked to say, oh, I might be interested or did they just say not preferred option?

MR. TSCHILTZ: No, at this point, with the level of detail that's in the white paper, no one could go back and make the case to their management that they would want to pursue this because it's not defined in enough detail for people to understand.

I think Dick covered in his summary of ANI comments at the public meeting that it wasn't in enough detail so someone could make a safety or a safety benefit or a cost estimate of what pursuing this option would involve.

You know, I think the ACRS was on to one of the other issues concerning the vulnerabilities assessment. You know, if you pursued an Option 2 in the

very limited scope, would it then open up a full scope review of everything covered under the PRA for a vulnerabilities assessment when your risk application would be very, very small focused effort.

That's the way it's --

MEMBER BROWN: That's the way it seemed to read, the white paper.

MR. TSCHILTZ: Yes, sir.

MEMBER BROWN: That's why I asked the question.

MR. TSCHILTZ: So, there would be benefit to more discussion in the white paper on that issue how that would be covered. Because, clearly, that would be something that people would be concerned about.

MEMBER BLEY: Are you going to get to what it would take to make this more attractive or is this about what you have to say about it?

MR. TSCHILTZ: Yes, I don't think that we would be at the point where we tried to define how we think it should work.

I'll note that, you know, when looking at Option 1 versus Option 2, it's hard to imagine that the staff would do things significantly different in reviewing a risk-informed application under Option 2 than they would for Option 1.

And that being that they would need to be the applicable industry guidance, the endorsing NRC guidance and this takes a number of years and a lot of effort to usually develop those for the risk-informed applications.

And then the level of review that the staff would be conducting for those type of applications would also be very important as to whether people would want to pursue them.

NFPA-805, I hate to use it as an example for any of the risk-informed applications, but there's a detailed review. You know, I think industry's expectation is that if you have a PRA that meets the standard and has N-1.200 and it's been peer reviewed and the F&Os are addressed, then you should be able to use that without a detailed NRC review of the PRA.

So, there's a lot of undefined details here that really make a difference I think and as to whether this would be something that people would want to pursue.

And clearly, it's a voluntary initiative, so if the NRC was going to put the effort into developing all these details, we think it's very important that they work closely with the industry so it would be ultimately come out with a product that the industry

would voluntarily adopt as opposed to something they said, well, this is developed kind of in isolation by the NRC.

And, not to criticize the staff here, they're trying to meet a deadline. That deadline seems to preclude a lot of detailed interactions with the industry on what should be in the SECY paper, what the options should be, what the detail associated with those options are.

So, I think that's it on Option 2.

For Option 3, I think it's clearly not a preferred option. I mean the way the white paper's scoped, it's for the existing fleet of plants, operating plants.

So, and in the white paper, it's characterized as taking longer than ten years to adopt this approach.

And, I think the things that are making it unappealing are the regulatory uncertainty associated with this approach. You're basically having to rewrite or redefine what's in your FSAR using a risk-informed approach.

And the cost benefit, again, is unclear. If you were going to undertake the effort to do all fo that which would be very significant amount of time and

resources, you would want to have the cost benefit better defined.

CHAIR STETKAR: Mike, I -- this says, well, don't adopt Option 3 because it's going to take a long time to put that in place.

What about new reactors coming down the line that probably won't be operating in ten years from now?

MR. TSCHILTZ: So --

CHAIR STETKAR: Would this type of framework be useful for them? Because you have to put the framework in place beforehand so that people understand what regulatory framework they're going to be licensed under.

MR. TSCHILTZ: Right. So, we asked that question, I think. So, it would be the group of reactors beyond the SMRs I think that we would be talking about as this being a viable option for it. At least that's the feedback that I got from the new reactor group at NEI who did pulse the industry to figure out where people would be.

I think one of the things with the SMR is the short review time that's scheduled with the design certification. So, people, I don't think, want to tie anything associated with that up with this process.

But the in the generation beyond that, I think there is some interest in pursuing that. As to whether it needs to be considered in the context of the RMRF or whether it's a rulemaking support that design review for that certification, that's a different issue.

But, I think that there is some interest in pursuing that for that generation of new reactors.

CHAIR STETKAR: Okay, thanks.

MR. TSCHILTZ: So, the regulatory process issues, I think I covered a little bit, Option 2 being a voluntary initiative and the importance of industry involvement in this.

Option 3, I think Dick Dudley alluded to this a little bit in his discussion that there doesn't seem to be a clear basis for making Option 3 a requirement.

I for the staff to be able to do that, they'd have to make the case that the existing regulations didn't provide adequate protection for the fleet and I think that would be a difficult case to make. So, I don't think making it a requirement is supported.

So, the staff's plans for issuance of a Commission paper, we had the public meeting on May 27th. We provided some feedback there. The industry will

also provide written comments by the June 11th deadline.

But, our understanding was the next opportunity for any industry insights into what was happening with the SECY paper was when the draft SECY paper is made available for the ACRS prior to the November meeting.

So, there was not going to be any other opportunity for the industry to weigh in to determine what, you know, where the staff was heading with these options. So, clearly, voting for any other or advocating any option other than Option 1 at this point in time would not be a prudent move for us.

There were a couple of other issues that were kind of bundled into the Federal Register Notice. One of these things, I know that this is an issue that I think the ACRS asked about previously.

I know it was brought up in the context of the subsequent license renewal, SECY paper and Dan Dorman's disposition of Joe Giitter's nonconcurrence in the paper mentioned that this may be something that could be considered in the risk management regulatory framework paper and that is whether this risk-informed alternative should be required for any plant that's pursuing subsequent license renewal beyond 60 years.

And when we look at this, we basically

determined that we don't think that this option has any direct connection to extending plant life and it's not uniquely relevant to plant life. The PRA doesn't provide any greater insights on years 61 through 80 than it does 1 through 60.

The existing regulatory processes for license renewal assessed and managed plant aging and making this a requirement would effectively bypass the NRC process for establishing the requirements.

And I realize this would be supposedly subsequent license renewals, not a requirement so you could finesse that into not being a back-fit. But I would say that NRC process would, in most cases, require them to consider the benefit of doing this.

For the design basis extension, we agree with the staff's assessment and recommendation. We don't think that this is necessary for Options 1 and 2 and Option 3 is TBD in the future if anybody would be adopting, we think Option 3, at this point, is a non-viable option except potentially for that next generation of plants that's out there.

So, for defense in depth, I think we agree that -- and support the revision of guidance documents to ensure consistent application of defense in depth in regulatory decision making. And I think we believe

that fits in well with the efforts we have underway with the Risk-Informed Steering Committee Working Group 2 that's been addressing uncertainty and is going through the risk-informed decision making process to deal with this issue along with aggregation is the right place to deal with it.

We do believe that industry should be involved in these and have interactions on the development of the increased or improved guidance on defense in depth. But we don't see a direct benefit from the development of a defense in depth policy statement.

I think defense in depth is fairly well understood at a high level. Where the challenges are is in implementing and in a consistent way. So, the detailed guidance, I think, is where we think could be where there's the most benefit to gain from this.

CHAIR STETKAR: Mike, on the first issue there, the design basis extension or whatever you want to call it, if indeed Option 2 were palatable to the industry, is there a fundamental disagreement with the notion that there could be two different categories of event s that are regulated differently?

In other words, do the design basis events that have tech specs and things like that and, we'll call

it a second tier of events that are still subject to some level of oversight, not defined right at the moment?

MR. TSCHILTZ: No, I think conceptually, I don't think there is. I think we are headed in that direction right now with mitigating strategies where there is --

CHAIR STETKAR: Yes, there is direction.

MR. TSCHILTZ: So, the mitigating strategies rulemaking actually would implement something effectively that.

CHAIR STETKAR: Into that?

MR. TSCHILTZ: Or the same as that.

CHAIR STETKAR: As I've said, in the current -- some of the new reactor designs, the RTNSS, you know, category is akin to that. Not necessarily for design basis events but certainly structure systems and components.

MR. TSCHILTZ: Okay.

CHAIR STETKAR: I just wanted to find out whether that it was something more fundamental up at that time. Thanks.

MR. TSCHILTZ: Okay. So, I think the example policy statement, the observation, our observation is written at a very high level. I guess policy statements are.

In our public meeting discussions with the staff, I think you heard very similar things to what we heard about this would potentially cascade down into other policy statements written by other -- some of the other program offices.

So, it seemed to be a significant effort and just an observation that overall, is that policy statements do require a significant amount of staff resources, and especially this one since it would cascade over into different offices. It involves interacting with agreement states and could take years to develop.

So, looking at it from a cumulative effects type of perspective, the benefit associated with the dedication expenditure of all those resources for this policy statement, at this point in time, I think is questionable from our perspective.

MEMBER BLEY: This one surprised me when the staff read it to me and when you put your slide up. Now that you've talked, I see you focused on this idea that perhaps there could multiple layers of policy statements and all of that.

And I would agree with you, that could get out of hand and might not be helpful.

But, given the letter NEI wrote to the

Commissioners not too long ago, that NRC maybe has lost its way in dealing with these risk-informed issues.

It kind of surprises me that you wouldn't be in favor of the high level policy statement to say this Commission is really on board and you and the staff ought not be, you know, trying to out guess us and decide we don't look in this direction any more.

I'll leave it at that, but it did catch me by surprise.

MR. TSCHILTZ: I think our response would be that the issues that we're experiencing really aren't going to be fixed by a policy statement. I think we believe that the existing PRA policy statement has stood us in good stead and this isn't going to provide a lot of additional insights or value beyond what the existing policy statement has for existing reactors.

And the other thing, and I don't know how closely this policy side statement would be tied to a risk management regulatory framework, but it doesn't appear that there's any impetus or initiative for this to carry over in the near-term to the other program offices.

Because the way it's written right now, is we'll try it out with, at least my understanding is, we'll try it out for the existing fleet of operating

reactors and then, based upon those experiences, this will cascade potentially over to the other program offices so they can adopt this kind of approach.

Using that, we have plenty of time to determine whether or not it's a good point or we should adopt a new policy statement that would back up this type of approach.

The other thing, it seems to me kind of almost misleading to come up with a policy statement that talks about a risk management regulatory framework when you really don't have any plans to implement one. So, just an observation.

So, the recommendations were to maintain the current framework, Option 1, for operating plants and then implement improvements in the Reg Guide 1174 for defense in depth. That's what our recommendations would be for proceeding at this point.

CHAIR STETKAR: Great. Any further questions or comments for Mike? Joy?

MEMBER REMPE: Yes. In light of this last slide, why don't you give it stronger in stronger in your comments on Option 2 and say, instead of saying there's not enough details, say as long as it's voluntary, we don't have anyone interested and you don't need to pursue this anymore instead of leaving the door open

that they should -- the staff should be trying to flesh out more details with Option 2?

MR. TSCHILTZ: That's a good question. I think there is some looking back over the history of how this has evolved over the past couple of years, I think initially people were interested in Option 2 and thought Option 2 would be a benefit.

But, for the process that's been laid out for us so far, which I explained involved the white paper, the public meeting, the June 11th public comment with no staff response to the comment, the next opportunity for any insight into where the staff was heading on this would be the availability of a draft SECY paper going to the Commission in November and really no opportunity for the industry to engage unless they wanted to write a letter to the Commission at that point on the draft SECY paper.

There's really no opportunity for us to engage in the process and I think if the staff were to change that, I think you would have maybe a different recommendation there.

But at this point, we don't see any option for us to influence or make sure that this option would be something that someone would want to pursue. And absent that, I think it's a waste of resources for the

staff to pursue that option.

I think that's why it's written the way it is.

MEMBER REMPE: Okay. Thank you.

MR. TSCHILTZ: Any other questions?

CHAIR STETKAR: Anything else for Mike?

If not, thank you very much. That's pretty clear. I'm assuming there'll be a lot more elaboration in NEI's written comments. So, we'll be interested in seeing those.

We can open the bridgelines.

While we're getting the bridgelines open for comments, I'll ask if there is anyone in the room who'd like to make any comments? If so, come up to the mic and identify yourself.

Apparently not.

Ah, there's some noise in the speakers here, so, again, I'll invoke our high tech way of confirming the bridgeline is open, if someone is out there, please just say hello so we can confirm that the bridgeline is open. Anyone?

UNKNOWN PARTICIPANT: Open.

CHAIR STETKAR: Thank you.

Now, if there's anyone out there who would like to make a comment, please identify yourself and do

so.

MR. HOFFMAN: Ace Hoffman.

CHAIR STETKAR: Great. Mr. Hoffman, you'd like to make a comment?

MR. HOFFMAN: Yes. If I understand it correctly when you were talking to some of the deterministic regulations and move to probabilistic regulations, do we no longer think that missiles are likely to be blown in the tornado over the fence, bounce off the control room diagonally into the pipe and then cause a guillotine break.

But, on the other hand, there are thousands, tens of thousands of specific events that might happen.

So, if we're going to be starting to eliminate the ones that somebody decides are obviously not going to happen, let's make sure that we add in the ones that have been recognized as obvious that were probably not seen 20 years go, ISIS, for example, or al Qaeda or Stuxnet or big parts inside of computer machinery or inside of any kind of machinery within a normal problem part, but endless wars going on and the guided missiles that no one could have dreamed of. The civil disturbances we've been detecting even in Baltimore, the laser weapons, the electromagnetic

pulses from the sun. There's electromagnetic pulse weapons. There's drones, there's jumbo jets being used as weapons.

These are all probably beyond design basis accidents. So, I think we need to make sure that we're including all the things we realize, even large earthquakes and tsunamis, and then go ahead and take Edsels out, I don't know.

Thank you very much.

CHAIR STETKAR: Thank you, Mr. Hoffman. I appreciate those comments.

Is there anyone else out on the bridgeline who'd like to make a comment?

I heard some beeping, I just want to make sure that nobody's trying to say something. Is there anyone else who'd like to make a comment?

If not, we will reclose the bridgeline and I thank the public for your comments.

As usual, as summing up a subcommittee meeting, I like to go around the table and see if any of the Members have any closing comments that they'd like to make and I'll start with Dick.

Dr. Powers?

MEMBER POWERS: I'm wondering if we're not seeing some of the limitations on risk assessment

because earlier today, we had the subcommittee meeting in which we were looking at risk assessments to where there no risks.

And so risk assessment became kind of a useless tool for the regulatory framework. And here, we see an imposition of a risk assessment that elicits no interest because it's hard to understand the benefits.

I wonder if we're not seeing some of the limitations of risk in the regulatory process here?

My only comment.

CHAIR STETKAR: Thank you.

Dr. Bley?

MEMBER BLEY: Every time I think I've figured out where this is heading, we have a new meeting and a new document and I say, oh, that's a little new direction.

I appreciate today's meeting. It clarified many things. We heard a few more things to think about and I appreciate all the presentations and discussions and comments from other people as well.

CHAIR STETKAR: Mike?

MEMBER RYAN: Dennis already, sir?

CHAIR STETKAR: No.

MEMBER RYAN: I'd thought Dennis's

summation was quite good. I agree with the views on the presentations. I think were very helpful for me to understand what people are thinking about and what they were thinking about moving forward.

So, I think those two points in particular were worthwhile to me and I hope will be worthwhile for us as a group to hear what they've got to say and maybe probe those kind of forward looking activities that they're engaged in from this point forward.

Thank you.

CHAIR STETKAR: Thank you.

Ron?

MEMBER BALLINGER: Northing more.

CHAIR STETKAR: Charlie? If you're going to say something, turn your mic on.

MEMBER BROWN: I made my comments, the two specific items I wanted to cover. I don't need to reiterate.

CHAIR STETKAR: Okay. Joy?

MEMBER REMPE: I just wanted to reiterate my thanks to everyone on their presentations and it was helpful. And I'll look forward to when it comes back to us again in October.

CHAIR STETKAR: Great. Thank you.

And I, too, thanks a lot to the staff for

summing things up. As I said, it helped me an awful lot to sort out some of the information that's in the white paper.

Joe's not here anymore, but thanks to Joe. Joe? You're here? Oh.

MR. GIITTER: I'm hiding back here.

CHAIR STETKAR: Joe's hiding. Thanks to you also for your insights.

It sounds like this is, as Dennis said, is evolving. I think from what we heard from the staff and what we just heard from NEI that the next couple of months are a pretty important time in this process and I hope that the staff, you know, considers whatever comments come in seriously, considers what you heard today from NEI pretty seriously and that we don't necessarily get caught up in something that's purely paper schedule driven --

MR. GIITTER: And I completely agree.

CHAIR STETKAR: -- and miss some opportunities.

So, I'll just end my comments that way.

MR. GIITTER: I completely agree.

CHAIR STETKAR: Thank you.

And with that, if there's nothing else, we are adjourned.

(Whereupon, the above-entitled matter went off the record at 4:30 p.m.)

Staff Recommendations Regarding a Risk Management Regulatory Framework

ACRS Subcommittee Meeting

June 8, 2015

Outline of NRC Staff Presentation on Risk Management Regulatory Framework (RMRF)

- Background
- Discussion of Staff White Paper
  - Implementation Options for Power Reactors
  - Re-evaluation of Improvement Activities 1 and 2
  - Example of potential agency-wide policy statement
- Summary of May 27, 2015 public meeting
- Next Steps

Background

- NRC staff is working to provide the Commission with three related items for their consideration:
  - Evaluation of options for enhancing the risk management approach used to ensure nuclear power reactor safety
  - Reevaluations of two power reactor safety "improvement activities" from Fukushima Near Term Task Force Recommendation 1 that the Commission deferred
  - Possible development of an over-arching, agency-wide policy statement using the risk management approach to ensure safety and security
- White paper (ML15107A402) released on May 6, 2015
- *Federal Register* notice (80 FR 27191) published on May 12, 2015
  - www.regulations.gov Docket ID NRC-2013-0254
  - Comment period ends June 11, 2015

Discussion of Staff White Paper

- White Paper discusses three related items:

1. Evaluation of options for enhancing the risk management approach used to ensure nuclear power reactor safety (Section I)
2. Reevaluation of two power reactor safety "improvement activities" from Fukushima Near Term Task Force Recommendation 1 that the Commission deferred (Section II)
3. Possible development of an over-arching, agency-wide policy statement using the risk management approach to ensure safety and security, including an example of what such a policy statement might include (Section III)

Section I: Options for Enhancing the Risk Management Approach for Nuclear Power Reactor Safety

Staff's evaluation determined that

- Safety Goals for the Operation of Nuclear Power Plants (51 FR 30028),
- Existing Probabilistic Risk Assessment (PRA) Policy Statement (60 FR 42622),
- Extensive experience with risk-informed regulation and risk-informed decision-making

… have already established a de-facto RMRF.

- Section I evaluates 3 power reactor implementation options to increase use of risk information
  - Option 1 – Maintain Current Framework
  - Option 2 – Establish a Risk-Informed Alternative Licensing Basis
  - Option 3 – Establish a Plant Specific Risk Management Regulatory Framework

Power Reactor Option 1 – Maintain Current Framework

- No extensive revision of NRC's regulatory framework
- The current power reactor regulatory framework meets the RMRF criteria in NUREG-2150
  1. Mission – Public health and safety; common defense and security; protect the environment
  2. Objective – Manage the risks via current regulations, guidance, and oversight (including defense-in-depth, safety margins, single failure criterion, fail-safe design, reactor oversight program, etc.)
  3. Goal – Provide sufficient risk-informed and performance-based protections to ensure risks are acceptably low (utilizing Commission's Safety Goal Policy Statement and subsidiary risk metrics)
  4. Decisionmaking Process that includes monitoring and feedback (e.g., LIC-504, "Integrated Risk-Informed Decision-Making Process for Emergent Issues;" Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis;" Generic Issues Program; Operating Experience Program; Accident Sequence Precursor Program; Industry Trends Program, etc.)
- Not a "do nothing" option -- staff would continue to make safety improvements (based on risk insights or other considerations) whenever necessary using existing regulatory processes
  - Fukushima Near-Term Task Force Recommendation 1 Improvement Activities 1 and 2 enhancements

Power Reactor Option 2 – Risk-Informed Alternative Licensing Basis

- Maintain existing generic regulatory structure
- Issue rule allowing licensees who upgrade PRAs to apply for approval of a risk-informed alternative licensing basis for certain deterministic regulations of low safety benefit for that plant
  - Licensees allowed to select a plant-specific set of design changes/compliance issues of low risk-significance that would deviate from current deterministic requirements **and** must search for and mitigate all plant-specific risk vulnerabilities meeting NRC-specified criteria
  - New information on mitigation of risk-significant events and/or accident sequences (risk vulnerabilities) must be documented in the plant's updated Final Safety Analysis Report in accordance with 10 CFR 50.71 (e) requirements
  - Mandatory monitoring and feedback (as described in RG 1.174) to ensure changes in risk remain acceptable throughout the lifetime of the facility
  - Staff requested public comments on potentially requiring licensees requesting subsequent license renewals (exceeding 60 years) to perform PRAs and look for and address risk vulnerabilities

Power Reactor Option 2 – Risk-Informed Alternative Licensing Basis (continued)

Implementation:

- NRC approval of license amendment would authorize use of alternative approach
- Plant licensees are expected to have high quality PRAs to support this risk-informed alternative licensing basis approach
- Regulatory process for licensees to self-approve certain plant-specific changes would likely be similar to NFPA-805 approval process, i.e., risk-informed changes allowed to license requirements without prior NRC approval if risk increase (Δ CDF) is "no more than minimal" (e.g., < 1E-7/year)
- Facility changes with risk increases "more than minimal" (e.g., > 1E-7/year) require NRC approval

Power Reactor Option 2 – Risk-Informed Alternative Licensing Basis (continued)

Implementation uncertainties:

- Staff has not developed implementation details for this approach
- Staff intends to review all power reactor regulations and develop list of rules amenable to risk-informing under Option 2
- Other implementation uncertainties include:
  - Minimum scope/technical accuracy of upgraded PRA for entry into the alternative approach
  - Certification/review of PRA?
  - Selection and scope of permissible design changes
  - Process for staff review of design changes
  - Reporting and documentation requirements
  - Ensure transparency (NRC and public) of processes

Power Reactor Option 3 – Plant-Specific RMRF from NUREG-2150

- Issue regulation requiring PRAs and that licensees establish plant-specific licensing basis based on:
  - Plant-specific risk profiles
  - NRC-specified risk management objective
  - Enhanced criteria for determining adequacy of non-risk factors (defense-in-depth, safety margins, etc.)
- Based on the risk profile, licensees would implement the plant-specific licensing basis by:
  - Determining how the risk objective is met
  - Ensuring that the necessary protections are in place to meet the risk management goal
  - Demonstrating the adequacy of non-risk factors (defense-in-depth, safety margins, etc.)
  - Establishing the risk-informed decision-making process
  - Establishing the monitoring/feedback and reporting process

Power Reactor Option 3 – Plant-Specific RMRF from NUREG-2150 (continued)

- Each plant's licensing basis would consist of:
  - "Technical requirements" based upon plant-specific attributes and applicant-selected design specific elements/constraints
  - Rationales (technical bases) why the technical requirements adequately address risk and defense-in-depth in light of the plant-specific attributes and design specific elements/constraints
  - FSAR-level description of the plant-specific attributes and applicant-selected design specific elements/constraints that are the inputs/assumptions for the above rationales (technical bases) which must be maintained
  - Process for maintaining the validity of the rationales (technical bases) throughout the operating lifetime of the facility.
- Structured, risk-informed decision-making process used by both NRC and licensees
- Licensees would be required to use the structured process with monitoring and feedback to ensure that the plant-specific licensing basis remains consistent with the risk profile of the plant, which could change over time.

Questions?

Section II: Reevaluation of Power Reactor Improvement Activities

- Recommendation 1 was to establish a "logical, systematic, and coherent regulatory framework for adequate protection that appropriately balances defense-in-depth and risk considerations."
- The NRC staff provided its evaluation of Recommendation 1 on December 6, 2013, in SECY-13-0132
- SECY-13-0132 recommended 3 regulatory framework improvement activities
  1. Establish new design-basis extension category **and** ensure that design-basis extension rules address all regulatory attributes (performance goals, treatment requirements, documentation requirements, change processes, and reporting requirements)
  2. Establish Commission expectations for defense-in-depth (definition and criteria for adequacy)
  3. Clarify the role of voluntary initiatives
- Commission's May 19, 2014 SRM on SECY-13-0132
  - Directed the staff to evaluate the implementation status of certain safety-significant voluntary initiatives (Improvement Activity 3)
  - Directed staff to reevaluate objectives of Improvement Activity 1 (new design-basis extension category) and Improvement Activity 2 (adequacy of defense-in-depth) within context of Commission direction on the Risk Management Regulatory Framework
- Staff will provide its reevaluations of Improvement Activities 1 & 2 in RMRF SECY paper

Reevaluation of Improvement Activity 1: Establish Design-Basis Extension Category

- Staff now believes creating new design-basis extension category is not necessary
- For Option 1 (maintain existing framework) and Option 2 (risk-informed alternative licensing basis)
  - Staff would develop clear internal rulemaking guidance to ensure consistent criteria for specifying performance goals, treatment requirements, documentation requirements, change processes, and reporting requirements whenever new regulations (especially beyond design-basis) are developed
    - Develop guidance using existing resources (routine, periodic guidance updates)
  - Developing internal rulemaking guidance on addressing all pertinent regulatory attributes would eliminate the need to establish new design-basis extension category of regulations
- For Option 3 (plant-Specific RMRF)
  - Instead of design-basis extension category, staff would establish design-basis enhancement category of events/requirements (per NUREG-2150)
  - Because implementation of NUREG-2150 approach would take longer than 10 years, staff would still need to develop clear internal rulemaking guidance for interim use until Option 3 fully implemented

Re-evaluation of Improvement Activity 2: Establish Commission Expectations for Defense-in-Depth

- Staff recommends taking action to establish Commission expectations for defense-in-depth
  - Option 1 (Maintain Existing Framework),
  - Option 2 (Risk-informed Alternative Licensing Basis), and
  - Option 3 (Establish Plant Specific Risk Management Regulatory Framework)
- Develop a definition of and decision criteria for determining adequacy of defense-in-depth (DID) for power reactor safety
  - Consistent with the approach recommended in SECY-13-0132
  - Reevaluate the need for a DID policy statement for power reactor safety
- Develop or revise to conform existing power reactor safety regulatory guidance, as appropriate

Questions?

Section III: Agency-wide Risk Management Policy Statement

- The consideration of risk and tailoring regulations and oversight to manage these risks is inherent in current NRC programs. The various regulatory approaches
  - have evolved separately (for reactors, materials, and other NRC program areas) based on their own individual attributes and characteristics
  - the various regulatory approaches are sometimes described using inconsistent terminology
- *If the Commission directs that it be developed*, the risk management policy statement could improve and make more consistent the regulatory framework used for all program areas
- The policy statement would establish ***by policy*** that the NRC uses a risk management approach; as such, the policy statement would establish an aspirational vision for the agency to improve existing agency policies and practices as guided by this vision

Example Policy Statement Concepts

- Applicable to all NRC-regulated program areas (radiological safety and security) and could be composed of:
  - A risk management approach would be used to ensure adequate protection of public health and safety and promote the common defense and security for all NRC regulatory activities
  - In a risk management approach, safety and security are ensured by:
    1. Understanding the risk associated with NRC-regulated activities
    2. Using that risk information to support regulatory decisions, and
    3. Ensuring that defense-in-depth is adequate

Example Policy Statement Concepts (continued)

- The risk management approach would:

1. Use a structured process to identify issues, identify options, analyze, deliberate, implement decisions, and monitor the effectiveness of regulatory programs to make improvements as necessary

2. Ensure appropriate regulatory controls and oversight are in place recognizing the variety of risks associated with different uses of radioactive materials, and

3. Employ risk-informed decision-making, in which risk insights are considered together with other factors commensurate with their importance to public health and safety and common defense and security

Example Policy Statement Concepts (continued)

- The risk management approach would (cont'd):
  4. Recognize the wide range of risk methods and tools in assessing the risk that would be consistent the complexity, hazard and technology of the regulated activity
     - These methods and tools would include, for example, the use of PRAs, integrated safety analyses, failure modes and effects analyses, vulnerability assessments, or more qualitative methods and engineering judgment, as appropriate to the regulated activity
  5. Consider input from stakeholders and other interested parties

Example Policy Statement Concepts (continued)

- The technical analyses supporting the risk-management approach should:
  1. Be based on sound data, information, and methodologies, including consideration of uncertainties
  2. Use techniques or combinations of techniques appropriate for the hazards and complexity of the issue
  3. Be as realistic as practicable, and
  4. Promote and utilize advances in science and technology, as practicable

- The risk management approach, when implemented (e.g., use of a structured decision process, establishment of risk goals, development of risk analyses), would be tailored to each specific regulated activity, as appropriate

Agency-wide Risk Management Policy Statement

- *If the Commission directs the staff to proceed with an agency-wide policy statement,*
  - The NRC staff would follow the normal regulatory process to develop the policy statement for Commission approval
  - This process would involve stakeholder input through public comment periods and public meetings

Agency-wide Risk Management Policy Statement

- Agreement States previewed the White Paper before it was released to public
- Organization of Agreement States provided comments:
  - Policy statement would be a useful way to provide the Commission's expectations for a Risk Management Regulatory Framework
  - "We cannot state or endorse the concept that there is a general understanding [in the radioactive materials program] of the terms *risk-informed* and *defense-in-depth*."
  - "[A] risk management approach is already being performed with our current regulatory system and IMPEP [Integrated Materials Performance Evaluation Program] process"
  - Policy statement should say to "review current [risks and practices] and provide recommendations for enhancement."

Questions?

Public Meeting on RMRF
May 27, 2015

- Well attended (26 in person; 14 via webinar)
- Industry stakeholders concerned about the lack of implementation details on Option 2.
  - Nuclear Energy Institute (NEI) stated that without additional details of how the Option 2 process would work, it is very difficult to assess safety benefits and costs
  - NEI said NRC should not present its recommendations to the Commission without having developed more details regarding how the processes would work
  - Option 3 should not be implemented at existing plants
- Agency-wide policy statement – NEI said development did not appear to be an efficient use of existing resources

Public Meeting on RMRF (continued)

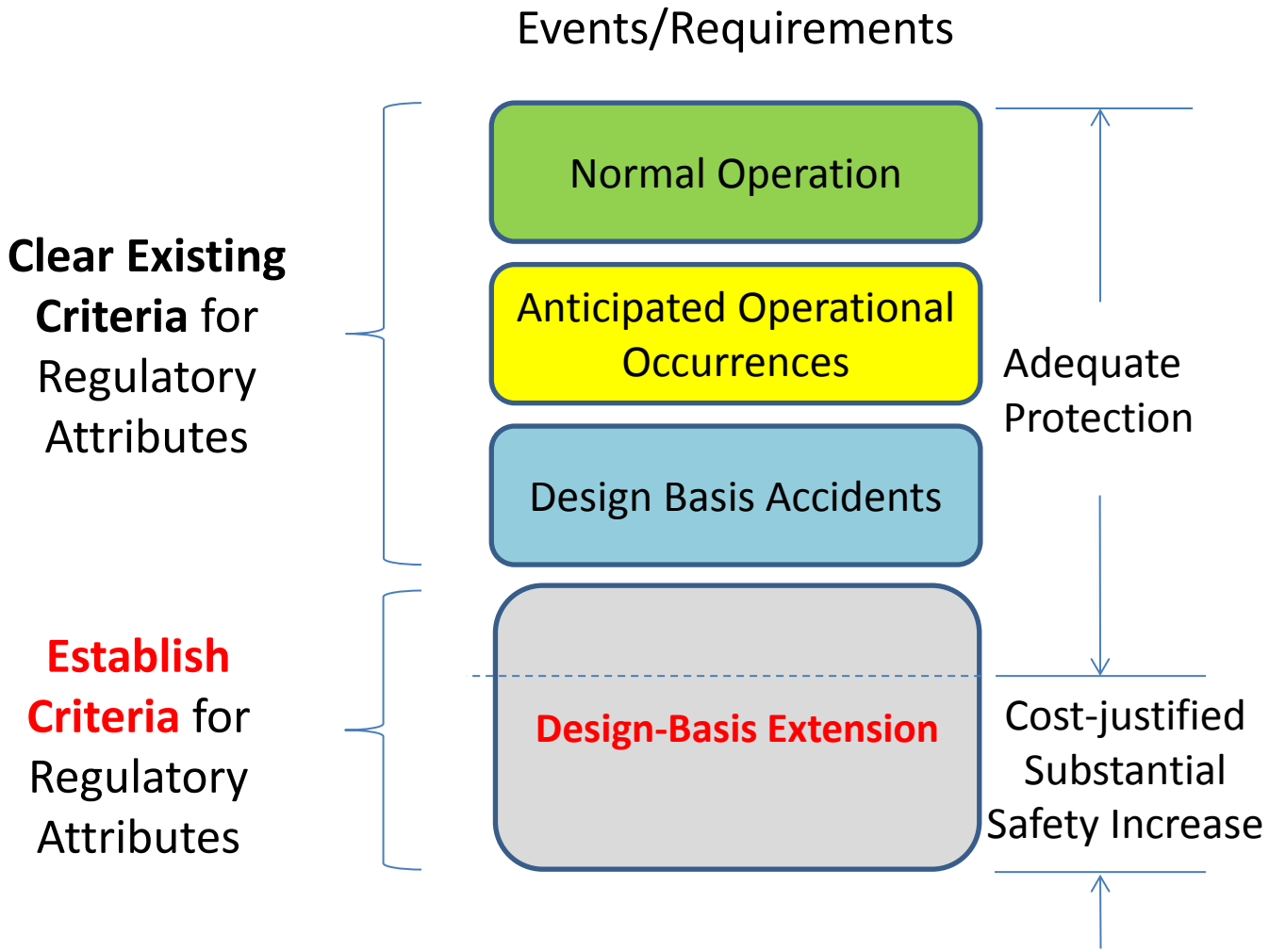
- The Union of Concerned Scientists (UCS) stated that Option 2 should not be pursued because it would result in inconsistent requirements being applied to individual plants across the industry and would further exacerbate the "patchwork" of different requirements that Near-Term Task Force Recommendation 1 proposed to eliminate
- UCS suggested that clear and consistent requirements could be applied across the industry by a new effort to reevaluate the Independent Plant Examinations (IPEs) and Independent Plant Examinations – External Events (IPEEEs) on a consistent basis across the industry

Path Forward on RMRF

- Public comments due on June 11, 2015
- Review public comments
- Meet with ACRS subcommittee (Oct.) and full committee (Nov.)
- ACRS letter
- Provide RMRF SECY paper to Commission by December 18, 2015

Backup Slides

Improvement Activity 1- Establish Design-Basis Extension Category



NUREG-2150 Design Enhancement Category

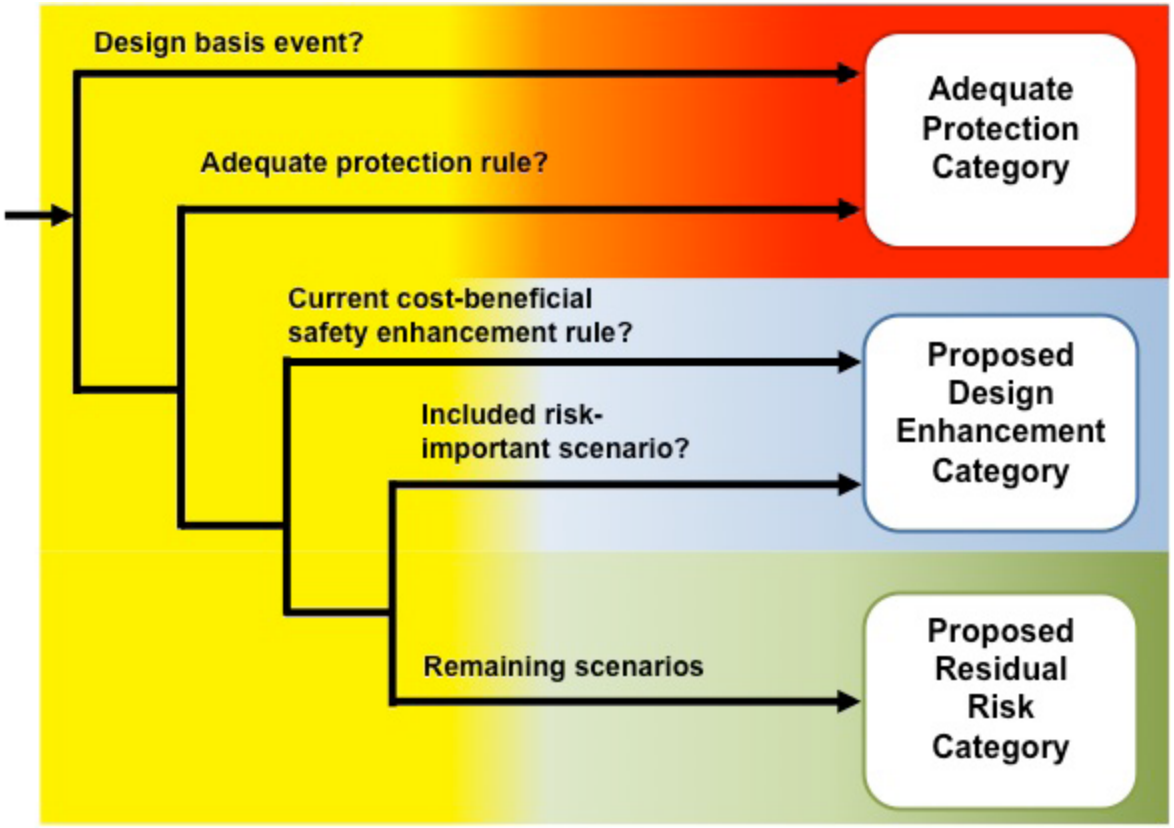
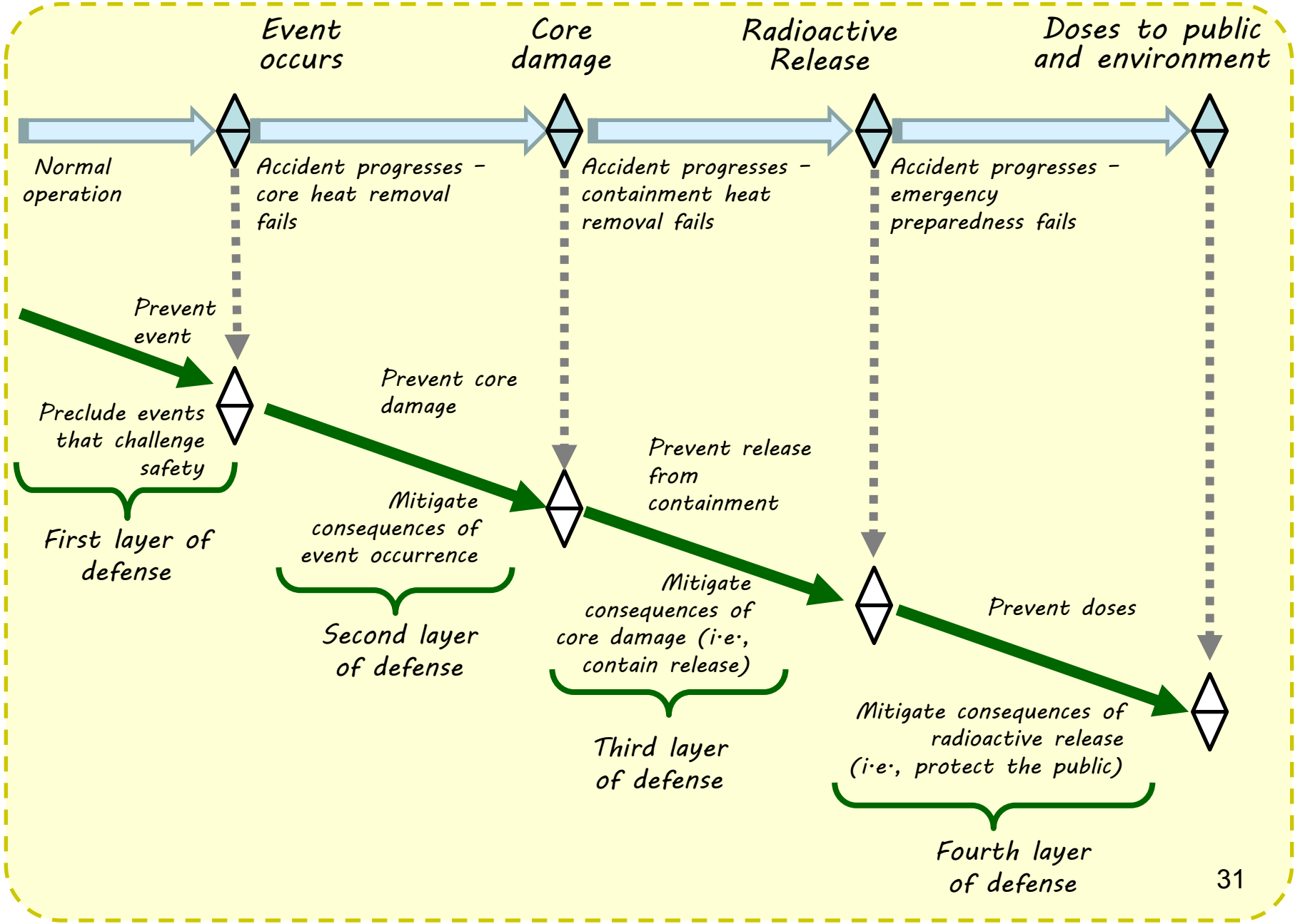


Figure 4.2-1 Regulatory Framework for Nuclear Power Reactors

Nuclear Power Reactor Safety DID May Consist of Four Levels



Definitions

To ensure a common understanding of this example policy statement, it is important to know the differences between the terms "risk management," "risk assessment", and "risk-informed approach."

- *Risk management* is the recognition of the threat or danger involved with the use of nuclear materials and establishing controls and oversight to manage the potential threat or danger. That is, it is coordinated activities to direct and control an organization with regard to risk. *[From ISO 31000, "Risk Management – Principles and Guidelines"]*
- *Risk assessment* is the evaluation of what can go wrong, how likely is it, and what would be the consequences? This consideration may be addressed either qualitatively or quantitatively. *[From SRM-SECY-98-144, "White Paper on Risk-Informed and Performance-Based Regulation," March 1999]*

Definitions (continued)

- *Risk-informed approach* to regulatory decision-making represents a philosophy whereby [quantitative and qualitative] risk insights are considered together with other factors to establish requirements that better focus licensee and regulatory attention on design and operational issues commensurate with their importance to public health and safety. A risk-informed approach enhances the deterministic approach which is used to define many of the design and operational requirements for NRC licensees. Risk-informed approaches lie between the risk-based and purely deterministic approaches. *[From SRM-SECY-98-144, "White Paper on Risk-Informed and Performance-Based Regulation," March 1999]*

NUREG-2150 Hierarchy and Structured Decision-making Process

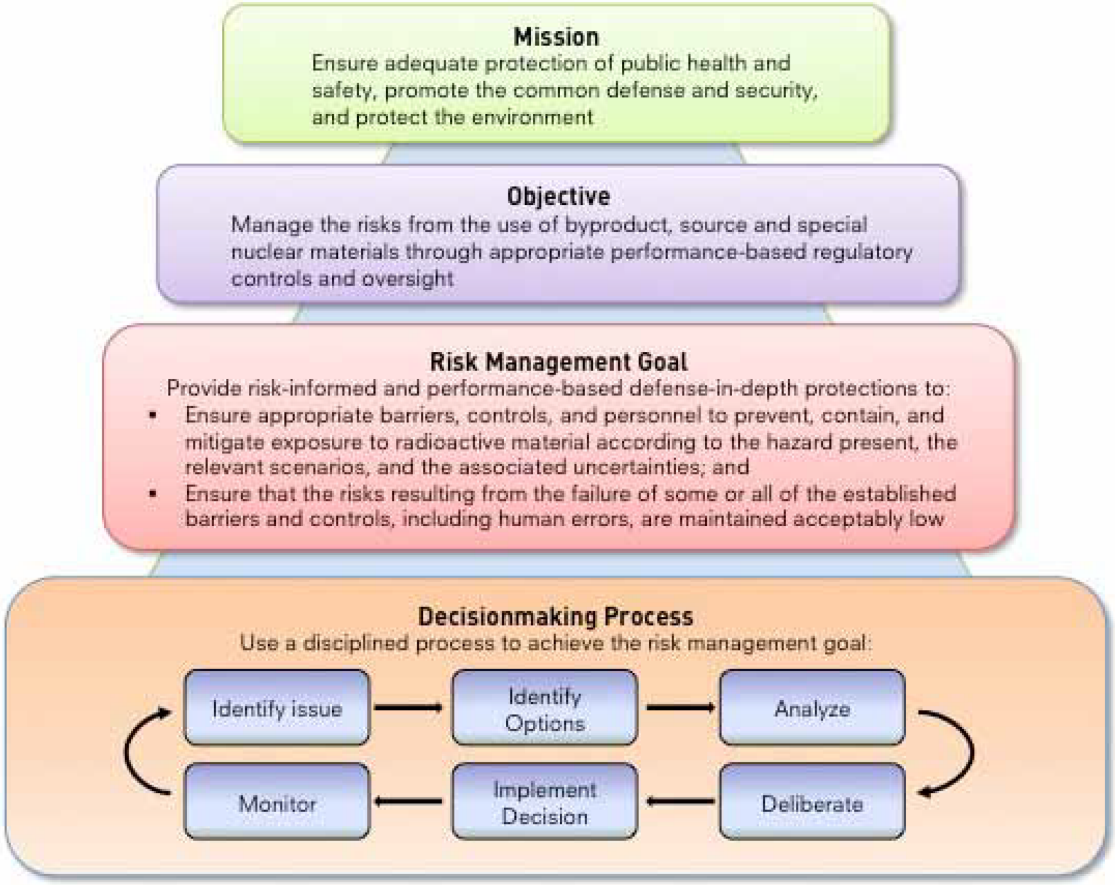


Figure ES-1 A Proposed Risk Management Regulatory Framework

Risk Management Regulatory Framework –

Thoughts on Option 2

ACRS Subcommittee Meeting

Joseph Giitter, Director, NRR/DRA

June 8, 2015

Introduction

- Option 2 is described in the “white paper” at a high level
- Feedback at a recent public meeting suggested more details on scope and process for Option 2 were needed.
- The rule would be developed with extensive stakeholder interaction to ensure that the benefits are realized and that unintended consequences are minimized

Option 2: Risk-Informed Alternative Licensing Basis

- Implemented by rule
- Alternative – Licensees may elect to adopt or not
- Requires a "suitable" PRA model
  - Provide plant-specific risk insights (search for and mitigate risk-significant events and/or accident sequences)
  - Allow risk informing of certain accidents and transients included in their licensing basis
- *Need more detail to inform external stakeholders (purpose of this presentation)*

Benefits of Option 2

- Increased safety to the public (identifies and mitigates any plant-specific vulnerabilities)
- Reduced burden (some non-risk significant portions of the licensing basis may be removed)
- Increased resource efficiency
  - Licensees may be able to expand self-approval of some changes
  - Risk-informed amendments would not require review of the base PRA (already reviewed)
- Operational flexibility for licensees (e.g., risk-managed Technical Specifications)

Desirable Features of the Implementing Regulation

- Be performance based
- Allow risk-informed amendments to the license without the need for an exemption
- Have objective acceptance criteria for risk, defense-in-depth, and safety margins
- Allow licensees to fully achieve the benefits of burden reduction commensurate with risk significance
- Require licensees to address vulnerabilities without requiring NRC to impose a backfit.

Possible Rule Content

- Scope – Current regulations and aspects of the licensing basis that may be risk-informed
- For each item in the scope:
  - Appropriate PRA scope, level of detail, and technical adequacy
  - Appropriate risk metrics, defense-in-depth elements, and safety margins
  - Acceptance criteria for risk, defense-in-depth, and safety margin

Possible Rule Content (cont.)

- Definition of "vulnerability" (in terms of risk, defense-in-depth, or safety margin) and the criteria for:
  - Identifying vulnerabilities
  - Adding an event or accident related to identified vulnerabilities to the plant's licensing basis
  - Determining what action (e.g., analysis, plant modification, procedure change, etc.) should be taken to address the vulnerability
  - Determining the pedigree of the engineering analysis and the treatment requirements for SSCs that prevent or mitigate the consequences of the events or accidents related to the vulnerability

Possible Rule Content (cont.)

- The criteria for self-approval of changes to the licensing basis (a risk-informed 50.59; possible risk-informed definition of OPERABILITY)
- PRA update periodicity
- Corrective action and reporting requirements

Lessons Learned

- Lessons learned from major risk-informed applications (e.g.,NFPA-805) requires new approaches to address PRA technical adequacy
- Separate NRC and Industry Risk Informed Steering Committee (RISC) working groups (WG) on PRA Technical Adequacy
- PRA “Certification” Concept

RISC WG Recommendations

- Objectives
  - Develop a process for making new methods available for risk-informed regulatory applications
  - Improve process for documentation and closure of Peer Review Facts and Observations (F&Os)
  - Evaluate additional gaps in peer review process
- Desire is that implementing recommendations will substantially improve the regulatory processes associated with verification of PRA technical adequacy for risk-informed licensing applications

“Certified” PRA Model

- A more robust approach to PRA technical adequacy may be needed to support a broad application of this rule
  - NFPA 805 experience shows that an up-front agreement on “methods” would be very beneficial
  - Industry “peer” review may not provide acceptable level of assurance that PRA is appropriate for broad changes to the licensing basis or identification of vulnerabilities
- To fully realize benefits, it may be necessary to:
  - Specify acceptable methods
  - Require PRA analysts to meet minimum qualification and experience requirements
  - Require “certification” of the PRA model (next slide)

PRA "Certification"

- More in-depth than peer review
- Preferably done by an independent body
- Must:
  - Be in-depth
  - Cover the entire model
  - Ensure that approved methods are employed
  - Ensure satisfactory resolution of the review findings
- Outcome: a "certified" PRA model that a licensee could use to make licensing decisions without the need for further NRC review and approval unless certain thresholds are reached

Example Scope of an Option 2 Rule

- Set of design bases events included in the plant-specific licensing basis
  - The current list could be reduced
  - New events could be added based on risk information
- Risk-informing operability determinations
- Scope might subsume some existing risk-informed regulations (e.g., 50.69, 50.48(c), etc.)

Conclusion

- Preliminary factors that could be considered in developing an RMRF rule.
- Extensive stakeholder interaction necessary to ensure that the benefits are realized and that unintended consequences are minimized.
- Option 2 could range from a very limited application to a fully risk-informed approach.

Industry Comments on Risk Management Regulatory Framework (RMRF) White Paper

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RMRF: Options 1, 2 and 3

- Option 1 – Maintain Current Framework
  - Industry preferred option based on current available NRC information
  - Enhance guidance for determining the adequacy of defense in depth in a truly integrated decision-making process
  - Streamline current approval processes for risk informed license amendment requests
  - No additional work needed to develop design-basis extension category

- Option 2 – Establish a Risk Informed Alternative Licensing Basis
  - Not preferred option at this point *for operating plants* in time based on current available NRC information
  - Could be a preferred option for new plants (full scope PRAs already required)
  - White paper lacks sufficient detail concerning scope and process
  - Unable to assess potential benefits and costs (no examples in white paper)
  - Unclear how this will differ significantly from Option 1 for staff review/guidance

- Option 3 – Establishing a Plant Specific Risk Management Regulatory Framework
  - Not preferred option
  - Expected to take longer than 10 yrs
  - Regulatory uncertainty high
  - Significant resources and time to develop and implement
  - Cost/Benefit unclear (cumulative effects)

RMRF: Options 1, 2 and 3

- Regulatory Process Issues
  - Option 2 - Voluntary Initiative (limited industry involvement); difference in process between Options 1 and 2 is unknown
  - Option 3 - Unclear basis for making it a requirement
  - Staff plans for issuance of Commission paper
    - Do not involve additional public interactions beyond May 27th meeting
    - Staff will consider but not address public comments
    - Next opportunity for involvement is Nov 2015 when staff discusses draft SECY with ACRS

RMRF: Options 1, 2 and 3

- Should Option 2 (Risk Informed Alternative Licensing Basis) be required for plant life extension beyond 60 years?
  - Requiring this Option has no direct connection to extending plant life (not uniquely relevant to plant life extension)
    - PRA doesn't provide any greater insights on plant life for years 61-80 than years 1-60
  - Other existing regulatory processes are focused on assessing /managing plant aging
  - Effectively bypasses NRC process for establishing new requirements (backfit)

Improvement Activities 1 and 2

- Design-Basis Extension
  - Agree with staff's assessment/recommendation
    - Implementing rulemaking guidance make it unnecessary to establish a design-basis extension category
    - Not needed for Options 1 and 2
    - Option 3 plant specific design enhancement category of events and accidents based upon risk criteria (TBD)

- Defense-in-Depth
  - Support the revision of guidance documents (e.g., RG 1.174) to ensure consistent application of defense-in-depth in regulatory decisions
  - Support the development of decision criteria for determining the adequacy of defense-in-depth in an integrated risk-informed decision-making process
  - Need to have industry involvement and interaction/public comment
  - Do not see the direct benefit of the development of defense-in-depth policy statement

Agency-Wide Risk Management Policy Statement

- Example Policy statement at very high level
  - Question if this is effective use of limited resources (multi-office effort)?
  - Higher priority should be to address issues related to risk informed decision-making (e.g., uncertainty, defense in depth, aggregation)
  - Policy Statement covers all NRC program areas
    - however at present no apparent intent or resources to put in place a Risk Management Framework for other program areas (white paper) in the near-term and 10 yrs to develop Option 3 for existing reactors.

Recommendations

- Maintain current framework (Option 1) for operating plants

- Implement improvement activities for RG 1.174 (Defense-in-Depth)