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RE Resolution of Public Comments on
NUREG/CR-7114, Methodology for
Low-Power/Shutdown Fire PRA

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UNITED STATES NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING WITH INDUSTRY REPRESENTATIVES
REGARDING RESOLUTION OF PUBLIC COMMENTS
ON NUREG/CR-7114, "METHODOLOGY FOR
LOW POWER/SHUTDOWN FIRE PRA"

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THURSDAY
OCTOBER 18, 2012

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The Workshop met in Room 2 C19, 21 Church Street, Rockville, Maryland, at 8:30 a.m., Felix Gonzalez, Moderator, presiding.

PRESENT

FELIX GONZALEZ, Moderator
PAUL AMICO, Kleinsorg Group*
VICTORIA ANDERSON, NEI
SUSAN COOPER, NRC
JEFF JULIANS, Scientech*
RAY GALLUCCI, NRC
DAVID GENNARO, NRC
JEFF MITMAN, NRC
STEVE NOWLEN, SNL
CHRIS ROCHEN, Westinghouse*
MARK SALLEY, NRC
JEFF STONE, Constellation*
RICK WACHOWIAK, EPRI
KIANG ZEE, ERIN

*present via telephone

TABLE OF CONTENTS

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

8:30 a.m.

MR. GONZALEZ: So, I guess we're ready to start. Is anyone on the phone? Okay, we're about to start in just a couple of seconds.

Good morning, everyone. My name is Felix Gonzalez. I work for the Office of Nuclear Regulatory Research of the NRC.

Welcome to the public meeting on the discussion of resolution of public comments to NUREG/CR-7114, titled 'Methodology for Low Power/Shutdown Fire PRA'.

Before we begin, there is a few administrative details that I need to cover.

First, these are like the other two public meetings, where members of the public are invited to participate in the meeting with the NRC, at the designated points in the agenda.

Given the nature of this meeting and the discussion, there are logistics that we'll follow in discussing this -- when discussing the comments, are the following, you know, NRC will discuss the proposed resolution to a specific comment or a set of comments that are related, and then we're going to give the members of the public or industry in the room, to comment on

it and then also, to members of the public on the phone.

If you are speaking on the phone, please set your phone to 'mute', except when speaking. Please identify yourself when you make a comment, particularly if you're on the phone. We are recording this meeting, and we're going to be transcribing it, to make sure there is no points lost.

Also, if you're on the phone, please email me your contact information, or if you're in the room, please sign the attendance list. I believe everybody so far, has signed the attendance list.

My email is the following, it's felix.gonzalez@nrc.gov, I repeat Felix, that's F-E-L-I-X, G-O-N-Z-A-L-E-Z@nrc.gov.

There is also feedback forms available. Feel free to fill one out at the end, if you wish, and your feedback is greatly appreciated, and will help us improve during public meetings.

Also, if you're on the phone, when you email me your contact information, email me that you want a copy of the feedback form, and I can email that to you.

For the individuals on the telephone bridge line and with access to internet, the presentation slides are publically available through the NRC website.

The ADAMS number, there is two ADAMS

numbers, one for the public meeting package, which I believe probably most of -- everyone has seen. That number is ML-12265-A330. I repeat ML-12265-A330.

We have another presentation that we published earlier this week, that we're going to be showing, that Steve is going to use for background purposes and to guide through the comments. That one has been published, the MO number ML-12291-A686. I repeat ML-12291-A686.

I serve as the contracting officer representative for this project. With that, I want to ask everybody in the room to introduce yourself, by telling your name, company and organization that you represent, and also at the end, we're going to give people a chance to introduce themselves.

I want to start with myself, Felix Gonzalez of the Office of Nuclear Regulatory Research of the NRC in the Fire Research Branch, and as I said, I serve as a project manager for this project, and I'm going to pass it to Steve.

MR. NOWLEN: I am Steve Nowlen, Sandia National Labs. I am the research contractor at Sandia, responsible for this contract.

MR. GALLUCCI: Ray Gallucci, NRR/Fire PRA.

MR. MITMAN: Jeff Mitman, NRC/NRR low-power

shutdown risk analyst.

MR. GENNARO: David Gennaro, NRC Fire Research Branch.

MR. WACHOWIAK: Rick Wachowiak, EPRI.

MS. ANDERSON: Victoria Anderson, NEI.

MR. ZEE: Kiang Zee, Erin Engineering.

MS. COOPER: Susan Cooper, Office of Research, NRC.

MR. SALLEY: Mark Salley, Office of Research, Branch Chief for Fire Research.

MR. GONZALEZ: And now, on the phone?

MR. AMICO: Paul Amico, Kleinsorg Group.

MR. ROCHEN: Chris Rochen at Westinghouse.

MR. STONE: Jeff Stone, Constellation.

MR. GONZALEZ: And anybody else? All right, I believe not. Thank you everybody, for introducing yourselves.

Now, before we start our discussion, I will give Mark Salley, the Chief of the Fire Research Branch, a moment for opening remarks.

MR. SALLEY: Yes, thanks, Felix, and just I guess, to set the stage and get us moving on this, you know, every time we go in front of the ACRS, we've got a number of projects.

I'll usually tell them that I kind of like,

follow the Dale Earnhardt philosophy on these projects, and what that is, if we put a document out, and we get a lot of feedback, be it good or be it bad, as long as we're getting feedback, it's a good NUREG.

Where I get nervous is when I put a NUREG out and nobody cares, and nobody gives us any feedback, which kind of tells me that there is not a lot of interest in the product we did.

In the case of this low power shutdown, we've got a lot of feedback, so that is a good thing. However, a lot of it was, may I say critical, which is -- it told us a lot of people looked at it, and they have questions and concerns about it.

So, we'll take that, and that is the unique thing and why we're doing this public meeting today, is because of that feedback and believe me, your feedback is very important to us. It helps us develop high quality products, and that's what we want to do.

So, being as we had that amount of feedback, and that it was somewhat negative, we thought the public meeting would be the best way to hear what you have to say.

It's one thing to read the written comments and to resolve them, but if we could gather anything additional from the verbal comments and the discussion,

that's what we want to engage today.

So, Felix will control the meeting, and we'd like to do it back and forth, rather than go through the whole spiel, and in the end, get your feedback. So, Felix will have control of this.

By way of history, this report, it's driven by a user need and research from NRR. This is something that NRR is looking for and we're obviously going to do the work for them. So, that's our impetus for doing this.

The project started out as a joint project. It was an EPRI/NRC project, way back when, and Felix, by the way, is the second PM on this. The original guy, Roy Woods, he retired. So, Felix has inherited this. It's been around for a while.

After we started out, EPRI, due to resources and other things, couldn't really support us on this, so, we ended up, NRC research, going alone with Sandia, our prime contractor, and the agreement was that we would do it and EPRI would still play a part with us under the memorandum of understanding, in the form of giving us a peer review in the report before we set it out.

So, that is how this worked. It was under the MOU, with that one change.

With that, we've gotten a draft out, and

when did we put that draft out?

MR. GONZALEZ: I believe in December.

MR. SALLEY: December of last year. We've got the comments. We've been looking at the comments, and we've been working through them, and that's why we brought Steve up from Sandia today, to discuss those comments and how he and Felix have gone through, and what we think and to get your feedback.

A final thing, I don't want to talk too much, I want to give it to these guys, because that's what it's about, is you know, we're into a chicken or egg thing, with these kind of documents, and we've seen this with NUREG/CR-6850 before.

Do we wait for standard to come out and tell us how to write methods, or do we write methods and have the standards work with us, and we go back and forth.

If there's one thing we learned out of 6850 was, I wish we'd had done it 10 years sooner, because now that all the plants are using it, we have the growing pains that go along with 6850, and we're working through those with half the industry on NFP-805.

With that, with this method, again, do we wait for the standard? I know there is work going on with the ASME and the fire PRA groups, and there's also work going on with us, with the method.

So, I believe we're in a catch-22 there. We're not going to win that one. Like I said, it's a chicken or egg thing, but we'd like to get your thoughts and then see where we go from here.

So, with that, Felix, can we turn it over to Steve or you?

MR. GONZALEZ: Yes, and Mark? Yes, we're going to give the lead of the meeting now, to Steve, so he can go through the presentation and go through the comments. Steve?

MR. NOWLEN: Okay, thanks. Okay, just background, this second slide, title slide, second slide is just the document we're talking about.

For reference, it was put out in late 2011, in the comment period, actually closed in February 2012. So, it was really just logistic that this was delayed somewhat, giving us time to deal with the comments and what not.

There were a total of 74 comments, it depends a little on how you count individual comments. But roughly, there were 74 comments that came from five different sources. NEI had one large comment. EPRI had eight, PWR Owner Group, 61, Doug True and Erin Engineering had one, and then Vince Young and RCS Engineers had three. So, that is where the comments

came from.

Now, in this particular presentation, the PowerPoint presentation, I am going to paraphrase some of these comments, all right. I've tried to pull out the high points. I didn't want to -- some of these were very long comments, and I didn't want to try and go through the entire text.

But the Excel spreadsheet that came out, along with the meeting announcement, has all of the comments in their full text, so the information is there.

But for this presentation, I'm just strictly paraphrasing, and hopefully, that will work out okay.

So, there were four comments that recommended withdraw of the report, don't publish, and I chose here, to basically just grasp that issue and deal with it.

So, the rest of this presentation is going to focus on those comments that had recommended withdraw of the report, and to talk about the issues that were raised, and just, you know, work through that first, and then the plan is to go to the Excel spreadsheet, and then we'll go comment by comment and address the other technical comments that came in.

So, basically, the comments saw the report

as premature for various reasons, and I'll cover some of those in the slides that follow here.

Our overall preliminary response to these comments is that the report acknowledges most of the points cited by the commenters as barriers to publication. We had already talked about most of them in some considerable detail.

Chapter One of the report has a section in particular on the underlying assumptions that go into this methodology, and most of the objections were raised there.

Now, we are planning to expand those discussions, to reflect the comments that came in. There were some extensions. There were some issues that we hadn't discussed in great detail, and there were some additional points, relative to the ones we had discussed.

So, our plan is to expand the discussion in Chapter One, to reflect the comments that we got, but that in general, publication of the report does advance the discussion of those low power shutdown PRA methods.

Another point here is that one goal that I -- and this is one of the things that I think we'll strengthen in Chapter One, one goal of the report was to identify the technical challenges and the barriers

to implementation and areas for further work. That was, in fact, part of what we were trying to do here.

Again, we clearly acknowledge that there are challenges to doing this, and again, in the idea of advancing the discussion, moving the ball forward, as Mark puts it, we think that publication is appropriate. At least, that's our preliminary assessment.

Again, we want to hear from the commenters and make sure that we're in line, but one of the major changes we're going to make, and I think this -- you know, it may seem like not much, but I think it's an important change.

We're intending to change the title of the report to 'A Framework For Low Power Shutdown Fire PRA'.

We do acknowledge that again, there are challenges, and the idea that this is a complete, full blown, ready to roll out methodology was not our intent.

I think the title that we had originally is perhaps, misleading, in that regard.

We were simply following -- you know, again, this was intended as complement to 6850-101 1989, the at-power PRA method, and so, we basically followed the title that that report had used, and simply added low power shutdown.

We agree that that's a little misleading, and so, we hope that this change in title to 'A Framework' will help set the tone for what this report is intended to be.

Then with that, I'm going to jump in to the individual comments, the perceived barriers for publication, that were brought out I the various comments.

The first one is Erin-1. In our spreadsheet, we've sort of given an identifier to each of the comments, and so, in the first column, you're going to see, this one is identified as Erin comment number one.

In effect, it -- this is the one that Mark touched on. The comment says that we should first define the requirements via the standard for low power shutdown to PRA, before we issue the final guidance document, and it also calls for pilots and lessons learned feedback.

The main point here for us is that this was not intended as final guidance. Again, a part of it is to identify the challenges going forward and the needs for additional work.

So, we saw this as sort of the first step in the process of defining low power shutdown fire PRA

methods, not the final guidance document.

All elements of the PRA standard have also benefitted greatly from the existence of pre-defined PRA structures, including the at-power fire. The low power fire shutdown, or the low power shutdown fire section should be no different.

That is, we have not yet developed a standard for the existing fleet, at least, absent of any guidance for how you would do a PRA. Every other section has benefitted from these pre-existing methods, internal events, fire, seismic, floods, you know, other external hazards.

Everything has had something to work from, and we think that in our view, it's really a complementary process.

The standard and the methods guidance are complementary. They serve different purposes, but we believe both will benefit from a parallel development, that, you know, having some framework, i.e., this kind of a document, a framework for how a fire PRA for low power shutdown might be done, is a benefit to the people writing the standard, to try and say, "Well, what are reasonable expectations of what should be required in a low power shutdown PRA," and whether or not you find some of the things in the report, to meet that standard,

that these are reasonable expectations, is another debate.

But to at least have something on the table that lays out a framework, we think that will benefit the standard development process, and the standard development process will in turn, benefit further developments of the shutdown methods.

Piloting and feedback is anticipated and we fully expect that, but before you can pilot it, you do need a method to pilot. You have to know what you're piloting.

So, again, we see those as parallel activities. You put a straw-man out, you work it. When you think it's ready for prime time, then you go to the pilots and you pilot the process. We agree with that feedback, those lessons learned from that is very important. We agree with that entirely.

But again, we don't see these points as barriers to publication.

MS. ANDERSON: I think we have a question about the -- sort of the sequence for finalization, the report in piloting, and based on some recent experience with some NUREG's that we won't name by number, I think there is some nervousness about having a final NUREG out that has not yet been piloted, even if there is an

intent to pilot it and further revise it.

I think that makes a lot of people nervous. So --

MR. MITMAN: Why?

MS. ANDERSON: Because once there is a NUREG there, there is a -- it can be -- you can have it -- some people could interpret that there is a methodology available, and that people should be using that methodology, and that fire events at low power shutdown operations should be addressed quantitatively, because there is a methodology out there.

MR. MITMAN: Should they be addressed quantitatively?

MS. ANDERSON: Well, that is another question, entirely, should they be addressed quantitatively?

MR. MITMAN: Is there any risk to the public from fires during shutdown?

MS. ANDERSON: I don't think anybody is arguing that it's zero, but is there any benefit you get out of doing a quantitative LPSD fire PRA, as opposed to doing a qualitative evaluation?

Do you find out anything new, that you don't know, already?

MR. ZEE: I understand your point, but I

think that's two steps further beyond, I think the issue Victoria is bringing up.

I think the issue Victoria is simply bringing up is, once something gets articulated and published in a NUREG, it carries a certain weight to it, and the ability to evolve it and change it.

The experience has shown that the burden of proof and that ability to change that is very difficult.

MR. MITMAN: My personal perspective on this is that there is a certain amount of risk at shutdown from fire, that is currently not being evaluated and looked at rigorously, and that without a regulatory position, it will not be looked at.

And so, this will promote the industry looking at something, so that they understand what the fire risk is.

I don't know whether the fire risk at shutdown is high, medium or low, because nobody looks at it.

MS. ANDERSON: I don't think that's true, especially not with 805 being implemented.

MR. MITMAN: Nobody looks at it quantitatively. So, nobody has an ability to say whether it's high, medium or low. They look at it

qualitatively to see what they can do to --

MR. STONE: Can in comment on that statement, and this is Jeff Stone of Constellation?

While I agree that there may be fire risk of shutdown, our PRA staffs are asking us to look at a lot of different issues, for example, seismic in the very near future, and we have to make sure, what is the priority for doing this particular risk, do we take it as a higher priority than going forward and spending our resources now on seismic, or diverting and looking at low power shutdown.

We have to be careful on what is our real priority.

MR. MITMAN: Certainly, there is -- that is a concern, but nobody has made an argument that says fire risk at shutdown is high, medium or low.

At it is, is let's defer this until a later day, and my concern is, the later day will never occur, and that this is a way to put shutdown fire risk on the table, and we've been nosing around at this for five years, somewhere between five and 10 years, and it hasn't moved forward, and this is a way to move it forward.

MS. ANDERSON: I think qualitative evaluations do tell you though, whether or not risk is high, medium and low in specific circumstances. It

doesn't give you a real hard firm number, but if you have a methodology that you haven't piloted, you don't know how accurate it is, you don't know whether or not it's sufficient to address anything, are you really getting any better information?

MR. MITMAN: So, is the industry coming forward with a perspective to pilot a fire risk methodology? Okay?

MR. GALLUCCI: Low power shutdown methodologies do exist and people do apply them.

MS. ANDERSON: Right.

MR. MITMAN: But they're quantitative.

MR. GALLUCCI: Quantitative, there are fire -- there are low power shutdown PRA's out there. People have been doing them. They know how to do them.

MR. MITMAN: Internal events PRA's.

MR. NOWLEN: Sure, there have been attempts to 1150 -- I'm sorry, the low power shutdown risk of these did include some look at fire, but it was pretty course. I mean --

MS. ANDERSON: Right, and I don't --

MR. NOWLEN: But again, I think right now, as I understand, there is no regulatory expectation that this method would be implemented by anyone today or tomorrow, but 10 years from now, who knows.

Again, our point is that if we don't start moving the ball forward, we'll never have anything.

MS. ANDERSON: Right, but I think having it published as a draft is moving it forward, and I think having a pilot of some sort, before finalization, so that you can gather feedback before you publish a final report, that is still moving the ball forward. It's just being cautious in the way you do it, so that you don't have unintended consequences.

MR. SALLEY: You know, and just talking about, we want open discussion with the meeting, but we also want it very controlled, because this is a public meeting.

So, please, Felix will tell you when we would like to engage in that, so we don't turn this into a free-for-all.

MR. GONZALEZ: Yes, if we let -- once Steve has finished his presentation, we'll go through these other comments. That would be best point, to actually getting to an actual discussion.

MR. NOWLEN: Yes, and we actually have a comment coming up, about the alternative methods that this document doesn't cover. So, maybe we can come back to that.

MR. SALLEY: Yes, and to just complete

that, and give it back to Steve, that was one of the issues with 6850, that we did have the pilots and it was split between two different licensees, and we didn't do, you know, A to Z, you know, start to finish.

I guess something I would say, okay, we've got a draft on the table here. We want to move forward with it.

Does industry have a plant that would like to go and pilot this now, that we could benefit from, and again, I'm hearing Jeff saying that I need to do something in the near term, not five years from now, talk about the pilot, to be doing something fairly soon, that the team could work with, and we could move that.

That would be something, again, for discussion. So, with that, Steve, how about picking it back up and Felix, when we do have points, we can comment.

MR. GONZALEZ: Sure.

MR. NOWLEN: Okay, so the next slide, NEI had a comment that was similar, but brought up some additional points.

Does not present a comprehensive technically sound approach and low power shutdowns don't have a clear regulatory application at this time.

I think again, the title change that we're

proposing, "A Framework', will clarify the intent of this report.

It was not intended to be presented as a comprehensive, all-encompassing, fully mature methodology, by any means, and again, a part of it was, if you will, a gap analysis, what issues are going to need to be addressed and what sort of inputs do we need, I think are very important.

Development of PRA methods in all areas has been a long and continuing process. I mean, we've been doing fire since 1978, at least, and we're still working the issues.

We don't see this as any different. You begin the process and you work it, work it, work it, and when it's ready for prime time, as a regulatory expectation, it is a different discussion.

Again, as an author in this report, I'm not telling anyone that this is ready for that kind of an expectation. You know, again, that's just me.

We already acknowledge many areas of technical challenge in these discussions, will be expanded, as I mentioned in a couple of slides back here, and right now, there is no immediate regulatory applications that are anticipated, but it -- as Jeff said, it's been an issue that's been of long interest

to NRC.

Research has an MOU from NRR, that says they would like to see these issues addressed, and again, this is the first step in what I see as a long process to bring these kinds of methods to maturation.

The next one was the PWR Owners Group, which we identified as PWR Owners Group 1. They actually provided quite a few comments, but this one does raise the issue of complexity in the area, and states that the document falters in a number of areas.

They then reference their -- a number of their subsequent comments, that we'll get into a little bit later.

But the document also -- or the comment, I'm sorry, also says this following quote, "It's a good start to developing guidance," and really, that is what we intend to do, is to provide, you know, the first step in saying, how are we going to do low power shutdown fire PRA, and again, I think the title change and expanded discussion in Chapter One will reflect that.

The areas of technical challenge that they cite, in their subsequent comments, were largely already acknowledged in the document.

You know, we noted these as areas of technical challenge, and we are going to be expanding

those discussions, and again, the PWR Owners Group, in particular, provided a number of really good constructive comments, that we'll talk about, that we will be addressing in the document.

The fourth one, there was also a PWR Owners Group comment, number two, "No companion reference for low power shutdown internal events, fire PRA depends to a large degree on an existing internal events PRA."

We do agree with that, actually. I mean, one of the key assumptions of the methodology that is already called out repeatedly is that we assume that you have done a low power shutdown internal events analysis, before you try and do this fire PRA.

And we rely on a number of key elements coming out of that internal events analysis, to support the fire analysis, and that parallels exactly what we do with the at-power.

I mean, there is really no difference in that regard. We expect that before you do a fire PRA, you've already done an internal events at-power PRA, and we build upon that. We see the low power shutdown fire PRA, as the exact same thing.

You're going to need to have an internal events analysis, and you're going to build from that fire add-ons, if you will.

I mean, key elements are like the plant operating states, and we have some specific comments that will get into this.

But we assume that the plant operating states of interest will be defined in the low power shutdown PRA. Hence, we did not provide guidance for how to define those plant operating states. That is an issue that is much bigger than fire PRA, by itself.

It's an issue that needs to be addressed by the community. It's an issue that is being taken up in the standard. You know, there is a lot of work going on, to try and say, how should we be defining plant operating states?

We didn't try to solve that problem, but what we did say is, internal events is going to define that for you, and whatever internal events does, fire will follow suit.

We will take the plant operating states defined, and we will address those in the fire PRA.

So, again, we definitely agree with the comment. You know, right now, there really isn't an internal events methodology, per se. There are various methods out there, but they're, as with the past, that are generally documented via specific studies that have looked at low power shutdown risk, individual plants

or NRC sponsored efforts that have looked at low power shutdown.

So, it is a similar kind of place, but you know, people have done low power shutdown internal events, and so, again, that is another thing that's progressing in parallel, and again, we just don't see this as a barrier to publication. We agree, but we don't see it as a barrier to publication.

We've clearly acknowledged it. We've discussed the implications, and that's where we're at.

Let's see, the next one is EPRI comments one through eight, really raised various technical challenges that parallel those of Erin and NEI. So, a number of these, we're actually referencing back to the Erin comments or the NEI comment.

But there is one particular comment, EPRI-1, that added a new element and it cites -- this is the one that Victoria was talking about a moment ago, "The document fails to address configuration risk management, which is seen as the dominant application of risk analysis during shutdown conditions."

That is true, and the original, as Mark said, we originally planned to do this as a part of the EPRI/RES MOU for research, and we had actually developed a project plan with EPRI, and what we did is, we looked

at the needs, and we divided up the work into, you know, things that NRC would take a lead on and EPRI would act as peer review and support, and things that EPRI would take a lead on, and NRC would act as peer review and support, and as it happens, the non -- the alternative methods, non-quantitative approaches, configuration risk management, those kinds of things were the ones that EPRI chose as their lead elements.

They would take a lead on those activities, and NRC agreed to lead the elements that were related to quantitative PRA, the more traditional PRA approaches.

Now, what happened is, we actually delayed the project for over two years, because EPRI had resource issues. NRC had provided funding for the activity. EPRI didn't have corresponding funding.

So, we put it off for two years, but then NRC said, you know, "We need to move forward. We've allocated money to this. We want to move forward," and so, what we did is, we moved forward with the elements that NRC had agreed to take the lead on, with the expectation that EPRI would eventually come in and participate with the other elements, and that really didn't happen.

So, bottom line, we agreed that there is

a place for these alternate approaches, configuration risk management is a great example.

What the role of each of these would be, ultimately, I haven't got a clue, but it was never our intent to dismiss those as having a place. It's just that that is not what NRC's plan had been.

We proceeded based on the original project plan, and our scope, as it was defined, was to deal with the quantitative PRA elements.

Okay, so, those were the comments that dealt with, you know, 'do not publish', at least the high points.

Now, like I say, my intent is to go to the tracking spreadsheet and sort of go comment by comment, and discuss the details, because again, these were paraphrased. There is -- a number of them said, "Well, see all of our other comments below."

So, unless there is comment, the intent is to go to the Excel spreadsheet, at this point.

MR. SALLEY: You want to take any discussion before we go to the spreadsheet, Steve?

MR. NOWLEN: Sure, I mean, like I say, that is --

MR. GONZALEZ: Anyone got any general comments they want to say, but I mean, for sure, you're

going to have chances to, you know, express how you feel about -- you know, we're going to -- we're planning on addressing the comments, or I think what we should do is, Steve -- have Steve discuss how we're planning, or how we did address the comments, and then see if you guys agree with it.

MR. GALLUCCI: I think we should get the -- I think there is an elephant in the room, which is 'do not publish', and I think we should deal with the elephant, and then get back to the specifics.

MR. NOWLEN: Well, and that's why I chose -- Mark disagreed with me, somewhat about this approach.

But I felt the same was, as it's the elephant in the room, because if we're 'do not publish', then --

MR. SALLEY: All these other ones are --

MR. NOWLEN: -- the other comments take on a different meaning.

You know, as Victoria said, even a draft is something, but I mean, it does depend on whether we choose to update the document, reissue what, publish or whatever, but it definitely is the elephant in the room.

MR. SALLEY: Yes, and obviously, if we were going to say, "Okay, do not publish," yes, we agree,

I mean, this meeting would not be taking place, okay.

So, obviously, we're wanting to go ahead. I've got a user-need request. It's probably five or six years old, as Jeff said, it's one that I'm way late on, and I need to move forward.

Now, the whole point of this meeting is, what is the best way to move forward, and that is why we want to engage and get your thoughts and ideas.

I want to meet my users request, that I give him a tool, or a method that works, and that we are where we need to be, and again, this is a dangerous one.

You seen the history here, and it is somewhat torrid, but this again, will be a state-of-the-art type project, where we think this is going to move and continue on.

I mean, look at 6850, all right, even though we've got it, people are using it, you know, we still entered the FAQ process, and put a supplement out with the FAQ's. So, even with that method, it was done.

Now, we're looking at another process again, yet again, to work with EPRI to refine it some more.

So, what Steve said in the beginning, we see this as, we need to get something started, and then we'll start into the refinement.

So, obviously, that is our intent, here. Any general comments? If not, I'd like to have Steve start getting into the specifics and we can discuss it.

MR. AMICO: I have a general question, which is, you've mentioned the user need, which of course, that's NRR.

So, my question is, if this is not going to be -- if nobody is going to be required to do this, and you know, utilities, these days, you know, they have a tendency to want to wait until the standards are out.

You know, you talk to utility management and they ask the question, "Well, you know, I mean, is there a standard," and we can say, "If we do this, we meet the standard," because if the standard comes out after we do it, then we're going to have to go back and figure out if we did it right, you know, or whatever.

So, the question is, what is the user going to use this for? What is the real user need, if nobody is going to be told they need to do this, and most likely, nobody is going to do it?

MR. GONZALEZ: For the purposes of our transcribing, can you say your name before?

MR. AMICO: Paul Amico from Kleinsorg Group.

MR. GALLUCCI: The user need is that there

needs to be a framework to develop methods to do this, and as I think Steve and Mark have reiterated, this is the vehicle by which we wish to establish, we seek to establish a framework.

MR. MITMAN: And there is an NRC Commission position on expanding the use of PRA, in general, and that includes both internal and external events, which encompasses fire, and it includes both at-power and shutdown conditions, and we continue to make slow progress on that, and as I far as I know, the Commission has not rescinded that.

So, there is a regulatory driver coming from the Commissioners, to move forward with risk technology and PRA capabilities.

MS. ANDERSON: Well, I think, I mean, if I recall the PRA policy statement correctly, it's that risk information is to be used in regulatory applications, as supported by the state-of-the-art, and I think those are two important points.

It's you're suppose to use it, not just model for the sake of modeling, and making numbers and making, you know, pretty charts and all of that, as much fun as that is. You're suppose to be applying it in regulatory space.

So, I think what Paul really wants to know

is, what regulatory space are we applying this in, and that's supported by the state-of-the -art, and yes, I understand this is what we need to do to eventually advance the state-of-the-art.

MR. MITMAN: Well, one place that we intend to use PRA tools with shutdown is in the ROP and in the SDP.

You know, we continue to use methodologies and promote them, and push forward with them.

We would much prefer to not be out on the bleeding edge by ourselves on this thing, but we have this direction from the Commissioners, and we can continue to move in that direction, all right, and we'd much rather do it in a collaborative environment, where we're sharing understandings and we're moving forward together. But if need be, we'll move forward by ourselves.

So, that is the regulatory driver that I see, that the NRC has on this.

MS. ANDERSON: All right, so, it's ROP. Are there other regulatory drivers?

MR. MITMAN: I think there is a regulatory driver in new reactors, okay.

MS. ANDERSON: What would that be?

MR. MITMAN: I'd have to go back and check

the actual language, to get it right.

But there is the 55th --

MS. ANDERSON: But there is no standard, so there is no regulatory driver there?

MR. MITMAN: Yes, but we're in a catch-22 here.

MS. ANDERSON: Right.

MR. MITMAN: We don't have any standards, because we don't have any guidance, and we don't have any -- and now, we're making an argument that we don't have any guidance because we don't have any standards, all right.

And you know, there is pressure now, to kill the ANS/ASME low power shutdown internal events standard, okay, for various reasons, and we're in this catch-22, and it's like, the Commission has a policy statement to move forward.

The industry collectively, the regulators and the licensees, the vendors, understand that approximately 30 percent of all risk comes from shutdown, okay. There is a huge chunk of risk that we don't fully understand, and this is a step to better understand that.

MR. GALLUCCI: And without 6850, there wouldn't have been a fire PRA standard.

So, as much as it gets maligned, it's

without it, we would probably -- and 805 may not have gone forward.

So, getting things out there, whether or not there is a standard currently, is still a good thing to try to do. It gets you started.

MR. MITMAN: And if you look at the internal events progress, you know, first EPRI came out with a PSA applications guide, which after being used quite a bit, then the standard came out, all right.

If you go and you look at internal events shutdown, the argument that we're facing right now is, you know, nobody has done anything, so we don't know how to write a standard. So, why are we writing a standard?

And so, all right, in this case, we say, okay, let's come forward with a guidance first, and promote it that way.

MS. ANDERSON: Right, my point was that there is no regulatory driver for new reactors, absent a new -- absent a standard.

MR. MITMAN: There is Commission guidance to expand the use of risk, and that includes new reactors, all right.

I think there is a whole litany of places in 10 CFR that call out for the use of risk. You know,

does it call out specifically for the use of fire risk? Probably not, explicitly very often.

But that doesn't -- you know, the absence of directly identifying fire risk doesn't mean that the general argument for understanding risk does not include fire risk.

MR. GALLUCCI: There is a regulatory driver, that NRC is responsible to -- for the safety of the public.

MS. ANDERSON: Right.

MR. GALLUCCI: Standard or no standard, we need to have fairly good feels for what the risks are, the risks are, et cetera.

So, a standard is not a requirement before we go forth with regulatory activities.

MS. ANDERSON: For new reactors -- I was just talking about the regulatory driver for new reactors.

MR. GALLUCCI: Well, we'll have the same burden to -- risks are -- risk analysis, PRA's are being required for the new reactors, to my understanding.

MS. ANDERSON: Right, but you only -- the scope of it is limited to where there are existing standards.

MR. GALLUCCI: I don't think -- not for

protecting safety to the public.

MR. SALLEY: And let me get this back on track here a little bit, we're kind of off, a little bit.

We're talking about a NUREG report here, which there are thousands of NRC NUREG's and NUREG/CR's out there. So, let's keep this where this is. We're looking at developing a method.

I don't want to get too deep into the regulatory side of it. That is a separate argument for a different day. Our focus here today is on the NUREG report.

MR. MITMAN: And I think we've both voiced our positions, and I think we understand our position, and maybe it's just a time here and now, to agree to disagree.

MR. SALLEY: And again, my thought here is, I want to look at a NUREG, which is -- we all know where a NUREG fits in the regulatory structure, and this is for the development of a method.

MR. STONE: Can I ask a quick question? I apologize, I know you're trying to get off the subject to some extent.

Does the funding --

MR. GONZALEZ: What is your name?

MR. STONE: Jeff Stone, I apologize. Is there funding or research or pilots planned for this, because as we discussed, several problems we had with 6850 is the fact that we tried to implement it relatively rapidly, without doing really good pilots of it.

Is that in the plan for now, or is there funding, or does your research plan include that?

MR. SALLEY: This is Mark Salley. Let me take this.

Again, as Steve showed, and you can look at the slides, this project had more from where it originally was and what its original intent was, when it was a joint program, to where it is now.

At this point, it's no longer a joint program. So, the things that EPRI brings to the table in those MOU type things, they're not on the table for me, right now.

So, I'm looking at it more to get back to my core need. I'm way late on this, to develop the quantitative method of doing it, so that I've got something for Ray and Jeff to start looking at, and get over there.

Moving forward, you know, if I could get a pilot plant or something like that, that wanted to be a part of this, we would definitely consider it.

But that is something that I just can't go out and start recruiting pilot plants. You know, this is, again, where I work closely with EPRI, where they have those connections, and that is why that works. I'm sorry, but we've kind of fallen out of that arrangement. So, we're looking at moving forward with the standard NUREG, at this point.

But again, today's meeting, we may have some new ideas and some new suggestions.

MR. STONE: Thank you.

MR. AMICO: Let me just, you know, go back and talk about -- let's just forget the whole thing about what some say is the standard or whatever, and let's talk a little bit about -- and I can say that this is -- this is Paul Amico, again, by the way.

I've been doing this stuff for like close to 35 years, so, I remember when we were developing internal events, and we didn't develop methodology documents like this, until a whole bunch of PRA's were done.

People went off and started doing PRA's and doing different things, and there was no methodology document until 2300, and there were dozens, I mean, plenty of PRA's done first, and we said, "Okay, we learned our lessons. Let's put it in a methodology document."

Here, you're trying to write a methodology document for low power shutdown fire PRA, when virtually none -- virtually, none have been done. In fact, we haven't had a methodology document for internal events low power shutdown PRA, and very few of those have been done.

So, it's all well and good to say, we know what we're doing, but you know, that is the cold question about the pilot. It's not even so much a pilot. It's like, how can you write an methodology document, when nobody is even -- you know, there is not enough stuff out there, to base the methodology on, not enough examples.

MR. GALLUCCI: I think that is why the title is being changed to 'framework'.

MR. SALLEY: Exactly.

MR. NOWLEN: That's part of it, yes. You know, folks have done low power shutdown fire PRA's, but I agree, I mean, the traditional approach for methods development was, individuals went out, did what they could and eventually, somebody took the time to draw together the methods that were out there, and bring it into a package.

You know, we don't have that luxury with this. I wish we did, and what we did is, we started

with 6850 as a general framework and said, okay, if you're going to now, having done 6850, which is also an input assumption, if you're going to now lay fire at low power shutdown on top of your at-power analysis, what are the addition challenges? What are the additional needs? What are the additional considerations?

And that is what this document does, and I disagree that we have to wait for, you know, 50 people to go and try this, or 10 people to go and try it, and bring it back.

I mean, clearly, we can benefit from that, but having a framework out there, that we can work from, I think is still a benefit.

It moves the ball forward. At least, we have something to talk about. Someone tries it and they find things don't work, great, bring the feedback back, and we'll adjust the framework.

But again, this seems like the logical step, at this point, to move forward.

MS. ANDERSON: I mean, I think we do appreciate having it re-titled. I think that is helpful, to call it 'framework'.

But it might -- we might need to think about this a little bit more, but I'm not even sure, even 'framework' might have -- might be interpreted to mean

that there is more out there than there really is, and that it's more solidified than it is, and maybe recent research on LPSE fire PRA, but that's word-smithing. So, I'll stop.

MR. NOWLEN: We meant framework as a pretty loose term. I mean, framework, framework is an empty structure, if you go to the ultimate dictionary term, right.

I think it's a little more than that. It's more than an empty structure, but I actually saw framework as a pretty strong modifier on this report.

MR. GALLUCCI: So, other words can be considered.

MR. NOWLEN: I'd be happy to consider it. I mean, I'm not hung up on the title, at all. To me, this was a good suggestion that we change it. It was actually -- one of the comments had said, "Why don't you change the title to 'framework'," and we said, that's a great idea.

MR. ZEE: Well, I'll agree, Victoria, I think the change of the title from 'methodology' to 'framework' suggests there is a tone change, but I guess I'm reserving judgement until I read all the other changes in the text of the document, whether it carries that concept through the rest of the document.

Titles are one thing, but the words in each of the sections describe what it is you can and can't do, and how you're to do things.

MR. SALLEY: Great, so, let's come back. I think that today --

MR. ZEE: That is --

MR. SALLEY: -- after we've gone through comments --

MR. ZEE: Right, that is where these --

MR. SALLEY: These would hit the target better for both the user and the stakeholder.

So, with that, Steve, would you like to get into the detailed comments?

MR. NOWLEN: Sure. Okay, so, now, these -- the order is somewhat arbitrary. It wasn't -- it was just the order that they came in. So, we were dumping these into a spreadsheet for tracking purposes. So, there is no particular order here.

It actually starts with the comments that we got from Vince Young, the RCS engineers -- I'm sorry, RSC Engineers.

The first comment was a discussion about how you count fire ignition sources. This is VY-1, and it suggested adding words to provide clear instruction for the potential treatment of de-energized ignition

sources during low power shutdown, assuming that such an ignition source was carried forward from the counting step.

Basically, what this gets to is that the implication is that when you're doing the at-power PRA, you don't count certain things as ignition sources because they're only used at low power shutdown.

And that actually is not what 6850-101-1989 says, right now. It's actually silent on this topic.

We discussed it at the time. There is certain equipment that is de-energized when you're at-power. Do you count it as a fire ignition source or not? Right now, the methodology says yes, you count it.

Now, there is -- you know, the question is, would you postulate a fire scenario for that equipment when you're at-power, and the door is left open to make the argument that no, I would not postulate a fire here, because this component is de-energized when I'm at-power, the only time.

So, it opens that door, but it actually doesn't say anything right now about not counting it. It gets counted, but you open the door to perhaps, now putting fire scenarios there.

Now, that is a little bit of disconnect,

but in terms of this particular report, we are proposing to reject this comment, because it's, in my mind, it's something that ought to go back to the at-power method, and say, are we treating things properly there?

There is a little catch because this gets a little complicated. There are certain things that 6850 right now, assumes the likelihood of fire is the same, whether you're at-power or not.

All right, if you're in low power shutdown versus at-power, 6850 did not distinct -- make any distinction between fire frequencies. Electrical cabinets are one, for example.

What the low power shutdown method did is, said that because at low power shutdown, there is going to be large sloughs of plant equipment that will be de-energized and out of service, that it's going to be a more important consideration for low power shutdown.

So, we grabbed the bull by the horns and said, you know, if that is the case, then that would be a consideration in developing fire scenarios.

Now, again, the at-power method right now, doesn't make a corresponding argument. So, again, we've proposed to reject this comment on the basis that this is really something that needs to be taken back to the at-power method and perhaps, discussed there.

But I can't solve the at-power question with the low power shutdown framework document. Does that make sense? Comments on that or questions?

I didn't hear Vincent on the phone, by the way. Do we by chance, have Vincent on the phone? I heard a couple of folks ring in. I'll take that as a 'no', okay.

MR. GONZALEZ: Any comments? People on the phone, comments?

MR. ZEE: My only thought on that is that, yes, I think I need to stew on what you said.

MR. NOWLEN: I understand.

MR. ZEE: Because I agree with what you said for some of the ignition source fields, because the idea was -- is, if the industry event experiences a fire, and a fire occurred during a shutdown site for non-power operation, was there something unique about that fire that said it only occurs during the shutdown?

If the answer is no, then it was included in the calculation of generic fire frequency for use at at-power, but for events that occurred because something unique had happened during an outage, it was excluded from the generic fire frequency.

MR. NOWLEN: Right.

MR. ZEE: So, I need to stew a little bit,

on what you said, because I think there actually is some distinction, in those fire frequencies in 6850, that they were developed specifically for use only at-power.

MR. NOWLEN: It's bin by bin, so some ignition source bins are counted for all modes.

MR. ZEE: Right, that is --

MR. NOWLEN: Other bins, yes.

MR. ZEE: Right, so, yes, that's why I'm saying, I think I need to stew on this a little bit.

MR. SALLEY: Yes, and I agree with you, and Rick, this is one for your firemen's database.

Okay, you get that database, that we can actually have something to stew on, to go in and to look at these different events, and when they occurred and what they occurred in.

MR. NOWLEN: Yes, and we have a couple more comments on fire frequency. So, I don't want to go too deep here.

But because that is true, but we'll get to it in a minute.

This was specific to the idea that people aren't counting equipment associated exclusively with low power shutdown in their at-power fire PRA, and that is not really what the methods says.

So, I mean, I've put down that we're

rejecting the comment, but to be honest, I have to think about adding that as a caveat, that if you didn't count things that were associated only with low power shutdown, when you did your at-power PRA, then that is a catch. You need to go back and reconsider that.

So, in that sense, I planned to add a caveat, but --

MR. WACHOWIAK: That is kind of accepting the comment, because the comment just say, make sure that it's consistent.

MR. NOWLEN: Well, I struggled with that. I'm sort of accepting it in principle, maybe, because I see that there is a point here, but I don't want to say what this comment suggested I say, because what the change that is suggested here implies that the at-power method says this, and the at-power method does not say this.

MR. WACHOWIAK: Okay.

MR. NOWLEN: Do you see what I'm saying?

MR. WACHOWIAK: But in practice, at least someone thinks that they do that.

MR. NOWLEN: Someone thinks they do that.

MR. WACHOWIAK: So, if they do, do that, count -- exclude things from the at-power that are now in plain shutdown, then you have to make sure you go

back and re-include them, so you get your counts correct.

MR. NOWLEN: Right.

MR. WACHOWIAK: So, it's really, you're consistent across both PRA's. If things were included or excluded because of the mode in the base PRA, then they need to be reconsidered for the low power shutdown mode.

MR. NOWLEN: That is right, and I'll also add that it doesn't scare me at all, that someone might have done this, because if you exclude something from the count, you're reducing your total population and you're adding frequency to the things that you do count, as a result.

So, this would actually be a conservative approach, that you simply didn't count the things that are exclusive to low power shutdown, when you did at-power.

You're actually -- so, you know, is there an issue here or not? Not a burning one, pun intended.

MR. GALLUCCI: Only if you lost it in the numerator all together.

MR. NOWLEN: Well, this was --

MR. GALLUCCI: If there was one piece of equipment and you threw it out, then it wouldn't appear in the numerator, and so, you'd get a zero --

MR. NOWLEN: No, it doesn't -- well, it doesn't appear in the denominator.

MR. GALLUCCI: Denominator, then it wouldn't appear in the numerator either, because then you're not counting that equipment, at all.

If it was --

MR. NOWLEN: Well, yes, sure.

MR. GALLUCCI: If it was just one piece. I mean, if there is 100 of them, then it should be 101 versus 100, it's not an issue.

MR. NOWLEN: Yes.

MR. GALLUCCI: It's where it was one, and now, it's zero, then it's not in the numerator.

MR. WACHOWIAK: So, not to belabor comment number one of thousands, or we'll never get done, but the intent here is, you just want to say that you can't just take the counts from the at-power PRA and apply them blindly. You need to make sure that if you modified the counts for the at-power, they need to be appropriately screened for the shutdown.

MR. NOWLEN: Correct.

MR. WACHOWIAK: So, I think -- anyway.

MR. NOWLEN: Yes, I'm going to take that as an action to add that as a caution. Depending on how you did your counts for your at-power analysis, you

may need to reconsider some things.

Okay, let's see, the second comment from RSC was in table five, "The zone of influence and severity factor recommendations table has no entry in the recommended method column for bins 33 and 37."

Now, bin 33 is cited as a 'not considered for non-power POS's', so, a zone of influence isn't needed.

The lack of zone of influence in the case of bin 37 is an oversight, and we'll add -- basically, in this case, it's assume 1.0. This is one where there is no split fraction. It's not one that you screen initially. I think it's one of the transient bins, if I remember.

MR. ZEE: Yes, it's transient.

MR. NOWLEN: So, we don't screen transients. You come in the same context of that particular table. So, that one should simply be assume 1.0. So, those will be corrected.

Let's see, VY-3, "General analysis flow chart for Task 11 de-titled fire modeling has flow chart boxes and text that are cut off."

This is basically an artifact of the PDF file, the way it was generated. So, in effect, it's a typo. We'll fix it.

There are -- some things got messed up with embedded fonts that went into that figure, and so, depending on what computer you looked at it on, if you happen to have the same fonts, it worked. If you didn't, it didn't. So, we'll clean up the font issue. I think I've got another one like that.

So, those were the RSC engineers comments.

The next ones were from Doug True and Erin Engineering. I believe there is only one. This was one of our, the document should be withdrawn comments. We've really gone through that already, and so, I don't intend to address this further, at this point.

NEI-1 is also one that said the document is premature, do not publish, and I think we've talked in detail about that one, as well.

That takes to the PWR Owners Group comments. PWR Owners Group comment number one was another one that raised an issue on publication.

This particular comment was more of a general introduction to the rest of their comments. So, we don't really see that there is any particular response required for this comment, in and of itself. The response is really embedded in the ones that follow.

So, PWR Owners Group-2 was also a comment specific to premature, and again, we've already covered

that one, so, I don't intend to go further.

MR. STONE: Can I ask a question? You're saying the comment PWR-2 is the same issue? It seems to me it's a slightly different issue.

MR. GONZALEZ: Who is this?

MR. STONE: In the fact that, I mean, I understand, I'm not saying we should stop this work, because obviously, eventually, we're going to want to understand this risk.

But it seems like this is saying there may be a little bit of a cart before the horse, in the fact that internal events -- I mean, the -- for internal events, low power shutdown is not mature or really developed.

We have to be clear that -- I'm not sure, is the NRC addressing that piece, as well, or is this -- to me, before you do a low power shutdown fire model, you have to have a model that works for internal events. The basic structure has to work, and I'm not sure we're there yet.

I don't know how -- if you stop this document because of that, it's just saying that it is not a technical problem with moving forward with fire and shutdown. I'm not sure that is the same thing.

MR. NOWLEN: And could you identify

yourself?

MR. STONE: It's Jeff Stone from Constellation.

MR. NOWLEN: Okay, thanks, Jeff. Yes. This is --

MR. MITMAN: Can I jump in here?

MR. NOWLEN: Absolutely, Jeff, go ahead.

MR. MITMAN: Okay, it's quite true that there is no low power shutdown approved standard, but that is not to say we don't know how to do shutdown PRA analysis.

The industry, the global industry has been doing shutdown analysis since at least the 80's. There are numerous fire -- or shutdown PRA's that have been done.

The NRC continues to do shutdown internal events modeling, and yes, we don't have a standard, but we know how to do it.

And so, it's --

MR. STONE: I'm not sure that's the case. I'm not sure I agree.

We have all done various models. No one has done one close to what is the draft standard today. I don't feel that right now, we have a mature process for doing shutdown PRA's.

I know we had the old ones we did in the 90's, and I wouldn't call those high quality PRA's, by any means.

MR. MITMAN: They were of close to comparable quality of the other PRA's that were being done at the same time.

It's quite true that the industry has not -- has chosen not to move forward with doing additional internal events modeling at shutdown, but that doesn't mean we don't know how to do it.

Certainly, we could do better. We could refine. We could refine the methodologies. We could improve the methodologies. We could improve the databases. We could improve the HRA analysis, if more work was done.

But again, we're back into this chicken or egg thing, and a lot is known about how to do shutdown modeling, and shutdown modeling does continue, though on a very much less extensive rate than the internal events at-power modeling.

MR. AMICO: This is Paul Amico, again, from Kleinsorg Group.

I'll just reiterate what Jeff just said, which is, you know, the comment that we know how to do shutdown modeling is that what we've got is, we've got

a bunch of people that have dabbled in shutdown modeling and who think they know how to do shutdown modeling, but there is no consensus on what is the appropriate approach, what are the right ways to do it.

We're still experimenting. We're like in the early days of internal events, where people are still experimenting with ways to do shutdown.

So, maybe we kind of know how to do it, sort of, but there is no consensus on what constitutes a quality shutdown model, period.

MR. MITMAN: The Seabrook shutdown model is not a quality model?

MS. ANDERSON: Maybe technically precise might be a better term than quality, just to get the point --

MR. STONE: That may be the best example, but the industry hasn't come to a consensus on the approach or done the pilot to review it.

MR. MITMAN: So, absent the industry's willingness to move forward, the NRC will move forward in its -- fulfilling its regulatory requirements, absent the utilities cooperation. That is our statutory responsibility.

MR. STONE: I understand that. My point is, is that I think to actually do a fire shutdown model,

you have to go forward and do a quality internal events model, first, is the -- is probably the biggest thing for that, first.

There has to be -- you can't develop a fire PRA, until we have a consensus method and we've actually developed a real shutdown model, and I'm not disagreeing that we've dragged our feet. I mean, I don't want to sugar coat that, by any means.

But obviously, we have to get that right first, and then we would have -- then we could get this right.

MR. NOWLEN: Well, getting back to this report, because I think again, we're off track here, but this report makes very clear, that I agree with you. You have to have an internal events low power shutdown PRA. Not only that, you have to have an at-power fire PRA, before you even start down this path of a low shutdown fire PRA, okay.

So, what this report has done is said, what are the implications of that assumption? You know, I am assuming you have done your internal events low power shutdown PRA. What does that mean? What am I expecting to get from that study, and how am I going to use it in the low power shutdown fire PRA, same with the at-power.

So, you know, in that sense, we already have a very lengthy discussion of that topic in the report, and in a sense, I'm sort of throwing down the gauntlet to the internal events low power shutdown PRA, as well, saying, I expect that you're going to provide this stuff for me, and you know, the most glaring one is the POS's, the plant operating states.

I need those to be defined. I am not going to tell you how to define it. I expect that the internal events community will come to some consensus about one or more methods for defining plant operating states to be considered. Once you've done that, fire PRA will follow.

So, in a sense, in the context of this report, I don't have to deal with all the issues surrounding quality and standards for internal events PRA, but I do need to lay out the expectations I have, coming into this process, as to what I'm getting from that. Does that make sense?

MR. STONE: Yes.

MR. SALLEY: It sounds like framework, to me.

MR. NOWLEN: Framework, it's framework. Well, it's also, like I say, we didn't use the words in the report, but in a sense, a part of the role here

is gap analysis.

You know, what do we need to even do this, and Chapter One, if you read Chapter One of the methodology, that is what it's all about, what are the basic input assumptions? What are the expectations coming in here? How are you going to use the information? All of that.

MR. SALLEY: Do we need to say gap analysis and put that in the report?

MR. NOWLEN: I am thinking about it.

MR. AMICO: This is Paul Amico, again, and I'll just get back to, maybe again, I don't know if this is a lesson learned or the way it was done in the past, or whatever.

But what the NRC did to jump start internal events PRA was not go off and write a methodology document.

What they did was go develop a bunch of PRA's. They started with Wash-1400, then they did the Crystal River Safety Study. They did the four IREP studies. They did RISMAP, and NRC did, actually did a bunch of PRA's, and then wrote a methodology document, and that is not -- that is what's not happening here.

MR. NOWLEN: No, I understand, Paul, but again, Mark's point that he raised before, our intent

was to do that via the EPRI collaboration.

You know, as research, I don't have that access anymore. The things that happened in 1150 days don't happen today.

You know, the things that happened when we did RMEIP are not the same as the way we work with industry today.

So, independently, I can't go off, just like Mark, and solicit a pilot and say, "Hey, do you mind if I come in and do all this work with you?" It just doesn't work that way.

The vehicle for getting that done is through the EPRI collaboration, and I'm more than happy to go down that road. I'd love to see us do it, but you know, in the absence of that, we move forward to put together this framework, and say, you know, what are the challenges?

You know, today, I'm not sure that I would recommend that we jump right into a pilot tomorrow. I mean, I think the first thing I would want to do is jump on the new database, and update frequencies and what not.

We didn't have that luxury with this report, but the database is on the verge of appearing, and that would be the first place I'd go, but you know, again,

it's all something we can discuss, going forward.

MR. JULIANS: Steve, this is Jeff Julians from Scientech.

So, aren't we just -- isn't the NRC, as a processor, doing a pilot for level three, basically, that is doing the pilot before the guidance?

MR. NOWLEN: I have no clue. What --

MR. JULIANS: So, there is precedent where in today's environment, where the NRC is doing that.

MS. COOPER: That is not what that is. This is Susan Cooper, NRC.

They level three effort that the Office of Research is doing is not to be considered a pilot. Its scope and objectives will be different, I would say, and including that that is only one of probably a dozen or more different fire -- you know, PRA hazards that will be addressed by that study.

MR. JULIANS: Okay, but no, my point is, though, that it's not -- maybe a pilot is too strong a word, but that the NRC is, in other areas, going forward with doing this study first, before developing, or in conjunction with developing the guidance.

MR. NOWLEN: Well, I think there is a difference, though, between doing a fire analysis and doing a level three analysis.

I mean, to do a fire, I need to be in the plant, with intimate access for a considerable period of time. I think level three, it's not the same, right, you're taking level two results and extrapolating to what happens offsite. That is a rather different beast.

MS. COOPER: Right, and to clarify, the Office of Research's effort, with respect to level three is going to start with the use -- it's expected to start with the use of the utilities existing fire PRA, internal events PRA, and any other PRA hazards they've already addressed.

So, we will not be starting from scratch to do that work.

MR. JULIANS: But my point is, it's not the where we're starting from or what level of interface you need with the plant, because even in a level three, you need to interface with the plant.

For example, the work you're doing with the severe reaction management, but the point is, that there are other areas like the older stuff, like Paul Amico's point, where you're doing projects and doing the studies before you're developing the NUREG.

MS. COOPER: Yes, we're not going to be -- I don't anticipate us developing methodology, as a result of -- I mean, that is not one of the explicit products

that I recall from the level three. Of course, I'm not a spokesman for this level three project.

But I don't know that it's anticipated that new methodology reports are to be coming out of this study.

MR. NOWLEN: That was more of a requantification of --

MR. SALLEY: Level three is a different discussion.

MS. COOPER: It's the demonstration of state-of-the-art.

MR. SALLEY: Level three is a different discussion.

MS. COOPER: It's existing state-of-the-art. That is what it's a demonstration of.

MR. NOWLEN: I mean, again, for our perspective, the path to get a pilot done is through the EPRI collaboration. That is the best path for us, and we're open.

MR. SALLEY: Next comment?

MR. GONZALEZ: Now, before we come to you, let's take a break, 10 minute break, and then after we come back, we're going to discuss HRA comments with Susan.

MR. NOWLEN: We have Susan here, and she is going to discuss the HRA comments. There is a handful of those, but she has a time constraint.

So, we're going to jump out of order here and jump to the HRA questions, after the break.

MR. GONZALEZ: Okay, so, as per my watch, it's 9:47 a.m. We're going to start 10 minutes afterwards, which is 9:57 a.m.

MR. SALLEY: How about 10 o'clock?

MR. GONZALEZ: Sounds good.

(Whereupon, the above-entitled matter went off the record at approximately 9:50 a.m. and resumed at approximately 10:00 a.m.)

MR. GONZALEZ: We are staring again, our public meeting, and the comments we're going to start next with Susan Cooper, specifically, the comments related to HRA, since she won't be able to participate at the whole meeting.

So, Susan, before you start each of the comments, just cite the identifying parts, so we can look over it.

MS. COOPER: Sure.

MR. GONZALEZ: So, we're all on the same page. Thank you.

MS. COOPER: Thanks, Felix. According to

what Felix gave me, so far as HRA comments, I am just going to go ahead and identify those comment identifiers, so, you know.

First of all, the global one from NEI, number one, was identified as being under HRA, and for the interest of time, I'm going to leave that one, to discuss that one, last.

The other comments are all coming from the PWR Owners Group, and those numbers are PWR-48, 49, 53 and 59.

So, we'll start with those PWR Owners Group comments, first, and I think what I'm going to do is go ahead and sort of summarize them here, and see if there is any feedback from anyone, if you want to reject -- rephrase.

But there is considerable overlap between these comments. So, I don't know that it's cost -- time-efficient to go one by one.

So, PWR-48 talks about the issue of human induced initiating events and dependencies.

PWR-49 talks about the issue of latent failures and shutdown. PWR-53 talks about what procedures are being used during a shutdown, and PWR-59 returns to the idea of -- the concept of pre-initiator events.

So, we've got one with respect to initiating events, two with respect to pre-initiators or latent failures, and another comment with respect to procedures.

First, with respect to human induced initiators, what is in the report, and the references, although I am not real sure if we picked up the right ones in the report, goes back to some work that the NRC did back in the -- this general time frame of when the two low power and shutdown PRA's were done by Brookhaven and Sandia. It was actually done just slightly afterward.

There was actually an HRA team put together by the NRC, with the idea of putting together a low power and shutdown HRA method to support the Brookhaven and Sandia teams, and unfortunately, that HRA team was put together a little too late to meet the schedule of those two PRA studies back in the 90's. I think that is documented in NUREG/CR-6143 and 6144.

In any case, but that team continued on. They published a report, it was a joint report, Sandia and Brookhaven, that was NUREG/CR-6093, and then a team from Brookhaven continued work, more generally on dependencies and errors of commission, and two additional NUREG/CR's, which also picked up some full

power issues.

But the bottom line is that one of the things that came through fairly clearly in looking at low power and shutdown events, was that there were some instances in which there was an effect on the control room, and their ability to respond to an event in low power shutdown, by things happening outside the control room.

Specifically, there were some drain-down events and some other types of events, where there was -- there appeared to be a slower response by the control room operators because of what was -- because of the human induced initiator outside.

That was not always the case, and when we looked at fire events a little bit later, another team of folks started looking at fire events a little bit later in the 90's, unfortunately, that work is not published, I'm looking at publishing that now with Sandia.

It wasn't clear that there were some of those same kinds of dependencies. I mean, in other words, you know, if a transformer blows up then catches fire because of some hardware failure versus someone backing up a pick-up, it wasn't really -- didn't really bother the control room.

But it wasn't clear that that could be

totally ruled out, and that is why we put something in the report, to that effect.

A part of that has to do with the fact that the operators in the control room now have to have responsibility for understanding the configuration of the plant. That is part of what their job ends up being, is to understand the plant configuration, as it's changing and how -- and you know, continually day by day, with the work that is going on. That is part of their, you know, needed understanding for response.

I think the expectation is that for most fires, that is -- even if they're human induced, that is not going to be an effect, but it just wasn't something that we thought we could rule out.

MR. STONE: Could I ask a quick question? This is Jeff Stone from Constellation, again, and I apologize, I haven't gone through to where this is discussed in the NUREG, in the last couple of minutes.

Is your discussion that it isn't -- it seems unlikely, but it could possibly, is that -- is the context of what you just said in the NUREG, or are you saying we have to evaluate in all cases?

I am just looking for some context in there, that would -- your tone is that it isn't likely, but it can happen. Is that it?

MS. COOPER: Yes, that certainly would not be in there, because as anyone who has done fires know, or low power and shutdown, this is a very plant-specific issue. It has very much to do with how a plant is organized and set up and so on and so forth.

So, you know, making some kind of blanket statement like that, probably wouldn't be prudent.

MR. STONE: Okay, understand. Thank you.

MS. COOPER: Sure, anything else?

MR. WACHOWIAK: Yes, but once again, along that line, we could see what has happened in some of the cases with the other fire documents, is that there is a bullet in the table that says, account for the dependencies, then sometimes later, someone would say, "Oh, there is no dependents accounted for here, therefore, you don't meet the requirements," and what you're saying is, there might be a dependent, not there is a dependent.

MS. COOPER: There are certain instances in which there could be a dependence, and this is discussed in some of the other NRC documents that are published, for example, the Good Practices 1792, and it actually does mention shutdown, specifically, saying that that document should apply, and in fact, you know, it should apply for some of those human induced

initiators for which there might be a dependence.

MR. MITMAN: So, should we change the language to say, look for and --

MR. NOWLEN: You know, right now, the proposal was to change the text to cite that these dependencies for fire would be unlikely, but cannot be ruled out entirely. So, some consideration may be appropriate.

MR. MITMAN: All right.

MR. NOWLEN: That was the proposed new language.

MR. MITMAN: And the second thing is, you've referenced NUREG/CR-6093, it would be great to add that to the reference.

MS. COOPER: I agree, that one --

MR. MITMAN: And any other --

MS. COOPER: Right, yes, and 6265 and -- yes, that one too, also, because that one was specifically on dependencies and errors of commission, errors of commission being often those human induced initiators.

MR. AMICO: I sent you a copy of the seven model, but don't send it out yet, because I think I've --

MR. NOWLEN: Paul, mute, and 6393 was the

other one?

MS. COOPER: Sixty-ninety-three, 6265, that is the one that is on errors of commission, and dependencies, yes, I would --

MR. MITMAN: And that raises a good comment.

I mean, since this is a framework, can we expand the references extensively, because this is a framework and it's someplace that we can -- that somebody can use to go find a lot of the other supporting documentation?

MS. COOPER: Yes. Certainly, we could add some more of the HRA references that can help somebody.

MR. MITMAN: And --

MS. COOPER: And of course, the new version of 1921 on a -- going into this.

MR. MITMAN: And 6143 and 6144?

MS. COOPER: I agree, absolutely, yes.

MR. MITMAN: Yes?

MS. COOPER: Yes, those ought to be in there, and the Brookhaven study, and I can't remember which one that one is, is it 44 or 43, although it wasn't -- doesn't use -- anyway, uses an existing HRA method, it was Dennis Bly who did it, with slim mod sort of thing.

He tried to use some of the things that we

developed out of 6093 and 6265, some of that qualitative understanding, is embedded in his analysis for Brookhaven.

MR. MITMAN: Yes, but I'd just like to expand the references, not just in the HRA area, but there are a lot of other references, I think that talk about shutdown and there is stuff that talks about fire.

And so, since this is a framework document, it would be useful as a source of where to go to get more additional information.

MR. NOWLEN: Yes, I confess, we did not attempt to do that. There was not -- we really only cited the ones that we directly drew from, but I'll talk to Mark and we'll -- we will talk to you, as well.

MR. GALLUCCI: Maybe a bibliography, as opposed to --

MR. SALLEY: Or we do it at one time, that additional reading that we could put in there.

MR. GALLUCCI: Could have a list at the end.

MS. COOPER: Yes.

MR. GALLUCCI: HRA stuff.

MS. COOPER: Yes, by topic.

MR. GALLUCCI: Internal events, that stuff.

MR. NOWLEN: Yes, it's sort of a matter of where do you stop? I mean, right now, we have a fire

publication list that's like 100 items. I don't think I want to put all 100 of them on there.

But, you know, so, it will be drawing the line. We'll just have to talk about it. I don't see a problem with it.

MR. SALLEY: We can do it.

MR. NOWLEN: Yes, we can do it.

MS. COOPER: Okay, if there aren't any further comments on the topic of human induced initiators, let's go ahead and tackle the issue of pre-initiators, and that seems to be addressed in PWR-49 and PWR-59.

Although this is -- they're both coming from the PWR Owners Group, I'm struggling a little bit to see if there is a distinction between the two.

So, if anyone wants to --

MR. NOWLEN: Clearly --

MS. COOPER: Do you want to --

MR. NOWLEN: Well, the PWR Owners Group comments were a collection from the members, as I understood it, is that correct? Do we know for sure?

MS. ANDERSON: Yes, it's several people that contributed to it.

MR. NOWLEN: Right, so, it's probably two people who have had similar comments, with slightly

different perspectives, would be my guess.

MS. ANDERSON: Right.

MS. COOPER: Okay, all right. I'm kind of struggling with a little bit of the logic here, because I mean, there seems to be agreement, at least in PWR-49, that there are more activities going on in the plant, that would take equipment, and instrumentation, which we have to add, especially if we're talking about fire context, out of service, or you know, into an unavailable state.

So, that doesn't seem to be the area of disagreement.

The area of disagreement seems to be with respect to the reliability of the restoration, and here, I'm going to disagree a little bit.

I mean, I'm not really sure what -- where they're coming from, but you know, from my old school thinking that the only way you can guarantee that something has been restored to service, as intended, is if you do a functional test.

You start the pump and you get flow. Some of these things -- some of the pieces of equipment that could be taken out, especially if you're talking about instrumentation, you may not be able to do a functional test.

So, I am kind of struggling, as to where people were coming from on this one. I do think you have to take a look at this.

The fire PRA side of this overall, you know, study is going to involve more things than you would otherwise, for at-power, because you're going to be worrying about instrumentation, and that is going to be huge.

I mean, it's already a problem for the operators, trying to figure out, you know, they have limited numbers of, you know, trains of equipment available during low power and shutdown, but if you add on top of that, the fact that we could have fire damage cables affecting your instrumentation, you know, it just -- the fact that you're going to be modeling that instrumentation means you have to also worry about the availability.

You know, one other train is taken out because of the fire, now, we got this train. You got to be worrying about them both.

So, I just don't really see how you can avoid the fact that there are going to be some more things to worry about, with respect to potential restoration failures of equipment and instruments.

MR. STONE: It sounds to me -- this is Jeff

Stone from Constellation, again, that the comment was directed toward pre-initiators, we're talking about maintenance activities that somebody messed up, you know, months earlier or weeks earlier.

Those would -- obviously, you're correct, that it would directly impact. The instrumentation loss would have to be modeled in there, to affect the fire PRA.

But none of the dependency with that previous maintenance action that failed those instruments. I think that is the context of the question of 49.

MS. COOPER: You are trying to suggest that the only maintenance restoration would be something that occurred before the outage started? Is that what you are trying to say?

MR. STONE: No, what I'm saying is, that generally, for an instrumentation, if it's out of service, some mechanic failing and inadvertently leaving an instrument out of service, his pre-initiator action is not going to impact the control room operators directly, the fact that he failed it.

The instrumentation unavailability would be modeled in there, but not any links between the mechanic's failure and the control room operator.

MS. COOPER: No, that would be a dependency, and I'm not suggesting that.

MR. STONE: Okay.

MS. COOPER: I don't think that was part of this comment. I don't see the word 'dependency' in this comment.

I think it was simply a matter of what human failure events are modeled as pre-initiators.

So, you know, there is -- I struggle to imagine an issue where there is an dependence between a pre-initiator and a post-initiator.

MR. STONE: All right.

MS. COOPER: So, that is not what I'm suggesting or what I think the comment was saying.

MR. STONE: Okay, my apologies.

MR. MITMAN: There is the possibility, since you're shut down and you haven't done all of your pre-start up verifications, the system alignments aren't as rigorously controlled, as they would be during start up, during at-power conditions.

So, if you've taken out a section of your fire system for maintenance because you're in a refueling outage, and you've done your first check to put it back in service, you may not have done all your final checks, and so, your probabilities of alignments not being as

expected would be slightly higher, maybe.

MS. COOPER: Interesting, yes, I didn't know that.

MR. NOWLEN: Well, and that is --

MS. COOPER: But the bottom line is --

MR. NOWLEN: Right now, we don't model suppression systems, at that level of detail either.

MS. COOPER: Yes.

MR. NOWLEN: So, interesting point.

MS. COOPER: Yes, but the bottom line is that any kind of administrative independent check of the system restoration is a very, very weak credit in the human reliability space.

The bottom line is, they're just not very effective, not much credit at all, and you still -- that means you have to model it. We have to include it.

So, anything further? I mean, I think the -- you know, we wrote this, or I wrote whatever was put in here, probably close to 18 months ago, or more. So, things have happened, so, I mean, I can certainly update it, but I think the basic philosophy here or whatever, stands. I don't see how you can change it.

MR. NOWLEN: So, basically, the proposal was to reject the comment, but to consider text clarifications or expansions if we could get some

additional detail from the commenter, or if we were missing the point somehow --

MR. ZEE: Well, I think you guys -- I mean, well, I'm just catching up with what this comment is out. I mean, I didn't read this comment before I got here.

But I think you guys are addressing what this comment is, but I think the comment is kind of speaking to maybe the way the bullet is worded. It's making a declarative statement, that regardless of what the plant practices may have been, it will be done.

You know, whereas, what you guys laid out is, from a practical standpoint, you know, there may be instances where they may not have done a full functional test.

MS. COOPER: It's just a fact of the life. I mean, there aren't that many pieces of equipment or parts of systems that you can do a full functional test. That is just a fact of life, can't be changed.

MR. ZEE: I think that is all the comment was getting at, is this thing basically doesn't create that thought process. It just says, it will be. I think that's all the -- that's my perception of this comment. I'm not the originator of this comment, but that is all I'm thinking about it.

MS. COOPER: Okay, all right.

MR. ZEE: I think they might be, you know, maybe their particular plant has a specific instance where what they do, as they move from window to window, they actually do something to actually confirm that that system is restored to service, before they take the counterpart out.

MS. COOPER: Okay, well, we could certainly expand discussion on what types of things might be effective or less effective or --

MR. NOWLEN: What it says is, the number of potential pre-initiators, increases.

MR. ZEE: Right.

MR. NOWLEN: I mean, that is -- I mean, given more maintenance, that is a true statement. I mean, that's why we were a little confused.

I mean, it doesn't say that the likelihood of error increases. It says the potential number of such things increases. I think that is a true statement.

MS. COOPER: Yes, and the fact is that you don't usually screen out any sort of maintenance or test activity on a piece of equipment or a train of equipment that you're modeling in the PRA, unless -- and I wouldn't, but I mean, unless you had that full functional test.

I mean, without that, you still have to put

it in. You can put a high, you know, a low -- I mean, a low probability on failure, but you know, you don't leave it out of the model, just because --

MR. ZEE: Well, I think that's what his comment is, yes, the way I am reading this comment is, is I think he's objecting to the notion that whatever you currently have in there for latent failure, automatically increases during an outage.

MS. COOPER: Yes.

MR. ZEE: That is all he's saying, and I think he is objecting there, because I think he perhaps, might have instances where he has the basis to say, because of what he did, that latent failure is the same number he has in his internal events.

MS. COOPER: I guess if they --

MR. NOWLEN: You know, I took it as -- sorry, Susan.

MS. COOPER: Go ahead, no, go ahead.

MR. NOWLEN: Out of place here, but I took it as, an interpretation of the statement that is made, that there are going to be more latent failures, and that is not what this statement says.

It says there is more potential latent failures. It doesn't say that there actually will be more failures, and the argument here is saying, well,

just because we're doing more maintenance, we have lots of things in place to control those.

But I did not read the bullet to say, there will be more failures, and that is sort of the way I read the comment, is that the implication is, there will be more latent failures.

No, there is more opportunities for latent failures to occur.

MS. COOPER: Yes.

MR. NOWLEN: Does that make sense? So, I'm not sure --

MR. ZEE: I understand what your points are, I mean, I just -- we have to find out what was really behind this.

MS. COOPER: Yes.

MR. NOWLEN: Yes, and if there is a suggestion for how do we work --

MS. COOPER: Yes, well, then if you guys can give us some more, you know, follow up with some more details --

MS. ANDERSON: I can find out from the RMSC people.

MS. COOPER: Okay, yes, because we're still --

MR. WACHOWIAK: I understand your point,

where you're saying that the full functional isn't always done, because it can't be done during the outage.

But I also -- has there ever been a study that has shown that when you actually come out of the outage, that you have a greater -- that you have an increase in failures because of improper restoration from maintenance, when you actually --

MR. NOWLEN: But that is not what this says.

MS. COOPER: Yes, that is --

MR. NOWLEN: That is not what this is.

MS. COOPER: Yes.

MR. NOWLEN: That is not what this says.

MS. COOPER: No, it just says that because of the activities that are going on during the outage, there are more opportunities for restoration failures, because you're just touching more stuff. You're moving stuff around. You're changing things out.

MR. WACHOWIAK: So, you're saying in the fire PRA or low power shutdown PRA, actually, go and add more restoration failures?

MS. COOPER: You may have to, yes, yes, I think that is right.

MR. JULIANS: This is Jeff Julians. So, there is more opportunities, but there is also plant practices that counter that, and this is actually an

internal events, this goes back to the higher level that, you know, this is not a function of the fire, and the fire during shutdown.

There are pre-initiators that are happening before any initiating event.

MS. COOPER: Right.

MR. WACHOWIAK: So, this document --

MS. COOPER: That's correct.

MR. WACHOWIAK: -- assumes that the plant has already done that properly in their low power shutdown fire PRA, that fire PRA?

MS. COOPER: Right, yes, the only difference might be that -- and I alluded to this, if I wasn't clear, that because of the scope of the fire PRA, there may be some instrumentation that you would not have included in your low power shutdown model, without fire, that you might need to worry about now, because instrumentation is going to be part of the fire side of this, this study.

MR. WACHOWIAK: So, if you're --

MS. COOPER: So, that might be something --

MR. WACHOWIAK: -- as a gap analysis, then say, you have your low power shutdown PRA, you're saying if you have to add additional equipment, because of the

fire scenarios, make sure you have included consideration of restoration errors in the context of the maintenance that is going on during the outage?

MS. COOPER: Yes, absolutely.

MR. WACHOWIAK: So, it's not saying to go to your low power shutdown PRA, and re-analyze all the restoration errors --

MS. COOPER: No.

MR. WACHOWIAK: -- that you already had?

MS. COOPER: No.

MR. JULIANS: This is Jeff Julians, again.

I don't think the instrumentation considerations are any different. I mean, if you could have an example of where additional instrumentation -- I mean, that is the same true as, or a fact that comes from the -- you know, any internal events or any HRA modeling, yes, that you need instrumentation, and if the fire damages is, then you have to account for that in HRA.

MR. GALLUCCI: But in the fire, you add equipment that wouldn't be in the internal event. So, instrumentation that is associated with equipment that isn't in the internal events, but is in the fire, would have to be examined.

I think this is just saying your fire PRA

has more equipment at-power model than your internal events, so, make sure that you catch the late errors associated with this extra equipment that might occur during non-power -- during low power shutdown.

MR. NOWLEN: And we also have new failure modes that wouldn't have been included in the internal events. I don't know if that plays in, spurious operations, don't do those at internal events.

So, I think the clarification here might be that we add a point that internal events is going to cover a lot of this, but the fire context may bring new considerations into play.

MS. COOPER: Okay.

MR. NOWLEN: That should be reviewed.

MS. COOPER: Yes.

MR. WACHOWIAK: Bring new equipment and failure modes into it.

MR. NOWLEN: Yes.

MS. COOPER: Yes, that's fair.

MR. NOWLEN: Okay.

MS. COOPER: Are you taking notes on this?

MR. NOWLEN: Yes.

MR. WACHOWIAK: My expectation is, however you did it, did that in your low power shutdown PRA, you would now just apply that same process to your --

MS. COOPER: Absolutely, yes, that is correct. That is correct.

MR. WACHOWIAK: Okay.

MS. COOPER: Okay, now, we're left with PWR-53, which is discussing the fact that alarm procedures instead of emergency operating procedures are going to be -- that is the procedure set, that operators are going to be using, and I can't disagree with that.

But they're also saying that this may change their ability to diagnose or choose the proper AOP.

I guess I'm not sure -- I mean, we've discussed some -- actually, even more now in the final version of NUREG-1921, and EPRI, what is it, 1023, whatever, whatever the EPRI number is. I can't even remember it, more about procedures there in the fire context.

I guess I am not really clear, as to why -- you know, what it is that they want us to do differently here. I mean, we don't -- you would have already done this as part of your shutdown PRA efforts. You know, you would be addressing the appropriate procedures.

You know, fire response procedures seem to vary from plant to plant, as to how -- so, how they would be implemented with AOP's, you certainly would have to

look at that, as part of the process.

We could certainly add discussion to say that that is what needs to be done, and that probably would be a good idea, but I'm sort of struggling with what it is that the comment is objecting to, with respect to the current document.

MR. GALLUCCI: I don't think there was an objection. I think it's more of a suggestion for and added --

MS. COOPER: Okay.

MR. GALLUCCI: -- discussion.

MS. COOPER: Well, we certainly could do that.

MR. WACHOWIAK: And it would go in the bullet at the top of page 54.

MS. COOPER: Yes, unless it seems like we've got enough clarifying text, that we create sub-sections or something, I don't know, but yes, sure.

So, yes, I don't have a -- I don't have any objection to that. We can certainly add clarifying text on that.

MR. WACHOWIAK: It almost seems like it's an example that goes with that bullet.

MS. COOPER: Yes, right.

MR. NOWLEN: Yes, and the initial response

here was to accept in principle and revise the text.

MS. COOPER: Yes, right.

MR. NOWLEN: The proposed, let's see, revision was, let's see, "Should review all of these aspects with respect to the procedure usage," --

MS. COOPER: Yes, and we can --

MR. NOWLEN: -- "different for low power shutdown than for full power, e.g., there is no equivalent of any EOP's for low power shutdown, operators may be required to do more diagnosis when using AOP's for low power shutdown, than when using EOP's in at-power events."

MS. COOPER: Yes.

MR. NOWLEN: That was the proposed added text.

MS. COOPER: We can do that.

MR. NOWLEN: I'm not sure exactly where in the bullet it goes.

MS. COOPER: Yes, yes, I can imagine though, a couple of sub-bullets that we can add there, but yes, I think that is the intent.

Certainly, we can do that modification.

MR. NOWLEN: Yes, because I think our interpretation was the same, was that this wasn't an objection to something that was said in the report, it

was a suggestion to add some new discussion to the report.

MS. COOPER: Yes, yes, that's fine.

MR. NOWLEN: So, in that context, we're proposing to accept.

MS. COOPER: Yes, okay, and I guess with respect then to HRA, that really only leaves anything that -- any comments to the more global comment from NEI-1, and I guess from the perspective of HRA, I think we're almost in a better place than we are in the PRA, because on the fire side, at least, you know, the fire component, I mean, and I'm going to go back to what Steve said a little while ago.

You know, the assumption is that you have a low power shutdown PRA, internal events PRA, and you have a fire PRA and now, you're going to do a low power shutdown fire PRA.

But you already have those two pieces together, and you're going to be using them as the basis for your new model.

For 1921, although, you know, one detracting comment is, "Well, we took a long time to write it," but at the same time, that gave us time to have it be used by some of the EPRI authors on the project, and provide feedback to the document.

So, I would say that 1921 has had

considerable testing, as part of its development.

So, there shouldn't be too many surprises in its use for at-power or for low power shutdown, and then going back to Jeff's comments, you know, we certainly have done HRA in low power shutdown PRA's. It's -- I mean, not a lot of them, but they have been done, and I think the NUREG's I mentioned, NUREG/CR's I mentioned earlier, we did quite a lot of work to understand the qualitative issues.

So, I think we're in a pretty reasonable staring place, with respect to HRA.

Anyway, so, that is my two cents towards response to that comment. So, I think I am -- yes?

MR. WACHOWIAK: I've got an HRA related question, before you leave.

Are there any -- and this will apply to everything, right, before we get done. Are there any new HRA methods contained in this document, or are you just looking at how you apply the existing things from 1921?

MS. COOPER: We're not suggesting any new methods.

MR. WACHOWIAK: So, there are no new methods in here?

MS. COOPER: No.

MR. WACHOWIAK: This is just application of the existing methods for HRA?

MS. COOPER: Right, yes.

MR. NOWLEN: It's framed in the context of a discussion of the things about HRA that are unique, when you go to the low power shutdown context.

MS. COOPER: Yes.

MR. WACHOWIAK: Not necessarily the fire context, but the low power shutdown context?

MS. COOPER: Yes, and I guess I would say, it's kind of neutral on the topic of method selection.

MR. NOWLEN: Yes, it doesn't recommend --

MR. WACHOWIAK: Okay.

MS. COOPER: It doesn't recommend anything specific, but it doesn't propose anything new.

MR. WACHOWIAK: Okay.

MR. NOWLEN: Yes, okay.

MS. COOPER: All right?

MR. NOWLEN: Well, thank you, Susan.

MS. COOPER: Sure.

MR. SALLEY: Thanks for coming down. We appreciate it.

MS. COOPER: Sure.

MR. NOWLEN: Yes, I appreciate it.

MS. COOPER: Okay, yes, you're welcome.

MR. NOWLEN: HRA is not my area. So, I appreciate not having been left with that. Thank you.

MS. COOPER: Not a problem. I'll let you carry on.

MR. NOWLEN: Okay, I think we left off at PWR Owners Group comment three, is that correct?

MR. GONZALEZ: That is correct.

MR. NOWLEN: Okay, so, this was a comment that says the report seems to assume that the refueling outages are the only or most important outage types, however, the issue of outage type should be addressed first, typically, as part of the outage types, but you can read the comment, I don't want to read it in total.

They mention hot-stand-by and cold-shutdown. This was clearly not our intent. The observation is not at all, what we intended.

What we have said is that whatever plant operating states get defined for the internal events low power shutdown, fire PRA is simply going to follow suit and address the exact same set.

So, whatever that set is, we certainly never made any implication that refueling is the only thing we're worried about.

So, we just saw this particular comment as not consistent with our intent. We went back and looked

at it, and didn't really see anything that implied that this was our intent.

So, right now, our proposal is to reject this comment, as just not being consistent with what we wrote.

Now, if there is clarification, if we missed something, if we need to add something, we're open, but again, we never made a statement like this, that we can find. It doesn't cite any particular section of the report or any particular statement.

So, we're not sure what we would do differently.

MR. MITMAN: And some of this goes back to the POS definitions, because the POS definitions will -- should also be looking at outage types, because the POS's will be different, depending on the outage type.

MR. NOWLEN: Yes, that is the expectation, is that, you know, there will be different types of POS's, and how you define those, and we've got some comments coming up down below, about grouping POS's, and things like that.

Again, we agree, but we did not try and solve that problem. What POS's need to be defined and how should they be defined?

It's not appropriate for us to try and

answer that question, and again, the broad statement here is, we will follow the pattern set by internal events, they'll define the POS's, the fire PRA will analyze the same set. That is the working assumption.

So, again, unless someone can point to a specific part of the report, where they got this impression from, that we would be happy to adjust, because we certainly don't mean this, but we couldn't find anything that implied this. You know, if someone can point it to us, we'll change the wording.

Okay, hearing no suggestions there, PWR Owners Group comment number four, for low power shutdown, more than at-power, the configuration risk management application seems to be dominant. Other -- so, this is getting into alternative methods, outage types and et cetera.

The issue of average versus outage, specific models needs to be addressed. Again, these are issues that we did not try to explicitly address and I don't think it's appropriate for us to explicitly address these.

I mean, the configuration risk management, we talked about that a little bit. We see a place for that, but that is not the same as doing a quantitative fire PRA.

So, we didn't try and do anything about configuration risk management, we talked about that before, and the issue of, you know, average versus outage specific models, that is way beyond what this report can solve. I mean, that is a debate in a standard world. It's a debate for internal events.

Again, our working model is, internal events will define the POS's, fire will follow suit.

So, basically, we're going to dodge this request. We decided in -- we are accepting in part, the discussion in Chapter Two, will be expanded to acknowledge that an average outage approach would introduce additional fire PRA challenges, and in particular, would require development of average availability, reliability for fire protection systems and features.

I mean, there are issues that -- if you're going to go to an average outage configuration. For fire, that is going to present new challenges, and so, the proposal is to bring that out a little bit more in the report, and say, if that is the approach you take -- you know, again, what is the average for a hatch that is open during an outage, and then put back in place, before the outage is over? What is the average?

What is the average, if you're taking a

suppression system out of service in a particular location, because you're doing hot-work, right, and you don't want the CO2 system going off, for example? You will take it out of service.

So, defining an average condition does present some new challenges that we didn't explicitly talk about, but beyond that, we're not intending to take a position on whether or not that is good or bad.

MR. WACHOWIAK: So, your framework, though, still works in all those cases.

If you know how to do a PRA, whether it's average or configuration specific, if you know how to do a PRA for a low power -- or shutdown condition with a hatch open, and you can then take this document and say, this is what I need to do, to this PRA that I already have for that, and make it into a PRA that considers fire, as well.

MR. NOWLEN: As a framework, yes. As a specific, how do I calculate the average hatch condition, no, because --

MR. WACHOWIAK: But you've already done that, in your other PRA.

MR. NOWLEN: No, because that wouldn't come into play, in the internal events. Why would you care if the hatch is open or closed?

MR. WACHOWIAK: I am just saying, if you have a PRA that already does that --

MR. NOWLEN: No, but that --

MR. WACHOWIAK: -- you've already figured out that averaging, and you would use the same averaging in this method, as well.

MR. NOWLEN: No, I think that is a challenge, because at-power the hatch is closed. It's a plug that you pull out of the floor, so you cannot --

MR. WACHOWIAK: My question is --

MR. NOWLEN: Okay, I'm not --

MR. WACHOWIAK: -- it pre-supposes that you have a fire PRA that does the average risk of that hatch being open.

You already have that PRA, but it doesn't include fire. This framework tells you how to take what you already have --

MR. MITMAN: You already have shutdown PRA.

MR. WACHOWIAK: You already --

MR. NOWLEN: No, no, you have --

MR. WACHOWIAK: I don't even know if it's a shutdown. It's a PRA for that hatch.

MR. NOWLEN: No, but the problem is, is that for a lot of these things, at-power, the average is zero.

The hatch is plugged. It's a floor plug that we pull out, so that we can get equipment in. At-power is closed.

So, I don't do that in the at-power, other than in the context of the multi-compartment scenarios, where I assign a very low probability of failure.

Now, the difference is, is that when I go into an outage, I know for a fact that in this outage, I am going to pull that hatch out, so, I can get a piece of equipment in, right.

So, now, when I go into the outage condition, it's an entirely -- it's a 1.0 that the hatch is not in place for some period of time, during the outage. It may be put back in.

So, how would you do that? If you're doing an outage specific, and you're looking at configuration changes, you can say, well, for this evolution I expect that to be out for half of the time, and so, when I do my scenarios, for that period of time, I will assume the hatch is missing, I'll do my analysis accordingly.

After that, I assume it will be back in place, and so, I'll do my analysis, assuming it's back in place.

Now, can I then go in and do an average and say, well, so, it's 50/50, so, I'll do one analysis and

assume it's 50/50 that the hatch is out of place? Perhaps, I mean, I know from a framework, you'll have to deal with that.

Do I have a specific answer for you, if you're doing an average outage? No, I don't. So, that would be a challenge, going forward.

MR. WACHOWIAK: So, that's -- if you already have a PRA, let's say a shutdown PRA, that does -- that is an average -- that considers the averages of all the different states, when you do the fire shutdown PRA, you do whatever you did for the rest of your averaging of your states.

The place where it comes in new is now, that if you pull out a hatch, you may have combined two fire areas that you didn't have combined before?

MR. NOWLEN: Correct.

MR. WACHOWIAK: But that is the only thing that is new about that particular piece in the context of fire, is that now, you may have changed your physical boundaries for your fires, and your fire PRA.

But if you were going to do an average outage, you had to have started with a PRA that considered what the average outage was before, and there is a methodology for calculating that average already, and you use that same methodology when you apply it to the

fire scenario.

MR. NOWLEN: For some things, that will work. Let me try another shot.

MR. WACHOWIAK: Yes.

MR. NOWLEN: Fire brings in dependencies, that will be different.

Okay, for example, let's take outage of a fire protection system, an automatic fire protection system. That is usually dependent on some activity taking place in the area, like hot-work.

I'm going to do hot-work in this area, so I'm going to disable the automatic suppression system.

So, there is a one-to-one dependency there, so, if I'm going to do hot-work fires for that location, then you're going to have to assume that the suppression system is 1.0 failure, it's out of service.

You may be able to manually recover it, et cetera, et cetera.

So, it doesn't work on an average, I'm going to take it out for one-tenth of this outage, but that one-tenth is my --

MR. WACHOWIAK: But that is my -- anything where you would have to consider averages like that, you have to consider those kinds of dependencies.

MR. NOWLEN: Yes, that's right.

MR. WACHOWIAK: Whatever methodology you use to consider the dependencies, you would apply here.

MR. MITMAN: I think we --

MR. NOWLEN: Well, I think fire is going to bring some new challenges into play, that you wouldn't have done for the internal events low power shutdown.

There are new dependencies that come into play, and that is what we're proposing to add to the report, is the discussion that, you know, if you're going to go with this average approach, you're going to have to deal with these kinds of dependencies that are --

MR. WACHOWIAK: That are different than --

MR. NOWLEN: -- that are different than --

MR. WACHOWIAK: Well, that would be helpful.

MR. NOWLEN: Now, would the same method work? Perhaps, you may be able to apply the same methods.

You know, if it's a one-to-one dependency, then it's easy, right?

MR. WACHOWIAK: Yes.

MR. NOWLEN: And your exposure time is different.

MR. MITMAN: I think we all understand the issues. I think maybe we're talking past each other a

little bit.

For shutdown, we don't wash RHR unavailability. We don't wash it, average it across the outage. It's POS, specific, and I think we're going to -- and so, I think you're right, in that first, you have to have the shutdown internal events model, which will look at POS's and equipment availabilities, identify vulnerabilities, those types of things, that are on POS specific issues.

And I think then that when you add in the complication of fire, those are also going to be -- have to be POS specific, and whatever methodology you use to average -- come up with your average outage risk, for internal events, would be the same, I would suspect, would be the same way you would average it for the additional layer of fire risk on top of that.

MR. WACHOWIAK: Right, and I think Steve is getting into the new -- the new complication is that within this POS, there may be a specific time when you're doing hot-work --

MR. MITMAN: Sure.

MR. WACHOWIAK: -- that is really, if you want to consider it, it's really a different POS, but somehow, you're going to try to put -- fit it into the major POS that you're working with.

MR. NOWLEN: Yes, you're not going to want to re-define a POS because you're doing hot-work.

MR. WACHOWIAK: Just to address it, right.

MR. NOWLEN: But you know, the alternative is that at some stage in that POS, hot-work will be happening --

MR. WACHOWIAK: Right.

MR. NOWLEN: -- and there are other dependencies that will go along with that, that you know, if the fire suppression system is out 10 percent of the time, but it happens to be the same 10 percent window, then it's a 1.0 failure and not .1, right?

MR. WACHOWIAK: Yes, but you have the fire watch there, at the same time.

MR. NOWLEN: Oh, yes.

MR. WACHOWIAK: And that says the whole thing, you know, but anyway --

MR. NOWLEN: But it's still hot-work.

MR. WACHOWIAK: So, there are different things that you're doing, maintenance-wise within a POS, some of them rise to the level of being a different POS, but most don't, and most fire activities could be a different POS, but most of them don't rise to that level of need for sophistication in the model.

So, whatever you did for addressing

averages and dependencies in your base model that you did for maintenance, you do the same kind of things for fire, and your document should identify which kinds of things are outliers there, that you should look for, for doing this sort of work.

MR. NOWLEN: Right, and we have some discussion of that, but our proposal is to expand that, to more clearly recognize in particular, this average outage approach, as opposed to a case specific outage.

MR. WACHOWIAK: Yes.

MR. NOWLEN: It's sticky.

MR. WACHOWIAK: We can debate the usefulness of the average outage approach.

MR. NOWLEN: The comment came in. We are proposing to address it. How is that?

Okay, any comments on that one from the phone? We haven't -- I'm taking that as a 'no', and moving to PWR Owners Group-5.

This is another one related to average versus outage specific. Let's see, yes, this one doesn't really give us any hints, as to what they're proposing we change.

So, we have a little bit of difficulty with it. You know, it's a discussion about advantages and disadvantages, how does shutdown risk compare on average

with at-power risk? I don't know.

You know, I don't -- I am not sure what to do with this comment, I guess is what it comes down to.

Define, again, I'm kind of falling back on our overall approach that we are neutral on the issue of how you define POS's. That is something that we will pick up from the internal events analysis.

We do discuss the issue in various places, and I think that what we've stated is that in theory, at least, you can take any set of defined POS's and do a fire overlay on top of your internal events and your at-power fire, in theory, at least.

I mean, clearly, there are challenges, and we talked a lot about those, but again, unless I get some clarification here, our comment is basically, accept in part, based on what we're proposing to do with PWR Owners Group-4, which we just talked about, because there is a lot of overlap here between the average and specific, outage specific approach. But beyond that, we're not proposing to do anything more with this comment.

Hearing no objection, PWR-6, let's see, NUREG, the NUREG identifies a possibility of applying fire PRA to all or a selected set of POS's. While this is appropriate, it's important to low power shutdown

to have a full set of POS's, so that the context of the specific POS can be properly understood. At-power should be treated as a POS, with its own POS fraction of time. Let me grab that last part, first.

We got a couple of comments like this, where at-power is just another POS. That is not consistent with the current language and structure that's being used. At-power is one. Low power shutdown POS's is something else.

Now, what -- where exactly the line is drawn between those, I think is a legitimate debate that is not this report's job to solve.

But when we got these comments about at-power should just be another POS, we are rejecting those -- that part of the comments, at least, because that is just not consistent with current language.

I mean, some day ideally, it would all be one nice thing that flows from place to place, but I expect to be retired before we get there. So, that part of the comment, I see nods around the heads, for those of you on the phone. They don't expect me to retire soon. Whatever.

MR. GALLUCCI: He is accepting contributions.

MR. NOWLEN: Yes, the balance of it is

really an observation around treatment and definition of these POS's, and again, we're taking the position that we're neutral as to how that happens.

We do set some challenges for internal events in that regard, but once internal events defines the POS's, we're assuming fire will follow suit, and so, any further changes relative to this comment are really outside our scope, and so, we're proposing to reject this comment with no changes to the document.

MR. WACHOWIAK: So, here, let's say your application is an SDP, because right now -- so, right now, you don't have a quantitative low power shutdown PRA, but something happens and you have to do -- somehow, do an SDP, and it gets into this quantitative range, however it got there.

You could only have one POS that you've defined, that addresses the one issue that you're using the quantitative shutdown PRA for, and this would be -- the methodology doesn't affect that.

MR. NOWLEN: No, I think we would say, okay, you've defined a POS. You have a plant response model for that POS. You know what your configuration is. You know, let's lay some fire on top of it. I think we could do it.

You know, again, there are clearly

challenges. Frequency, partitioning --

MR. WACHOWIAK: Not that you want to do that, but yes.

MR. NOWLEN: Well, not that you would want to, you know, but --

MR. MITMAN: We would want to do it, in the context of an SDP, if there were fire implications.

MR. NOWLEN: Right.

MR. MITMAN: It's not that we -- we would want to do that. We would want to understand the contribution to the overall risk from fire.

MR. WACHOWIAK: Right, and you may even be able to cut it down to a sub-set of fire scenarios that you'd have to look at for that SDP, so, you wouldn't have to do the whole plant, either.

MR. NOWLEN: I tend to agree, define a POS, and in theory, we can lay fire on top of it. Again, there are clearly challenges. Fire frequency is the first one you run right into. But there are others. So --

MR. MITMAN: Well, in the most recent application of SDP that I am familiar with in the fire context, was a fire at a PWR, while it was shut down, where they had -- I think it -- I don't remember whether it was -- it was their diesel-backed ESF buses.

There was a very significant breaker fire that disabled the entire ESF bus, and then crossed over and started to affect other ESF safety buses at the same voltage, and that was at shutdown, and an analysis was done on that.

MR. NOWLEN: Yes, and you could do it, because you'll have certain buses that are out of service and things like that. You could reflect that.

Now, what the root-cause of this particular event, I don't know whether we would have captured it in a fire PRA, but we can certainly look --

MR. MITMAN: Right, but the most important aspects of fire was the POS's that they were in, and what equipment was available because of the POS.

MR. NOWLEN: Yes.

MR. MITMAN: And what equipment could be brought to bear, to deal with the loss of the 4KB -- for the loss of the ESF bus, due to the fire, and all of the other equipment that was impacted by the fire.

MR. WACHOWIAK: So, you could do this for one POS. You don't have to have all the rest of the POS's modeled?

MR. MITMAN: In SDP space, that is exactly what we would do, yes.

MR. NOWLEN: Okay, the next one is PWR-7.

This is a -- it's another lengthy comment, so, I don't want to read through it, but it's basically getting into the concept of grouping POS's, so that, you know, every time you, you know, start welding, stop welding, that is not a new POS.

But well beyond that, I'm actually grouping POS's, based on plant status and equipment availability and things like that.

Again, we are not taking any position pro or con. I think that the grouping of POS's is certainly a potential approach. I presume that the people doing internal events are considering this, and again, in my perspective, I don't see that that would change the way I do fire.

The one challenge, again, is similar to the other, is that if you're going into an average out -- or an average configuration, this is sort of an intermediate step. You're not saying it's all one POS. It's some grouping.

So, some of the same sorts of averaging kind of issues may come into play, that will have to be addressed, but beyond that, I don't see that it changes this report very much.

Our proposal is to accept this in part, and add to the existing discussion, to acknowledge this idea

of grouping POS's, may be a viable approach, and that that would be something that would be addressed within the framework of the internal events, that would then largely carry over to the fire analysis, and we were proposing to highlight the potential challenges that may present, and they're very similar to what we already talked about, the status of fire protection systems may change, over the course of that. You have to deal with that.

There are dependencies between these changes. You know, things change because you're bringing fire hazards, or whatever. So, that would be the response there.

MR. MITMAN: Can I suggest, grouping is allowed in the draft shutdown standard, and I don't see any inherent difference that would make it inappropriate here.

So, can I suggest that we add language that says, grouping is permitted as it is permitted, however, it's encompassed in the internal events shutdown model.

MR. NOWLEN: Will do. Yes, we were -- when we first wrote this, which was some time ago, we were working with a draft of the low power shutdown standard that is not the current draft, and that is reflected here. Some things have changed.

One of our general obligations, we didn't specifically get a comment on this, but one of the general expectations is that we will go back and review everything we said about the standard, in the context of the latest revision.

So, yes, but we will add that specific language.

MR. WACHOWIAK: Yes, because this comment goes to a generic concern with the whole thing, the whole fire during low power shutdown, that may or may not be in an explicit comment, but what we've talked about, of this.

Let's say you're one of the plants that has 2,000 fire scenarios in their full power fire PRA, and let's say there is 10, I'll make up a round number, so, I can do the math in my head, 10 plants operating states for shutdown.

Now, you're at a point where you could potentially have 20,000 scenarios, you're trying to dissolve in a quantitative fire PRA, and I don't know that anybody has the tools to solve 20,000 scenarios at this point.

MR. NOWLEN: I understand. My hope would be that many of those don't really change. It's the same scenario, with a different impact on the plant.

MR. WACHOWIAK: Thus, grouping the POS would help alleviate that.

MR. NOWLEN: It's also certain -- you know, certain locations aren't really going to change, because you went into shutdown. You may actually have less fires because the equipment there has been de-energized, and we sort of brought that out.

But I think our expectation is that you don't start from scratch, that --

MR. WACHOWIAK: Though, you also can't go the brute force method either, and take all of your fire scenarios and apply them to all of your plant operating states, and hope that you get something that the computers can solve.

MR. NOWLEN: Understood, yes, and I think the report has words to that effect, is that you're looking for things that have changed, because you've gone to shutdown, and that is the focus.

The intent is not to go back and re-analyze the whole plant, the way you would have done for the at-power. You're looking for what has changed. What is different because you've gone to shutdown? What is different because you're in this POS?

MR. WACHOWIAK: Is that clear, from reading through it, Kiang?

MR. ZEE: I think later on, it is, because I think later on in this document, I think I made a comment about the fact that even if you are the plant that's got 2,000 scenarios, you get to make new ones, for non-power.

MR. NOWLEN: Oh, yes, there will be new ones. I mean, there will be places that --

MR. WACHOWIAK: But so, the old ones don't matter?

MR. ZEE: So, there has been kind of a complicated mix, in terms of how you integrate, you know, your 2,000 existing ones, with perhaps, having to add 100 new ones, and how that all works with 10 different POS's.

And when you start getting into groupings, I think from a practical standpoint, you know, we can conceptually think that you can do grouping of POS's, but I think what is going to happen, in terms of your actual maintenance windows, it's going to have such a dramatic effect upon the results of the analysis, that you probably are not going to want to -- you probably can't afford to do groupings.

You're probably going to be driven more by what is in the -- what activities are happening.

MR. WACHOWIAK: Okay, but that --

MR. JULIANS: I agree with that comment. I mean, the grouping that is going to be out-weighed and swamped by the need to do different quantification for different kinds of space on the different maintenance activities.

MR. ZEE: Right, so, I think I'm kind of making notes on my thing here, and I'm getting tired of writing down the word 'pilot' because I think a lot of these things in concept make sense, but I think in practice, I think what we're going to find is, until we actually go through and do it, we really don't know.

And what I'm really fearful of is, that the results we might be led to believe, if we try to do grouping to simplify, are just so inaccurate, we're just getting completely mislead.

Then the problem becomes insurmountable, which then sort of opens the door, so, we got to find a better way to sort of play within the framework, to try to solve the problem, that you're trying to get answered.

MR. JULIANS: This is Jeff Julians. I agree with that, and this kind of implies that not only the piloting, but implies there is a framework needed for the low power shutdown internal events.

MR. ZEE: Right.

MR. JULIANS: And if you've got -- what is the basis that we're pointing to here?

MR. NOWLEN: Yes, no, I understand and agree.

You know, I think we have a comment coming up eventually here, about screening methods, too, and to me, that is the real key, is to develop, and I agree, through pilots is the way you do that, good screening methods that focus your attention on that which matters and not that which is minutia.

That is going to be a really, really key element here, and again, we got a comment coming up on that subject. I don't believe we overlooked it, yet.

It wasn't folded into to one of the 'don't publish' things. It was a separate comment. So, I believe we'll get there. If we don't, we'll come back to it, because we are intending to increase the discussion of screening methods, focusing your attention, because yes, I don't think, you know, dealing with, you know, even 10 POS's for low power shutdown, and then redoing the analysis top to bottom for each one, no.

There are elements that you'll have to redo. You'll have to, you know, rethink about screening. Things you screened out before may now be more important,

because it was a low power shutdown issue, and so, you screened it out.

Well, those are all back in play. Hopefully, you know, the internal events will help you there, but there are elements that you'll have to reconsider, and I don't think we're recommending you do it 10 times because you have 10 POS's. I think you do it once in the context of each of the defined POS's, kind of thing.

Then you say, okay, well, given this POS, what are the important locations? Where are the locations that won't be important, and you know, again, the idea of screening and focusing your attention down to what is important, is a real challenge, and we plan to strengthen that a bit.

Okay, let's see, so that was seven? So, PWR-8, this is another one, low power operation is more similar to at-power than it is to cold shutdown, agree.

The internal events model essentially is the same. EOP's during low power, again, this is getting to a question of, it's similar to the one that says, at-power is just another mode.

That is not the language right now that we use. Low power, and even the standard that we were working from, had a little bit of a flexible definition

of where you cross the low power to at-power.

So, I agree that those are issues that need to be worked about, but again, it's beyond our scope. We're assuming that those are issues that will be dealt with through the internal events standard, in particular.

I think folks recognize it, and we're just not going to try and solve that problem for them. So, the proposal is to reject this comment with no changes to the report.

MR. MITMAN: Two thoughts. One, the NRC should have an internal discussion about whether we want to continue with the approach of having at-power not being a POS. That is something we should talk about.

Second of all, this is a comment by the PWR Owners Group, and they're quite right, that low power in a PWR is much closer to at-power in a PWR, but I don't think that that necessarily is true with a BWR.

At low power, during a start-up, your turbine driven systems are not going to be available, and so, I'm not sure that I agree with the position that all the time, low power is closer to at-power.

MR. WACHOWIAK: They may have a different steam source, though, too.

MR. MITMAN: HPSI and RCSI?

MR. WACHOWIAK: Yes, at plants I've been at, use their ox-boiler to run RCSI at low power.

MR. NOWLEN: That still makes it different.

MR. WACHOWIAK: But it's different, I'm agreeing that it's different --

MR. MITMAN: Yes.

MR. WACHOWIAK: It's not necessarily unavailable, but it's powered differently.

MR. MITMAN: Certainly, low power presents its own set of challenges, and the challenges are different than shutdown, and for BWR's, they can be significantly different than at-power, too.

MR. NOWLEN: Okay.

MR. MITMAN: So, let me -- I'll take an action item to look at that and --

MR. NOWLEN: Yes, the issue of at-power is a POS, we --

MR. MITMAN: Yes, and the context of this question is --

MR. NOWLEN: Right.

MR. MITMAN: -- as it applies to a BWR.

MR. NOWLEN: Right.

MR. MITMAN: Or this --

MR. NOWLEN: Okay, understood. So, we will modify our response, our assessment. We have a comment

assessment, that will eventually get published and we'll modify that --

MR. WACHOWIAK: And your point too, though, just because it's the same tech spec mode, it may have two different POS's, because of things that are available.

So, coming down the steam power systems are much different than at-power, but coming back up, they may be --

MR. MITMAN: I mean, a PWR, when they're starting up, they take the reactor to full pressure and temperature, using pump power, and so, the behavior at one percent power is pretty similar, or a fraction of a percent power is pretty similar in general, okay, to what it is at 100 percent power.

But a BWR starts up on reactor heat, and so, at a tenth of a percent power, you're not at any appreciable temperature or pressure, and so, the response to the plant is quite different than it responses at-power.

MR. NOWLEN: Okay.

MR. WACHOWIAK: That is an LPSD/PRA question, not a fire LPSD.

MR. MITMAN: Right.

MR. NOWLEN: That is our fundamental

position, relative to this, that's beyond our scope.

Okay, PWR Owners Group-9 is very similar, going to hot-standby, and so, our response to that is the same. We just say, see the fire comment, you know, basically the same thing.

Let's see, PWR-10, the report should consider that most fire emergency procedures are written to address Appendix R requirements, assuming the plant is at-power.

We did already discuss this. We didn't explicitly say, you know, at-power is Appendix R, because it's not anymore.

I mean, there are Appendix R plants, and there are post-Appendix R plants, and now, we have 805 plants.

So, we're a little bit reluctant to jump into Appendix R, as the basis for at-power, but we do already say that, you know, things during shutdown are not the same, and they're not governed by the same set of rules, and that is Section 4.12.2, where that is discussed.

So, we do already say that those are important considerations, in the context, procedures are important, but you know, let's see, we talk about low power shutdown procedures, training, staffing, and

other factors may be substantially different than at-power.

But I think in our minds, we already had a fairly extensive discussion of this. We don't want to go to Appendix R as the basis here. So, our proposal is to reject this comment with no changes in the report.

MR. MITMAN: But is that the issue that is being raised here?

You know, with an Appendix R plant, they have one, typically they have one safe shutdown system to get them in -- to maintain them in cold-shutdown or hot-shutdown, depending on the plant.

But with -- when you're in an outage, that system may be down for maintenance, okay, and now, they don't have a dedicated safe shutdown Appendix R train, to keep them in cold -- safely in cold-shutdown, okay, and is that the issue that the PWR Owners Group is trying to raise here?

MR. NOWLEN: I am not sure. We already had, again, a discussion that when you go to low power shutdown, it is a different world from a fire protection perspective.

The same rules don't apply, you know, there is a different set of rules. There is a different set of procedures. There is a different set of concerns.

I mean, I don't know that, you know, an Appendix R systems that gets a plant to hot-shutdown has much relevance, when I go to most of my low power shutdown modes.

MR. MITMAN: But if you're --

MR. NOWLEN: We didn't get to that level of detail, I'll say that.

MR. MITMAN: Well, this is one of the issues that comes up, when I think about fire risk at shutdown, is the Appendix R plants have assured fire -- safety from fires, by having a dedicated protected train that will survive a fire, okay.

Well, if that train happens to be out of service for maintenance, how do you know a fire won't take out everything else? You don't know, and it hasn't been analyzed, and we haven't thought about it, as an industry.

Okay, so, is there some big risk out there, that we haven't taken into consideration, because if you've got a four-train RHR plant, and train A is your Appendix R system, and train A is down for maintenance, then you don't know a fire won't take out trains B, C and D. You don't.

MR. GALLUCCI: I know from doing the configuration risk management stuff back at Ginna, that

there was -- a fire was specifically considered there.

So, if that -- the system that was suppose to be credited, like a fire suppression system that was being credited was taken out, you would probably have a higher color or something, during that phase of the outage, and you would need management approval or something, or you would have to have a fire watch standing by, et cetera, to compensate for it.

MR. NOWLEN: Well, at our --

MR. GALLUCCI: So, I think the configuration risk management would -- should pick that up and then that input could be fed into the PRA.

MR. NOWLEN: Well, in the PRA context, what we expected is that you know, the at-power safe shutdown analysis has relatively little role to play.

It's already been folded into at-power fire PRA, so, to whatever extent it impacted there, it comes in via the at-power fire PRA.

But we did not, for example, suggest that you go back and look at the at-power Appendix R safe shutdown analysis. That has been done. It's in the fire PRA.

What we expected here is that the internal events plant response model developed for low power shutdown would tend to drive this one.

You're going to follow a similar process, where you say, well, internal events didn't consider spurious operations, so, I have to look for those and add them to the model, if I didn't already do it for my at-power. I'm probably going to get a few new ones that I dismissed for at-power, that kind of thing.

But that would then drive your perspective on, you know, what locations and what equipment are important to fire, which then drives you to the perspective of, you know, what fires are important to fire risk.

So, we were really kind of, in a sense, abandoning the at-power analysis, beyond what it already did for the fire PRA, the at-power fire PRA, and we were kind of starting from a different perspective.

MR. GALLUCCI: But the low power shutdown model would already -- the internal events version would already show that system out of service during that POS, so, when you threw fire on top, that you know you couldn't credit it.

MR. NOWLEN: Right.

MR. GALLUCCI: So, to some extent, the only way it wouldn't is if the internal events low power shutdown, it didn't have that system in there, the you would have --

MR. NOWLEN: Right.

MR. GALLUCCI: -- and then you threw it in for the fire, and you're saying, well, ghee, this is an Appendix R system, so, we have it available, now.

Then you would have to make sure to catch that, if that system was out for some reason.

MR. NOWLEN: Right, and we would expect that perspective to come in from the at-power fire PRA, because one of the things you would do is say, okay, what did I credit it at-power fire PRA, and is any of it relevant to my low power? Is any of it different from what I did for my low power internal events, and the two somehow get merged into a magical low power shutdown fire PRA model.

But it's a very similar process of -- I didn't use the word 'magical', but you know, it's the convergence of those two things coming together, plus your insights for low power shutdown fires that end up driving how you have to model your plant, and it's very similar to what we do with the at-power, except that it's an internal events at-power, plus your fire safe shutdown analysis.

Those two come in and merge into the fire PRA plant response model. We're simply not backing up that extra step to the Appendix R analysis, assuming

that it's been folded into the at-power fire PRA. Does that make sense?

MR. ZEE: I am keeping quiet on this. I didn't originate this one, and at the risk of offending whoever the originator is, I see this as just making a simple declarative statement, and I'm not sure what he's driving at.

I mean, Jeff, your point is taken. I mean, that is what the issue is.

MR. NOWLEN: Well, to be honest, a number of these are just phrased as statements, with no recommended changes.

I tried very hard not to reject a comment because it didn't say, do this. I tried to address the spirit of the comment, and the implication, even if -- and there are a lot of them that are like that.

Okay, so, PWR-11, operating experience, database of fire events at shutdown should be reviewed more carefully. Hard to disagree with that.

This is getting into the fire frequency issue, presumably, fire shutdowns are more frequent, but also more likely to be observed and extinguished.

Well, it's a mixed bag here, because some fires are more frequent. Some fires are actually less frequent. So, there is a whole can of worms here about

fire frequencies, and we got a couple of comments on fire frequencies, that will come up later.

But our ability to deal with the fire frequencies was pretty limited given the original EPRI fire event database that was used to develop the at-power method, right. It's hard to parse those out, beyond, this was at-power, that was not at-power.

So, our expectation was that the new database would be coming out, and so, we didn't go back to the old database, and try and work out all the excruciating details for all the events, with the expectation that the new database would give us much better information and we would largely be wasting our time.

What we did instead is, we followed the practice of the at-power method where certain things were considered to be the same, at-power shutdown. Other things were split, and only the at-power frequencies were used and calculated, or the at-power events were used and at-power frequencies are calculated.

We used the existing database to calculate corresponding low power shutdown values, just on a same basis. We had to do some additional event screening, because if they realized that it was a low power shutdown

event, they may have skipped over it, in the potentially challenging assessment.

So, we had to go back and do that, but that is about the limit of what we did.

Now, again, we agree with the comment, that, you know, things will be different, in terms of fire frequencies, but at this point, we're rejecting the comment. We've already had an extensive discussion in the report about the limitations and the fire frequencies right now, and you know, that this is an area that the new database will support.

So, our proposal right now is to reject this, with no changes in the report.

MR. ZEE: Because your position is the report -- I don't remember the details in the report, because my memory cells don't work that well, anymore.

MR. WACHOWIAK: It's got a calculation of all the bin frequencies.

MR. ZEE: Well, it has that, but this is raising a point, and this comment is sort of the beginning of a smattering of comments that are stitched through out, that sort of speak to state of knowledge, and whether that state of knowledge is going to affect our ability to realistically model and treat and numerically address these attributes.

So, in that context, this report already sort of highlights this sort of weakness in the framework, in terms of things that need to be done, that I think that is really what this comment is sort of speaking to. I mean, in the spirit and fact that we're sort of changing this into sort of a framework document, not a methodology.

MR. SALLEY: I was thinking the same thing, Steve, but I'm thinking, when is that database coming out?

MR. WACHOWIAK: We don't want you to just take the database and generate numbers. This is a project that we're working on together, that generates the frequencies --

MR. SALLEY: Exactly, and when that project doesn't work, those pieces will come directly in here.

MR. WACHOWIAK: Right, but currently, the scope of work on that was not to do the low power shutdown frequencies.

Now, we can address that and say, well, let's -- before we get started, let's change the scope and do all of them. That is probably a suggestion. It's not in any of my current documents, but --

MR. NOWLEN: That may be premature, and we do have a couple more comments coming up here, and I'll

jump ahead a little bit, because another comment that comes up here shortly is, we should have fire frequencies by POS, not just low power shutdown fire frequencies. That is a whole other --

MR. WACHOWIAK: Right, unless we have a methodology --

MR. NOWLEN: So, there is -- yes, we need to work on a methodology. We need to decide how we're going to parse things.

I think, for example, legitimate thing is to go back and ask, were we right, when we said that it's the same for at-power and low power shutdown? Were those bad assumptions? Do the new data say, we should revisit those?

MR. SALLEY: But the key is quality data, and in fact --

MR. NOWLEN: Quality data is the key.

MR. SALLEY: -- that quality data never existed, until you guys did that fire frequency. Whether it's binned out and collected to do that is a different question than, do you have the data? We now have the data.

MR. WACHOWIAK: We have the data, now. We don't -- and we are -- we are currently working with the data. The report doesn't have to be out to start

the work on the data.

MR. ZEE: But there is at least three things. We want that data, in order to use it in this analysis correctly.

The easy one to do is frequency, because that is just data we can get fractioned. I mean, that is an easy thing to do.

But the problem that has always existed in the guidance we're playing with is, that is a frequency for an event, but now, we're doing fires. Now, we need to characterize the behavior of that fire.

So, it's the behavior, the type of fire we're dealing with and what it looks like. That is the big weakness, and that is a thing, from my perspective, that I really want out of whatever it is we're going to do with this data, and given the fact that we might have a better understanding of what the nature of these fires are, it could potentially change everything we do, in terms of fire modeling, because I mean, fire modeling is a whole different topic.

But it starts with -- I'll just use the term, a source term, you inject the heat and release rate and a particular growth rate, and then it gets fed into the rest of the tools and you guys do your thing.

But that is a leap of faith, and we have

to find a way to get that out of the data, and then the last part of it is, the whole behavior of what is it that the plant staff does, when a fire is detected, and I mean, we talked a lot about fire suppression.

But my position is, there's always -- I'm a little less concerned about fire suppression. I'm much more concerned about fire control, because once he actually has a fire under control, that presumably, what is going to get damaged has already been damaged, but nothing new is going to be damaged, and now, he has the fire under control. He hasn't actually suppressed it.

So, the whole notion of focusing on suppression time, we may be artificially letting the fires do more damage than what the plant staff is really doing.

I mean, so, that is -- those are the three easy ones, and there is probably more.

MR. MITMAN: But is there any difference between what you would do in a shutdown fire PRA and what you would do in an at-power PRA -- fire PRA, in that aspect?

MR. ZEE: The answer is no, and that is what the problem is, because this is an existing weakness, for the at-power fire PRA's and --

MR. MITMAN: And so, it's going to be an existing weakness for the shutdown.

MR. ZEE: No, but it's going to perpetuate a known problem that we already have in the use of the at-power fire PRA results.

MR. MITMAN: But anything we do to resolve, clarify, improve the at-power PRA's for fire, will also add additional value to shutdown.

MR. ZEE: Well, but the issue is an acute enough issue, in my mind, which is -- which got us to one of the early drivers, early on, where people were saying, do not publish, because you're scared to death, of when little nuggets of data come out, that people start running off and making decisions, based on that, and that is not what they want to have.

I mean, we have one train heading down a track that we're trying to keep it under control, and they're scared to death that we're going to send a second one down the track with it, doing the same thing, and that is --

MR. MITMAN: And my concern is, if there is a vulnerability that we haven't identified, we should be trying to identify those vulnerabilities.

MR. ZEE: Agreed, and I --

MR. MITMAN: And these are tools and

methods --

MR. ZEE: I think driving -- and this gets back to what Victoria mentioned, I think if we stick with the framework, we identify what all these barriers are, it seems like we ought to be able to have framework that we can work our way through, to decide what is it we can deal with, what is it that we can't deal with numerically, or qualitatively, and I think if we put that in place, in this framework document, we ought to be able to find a way to address what your concern is, without necessarily structuring within a framework that suggests it's all being done strictly quantitatively and numerically.

MR. GALLUCCI: Isn't the new database project going to develop new non-suppression probabilities, as well?

MR. ZEE: Right, well, let me --

MR. GALLUCCI: I thought that was part of the goal.

MR. ZEE: Let me get into -- because then you could read the -- suppression does imply control versus -- I think people confuse suppression with extinguishment.

Suppression does imply control --

MR. WACHOWIAK: Yes, but I doubt the way

the data was collected, it's a little more toward extinguish than recognizing --

MR. GALLUCCI: Even the new data?

MR. WACHOWIAK: Yes, I think so.

MR. NOWLEN: It is. Again, it's --

MR. WACHOWIAK: Now, we can change that, going into the future. That is --

MR. NOWLEN: Well, but yes, the fundamental challenge we run into is getting people to distinguish, when did you have it under control? I don't know, so --

MR. WACHOWIAK: That is fixable for future fires.

MR. NOWLEN: Yes.

MR. WACHOWIAK: Because INPO is, at least as far as I know, set to start collecting fire data January 1st, and they're going to give instructions for how you fill in that extinguishment block.

If we want it to be controlled, we just add controlled.

MR. GALLUCCI: Well, I mean, we --

MR. SALLEY: So, you know, you guys dance over some classic fire protection stuff here, now.

If we're going to say a fire is under control, but we're not extinguishing it, the classic

one there is, your hydrogen.

When we get hydrogen burns out on the trailers or in the switch yard, often times, you know, it's too risky to go in there and to try to extinguish it.

So, we say, hey, look, it's go four hours. It's going to burn out and we'll take down some high tension lines and we'll just let the fire go until it runs out of fuel, and it extinguishes itself.

So, that is classic control. The other is extinguishment. I think we always drive to extinguishment, it's at what part of the curb do you start controlling the damage, that's it, nothing else is in a damage state, until we get to extinguishment, because we always want to get to extinguishment, right.

MR. GALLUCCI: Well, for the PRA, you want to get to the point where no more PRA relevant damage will occur, which may be short of extinguishment.

MR. SALLEY: So, you stop the fire from growing --

MR. GALLUCCI: How do you --

MR. SALLEY: -- or doing more damage, and now you're going --

MR. GALLUCCI: How do you collect that data in the database? I'm not sure.

MR. ZEE: Here is a good example, from my perspective, because I mean, we've seen this because we spent a lot of quality time looking at data.

I mean, you have a fire inside say, an MCC cubicle. So, the fire brigade shows up and says, "Sure enough, I got a fire going on inside this cubicle," and they're staring at it.

But the fire stays inside the box. It hasn't come out of the box, and you're just staring at it and staring at it, and you're trying to decide what to do, what to do, and at some point in time, they finally decide, okay, we're all ready to go.

We've got all of our extinguishers ready to go. They're kind of taking their sweet time, because it's just --

MR. SALLEY: No, they're saying, "It's energized, I'm not touching it."

MR. ZEE: Well, no, but --

MR. SALLEY: They're just saying --

MR. ZEE: Agreed, agreed.

MR. SALLEY: You go touch it.

MR. ZEE: Agreed.

MR. SALLEY: You're saying, "I'm not touching it. Steve, you go touch it." That is reality.

MR. ZEE: Agreed, so, those are all states

of this, but at some point in time, eventually, they open the door, the put the extinguisher on it, and they say, "Looks like I got it."

MR. SALLEY: Or the fire blows the door open.

MR. ZEE: Or the -- which we haven't --

MR. WACHOWIAK: Which changes their state of mind and what they're going to do with it.

MR. ZEE: Yes, and they'll do something, different, but eventually, they put the extinguishers on it and it looks like they put the fire out, and you're kind of watching it.

So, if you have a great record, they'll make record, they'll say, "Oh, this time, they got the alarm, at this time they got there, at this time, they reported to control room this, at this time, they opened the door and put extinguisher on it, and at this time, they called the control room and declared the fire out."

Well, the way the data is normally processed is from here, to when they called the control room is the extinguishment time, not the time they applied the extinguisher.

Now, so, now, I've got an extinguishment time --

MR. SALLEY: Because by definition, it's

the confirmed fire is extinguished, so they have to confirm the fire --

MR. ZEE: Right, so, now, if have an event that is feeding something to the data processing for how we do the PRA, that says it took 20 minutes to put this fire out, and that's what the record shows, and you can make whatever arguments you want.

But how this is all inter-related and stitched together is, is but when I take that fire and put it into my fire PRA, that fire went from zero to peak heat release rate in 12 minutes, and it's got whatever characterization, and it's burning things outside the enclosure, and now, I'm not going to put it out for 20 minutes.

But that is this whole thing about how we have all these attributes, they're all inter-related, they're treated compartmentalized, and when dealt with in a compartmentalized fashion, everyone is intact.

There is integrity and validity in terms of how it's dealt with in that, but there is a set of boundary conditions that go along with it, and it's that set of boundary conditions that defines how that parameter is assigned, that isn't neatly coordinated with how all the other variables are applied in the calculation.

MR. WACHOWIAK: But there is --

MR. ZEE: There isn't simple line, when you know it's not, there is all these sort of ups and downs, that have to happen, and that's where our problem really is.

MR. WACHOWIAK: There is a project that is attempting to address that right now, and I had my initial contact with Nick, writing up what the scope of work is, right now.

One of the things is to address frequencies, coming out of there, that's one thing we want to do.

We'll need to decide whether we need to make it low power shutdown frequencies or if this idea that maybe it's plant operating state specific, that maybe should be a separate project on its own, I don't know yet.

MR. MITMAN: Well, but --

MR. WACHOWIAK: Right now, it's not in the project.

MR. MITMAN: But can we just decide, you know, none of the initiating event frequencies for shutdown PRA's are done on a POS basis, okay.

So, I don't think we -- in my opinion, I don't think we want to go try and parse the fire data down by POS --

MR. WACHOWIAK: That is what I was going to say, that once we start parsing it down that far, because a lot of people want to parse things down, all of the sudden, we don't have a data set that's big enough to deal with it.

MR. MITMAN: And you the other thing that is -- but that other thing that is -- you have to be careful of is, there is no requirement in the internal event standard for everybody to have the same POS's, okay.

So, my BWR-6 parses POS's one way. Your BWR-6 parses them a different way. How are you going to parse them for fire initiating event frequencies?

You're going into an area that you don't need to go in, that nobody has asked anybody to go in, and I suggest that you not complicate the issue, by parsing fire initiating event frequencies by POS.

MR. WACHOWIAK: That is kind of --

MR. NOWLEN: We'll get to that one in a minute, because that is an upcoming comment, so, I have it --

MR. WACHOWIAK: That particular idea, though, if we had to do something more complicated than just say, let's also do the low power shutdown ones, and do it the same, you know, it's at-power and -- the

same way it's been done in this book, I can probably add that to the project that we have going on right now, without much disturbance of that project, as piece one of the project.

Piece two of the project is to address non-suppression probabilities that go with the frequencies that we're generating, because you can't use a different set of frequencies, a different set of non-suppression curves. They have to go together.

The third thing which is -- which we're still discussing, as to the scope of this is, the characterization of the fires.

The problem with putting the characterization of the fires, like you're saying there, how do they grow? When are they actually put out? Getting that information from the database, extends the time frame of the project, and we'd have to decide then, how do we want to do this?

Can we publish a report that has new frequencies of non-suppressions and continue the project and do a separate report with the characterization of the fire, or is that just taking us farther down the track, where we have this disconnect? I don't know.

But it's time, and but once again, we do have the project going on. I haven't proposed to Nick,

even though I told him I'm going to propose to him, what our role and your role is in the generation of that project there, just like you did -- like Gabe sent me something on a different project, but --

MR. SALLEY: I want to see the transcript. You're going to propose to Nick.

MR. WACHOWIAK: No.

MR. NOWLEN: Okay, on that note, I told him --

MR. WACHOWIAK: No, this is what my point was.

MR. NOWLEN: Let's get back to this report.

MR. WACHOWIAK: You have this table in there, and at least from this comment, you said you weren't going to make any changes, but --

MR. NOWLEN: Not because of this comment.

MR. WACHOWIAK: But I think there is something that you have to do, to recognize that there are projects going on, to update this information, and there was a note that we added to the HRA document, where they copied something from 6850 and we put a note on the table, put some stuff in the text that says, "When the new stuff comes out, the table that you have to use here has to be consistent with what you've updated the rest of your PRA with."

So, somehow, we need to put a note or something on this, that says, "When the new frequencies come out, use the new frequencies. Don't use this table."

MR. NOWLEN: It's already there. What we did, again, getting back to this one --

MR. WACHOWIAK: Is it in the text or is it in the table?

MR. NOWLEN: It's in the text.

MR. WACHOWIAK: It has to be both places.

MR. NOWLEN: Okay, we can do that.

MR. WACHOWIAK: Because some people just copy the table and never look at the text.

MR. NOWLEN: That is not a problem, but getting back to --

MR. WACHOWIAK: Some people just look at the text and never --

MR. NOWLEN: No, I understand. Getting back to Kiang's comments, I mean, 90 percent at least, or more of what you said is equally applicable to at-power. I mean, it's mostly at-power issues.

I'm not trying to solve at-power issues with this report. So, I didn't go there in this report, and I really didn't intend to go there in this report.

MR. ZEE: Well, I didn't think you were going to solve them.

MR. NOWLEN: But I don't disagree.

MR. ZEE: I do think it would be appropriate to add, sort of the caveats and sort of along the lines of a caution, things you need to be thinking about.

And at the risk of diverging discussion again, I heard what you said about POS stuff and I heard everything Rick said, but coming back to what Steve said, there are other comments in here, that speak to things this document suggests you need to consider, that will begin to drive you into doing very POS and maintenance specific models, which will drive you to need frequencies for those specific states.

MR. MITMAN: Well, please identify that, and that is something --

MR. SALLEY: The purpose of this meeting.

MR. ZEE: Right, I mean, the simplest is to have all of this is, we have an average frequency for hot-work fire. What is the frequency of a hot-work fire when you're doing hot-work, because that's what this document is going to drive you to have to know.

MR. NOWLEN: Let's hold that because I have an alternate vision.

MR. ZEE: Okay.

MR. NOWLEN: I think it's about -- well, let's just hold that discussion.

(Off record remarks)

MR. NOWLEN: What I did on this one is, I changed our response to accept in principle, and we'll expand the discussion, how event insights can be used, given quality data, i.e., the new database to address things like fire behavior, suppression frequency.

I am not going to go too far with that, because again, if I think it is primarily an internal events issue, that we will carry forward, I'm going to say that.

But yes, so, that one, I have proposed changing to accept in principle, okay?

MR. GONZALEZ: So, with that, we break for lunch, one hour. Let's come back at 12:35 p.m. on that clock.

(Whereupon, the above-entitled matter went off the record at approximately 11:40 a.m. and resumed at approximately 12:50 p.m.)

MR. GONZALEZ: Hello, is there anyone on the phone?

Okay, we're going to start now, then we'll have regular meeting, but we're going to get started. We left at PWR-12?

MR. NOWLEN: Twelve, yes.

MR. GONZALEZ: Okay, Steve?

MR. NOWLEN: Okay, so, PWR-12 deals with LERF consideration LERF, as shutdown is limited by the reduction in source term, such that by 15 days, LERF release, dah-dah-dah.

We do not deal with level three in this document at all. So, you know, this is not a topic that is really something that we can or should address in our view.

MR. WACHOWIAK: LERF is level two, though.

MR. NOWLEN: I'm sorry, level two, yes. We're limited to level one.

We did have some discussion in there about developing LERF models, but it's really not much.

So, we really felt that the topic that's being raised here is more appropriately dealt with by the internal events folks, rather than us. We do talk about LERF, to some extent, but not at this kind of level.

I mean, even 6850 didn't say much about LERF at this sort of level.

So, our nominal response to this is to reject, it is just outside the scope of this document.

Okay, PWR-13 is multi-unit risk, dependencies and inter-connections may create unique and complex considerations with regard to shutdown risk, in general, and fire shutdown, in particular.

The issue of risk for multi-unit sites is sort of the long-standing issue with wide implications. As with other aspects of the analysis, low power shutdown would follow the lead of internal events in this regard, as well.

So, again, I think in theory, to the extent that you can do fire for one unit, you can look at the implications of a sister unit or for a sister unit, but we don't get into that in great detail, and I'm not sure that it's appropriate for us to get into that.

So, again, we're prosing to reject that.

MR. MITMAN: Can't we characterize -- add something that says, we just follow the guidance on internal events, because this isn't --

MR. NOWLEN: We could do that.

MR. MITMAN: This is an evolving area, especially post Fukushima, where there is a lot more interest in multi-unit risk today, than there was two years ago, and that's especially pertinent, seeing the damage that was done to Unit 4 at Fukushima-Daiichi, which was a shutdown unit, and the damage was done from a hydrogen source on a different unit.

Now, I don't propose to try and tackle that issue here, okay, but if we just -- can we just put something in that says, "We'll follow the lead of the

internal events."

MR. NOWLEN: We can certainly do that. I'll have to find -- probably, that will go up front, in terms of --

MR. MITMAN: Scope?

MR. NOWLEN: -- scope and assumptions, in that, without explicitly dealing with multi-unit risk and that we would expect to follow the lead of internal events, if and when methods become available, something on that order, okay?

The next one is PWR-14. This is another methods that's premature. Let's see, struggling with methodological concerns associated with fire PRA, due to conservatism's, compounded by overlaying low power shutdown, will cause resources to be expended without commensurate gain.

We are referencing back to the Erin comment and the NEI comment, as raising similar points, as to, you know, the current utility of the method, and again, I think changing it in to a framework, I mean, we acknowledge that addressing conservatism's in fire PRA is an issue, and we're working on that in the internal events concept, and you know, that will carry over.

But you know, in the context of this document, there is not much I can do about this comment,

beyond what we've already said for the other comments.

Let's see, PWR-15, development of such a methodology is premature for a second reason. Industry has been working on the low power shutdown standards.

So, this is again, the chicken and egg issue of what comes first, the standard or a methodology, and in our view, the answer is, they should come in concert. The standard benefits from having a methodology to -- as a framework, to work from.

So, again, this parallels the Erin comment, in particular. So, we're referring back to the response on that comment.

PWR-16, this is another similar, seems inverted, premise for a fire PRA is to build upon existing at-power internal events. POS's are likely to come from a low power shutdown internal events.

Here, again, would include at-power as one POS. Well, that's not current method -- language, but more suitable approach would be to start from a low power shutdown POS's and then overlay fire, and this is one where I -- you know, that is what this report says to do.

So, it is the method that's suggested in this report, and so, we really disagree with the premise stated here. Section 2.2 in particular makes it quite

clear, that the assumptions are that both an at-power fire PRA and a low power shutdown internal events PRA will be completed prior to trying to do the low power shutdown fire PRA, and then we talk at some length, about the implications for that, what we are assuming as inputs to the process, et cetera.

So, I think this comment fundamentally is just off base, from what we intended. So, we are proposing to reject that, with no changes to the report.

Okay, let's see, the assumption G16, I think that is just the fire comment, also suggested a methodology is premature. Assumption one relies on completing an at-power fire PRA. Assumption two relies on a complete low power shutdown internal events PRA.

Assumption three indicates that the necessary HRA support is beyond the scope of the draft NUREG. How can a credible low power shutdown be developed without the use of suitable HRA methodology, et cetera.

You know, this is again, it's a comment that there are gaps. We have acknowledged these as gaps in the methodology. I think the, you know, posting this as a framework, and even using the phrase 'gap analysis', because you know, again, one of our objectives was to identify the challenges and the needs for further

development, and that -- we'll make sure that that comes through more clearly.

But beyond that, we're not proposing to make any changes, based on this comment.

MR. MITMAN: But we do have guidance on how to do the fire HRA, right?

MR. NOWLEN: We do now, yes. Yes, we do now.

MR. MITMAN: Right, so, can we add a reference to fire HRA?

MR. NOWLEN: It's already there, but it referenced the draft, and so, what the fire -- what the HRA section does is say, well, you know, you're basically going to go back to the fire HRA methodology and apply the same tools, and here are the things that are going to be unique considerations, when you look at low power shutdown.

MR. MITMAN: But in response to this comment, I think we should say that there is fire HRA guidance and there is shutdown HRA guidance in SPAR-H, okay, and so, it's true, we don't have specific guidance for shutdown fire HRA, but we do have guidance on shutdown HRA and we do have guidance fire HRA, and I think we ought to talk about that in the response to the comments.

MR. NOWLEN: Okay, but --

MR. MITMAN: And then I think we can do to strengthen the report, to reference those documents more thoroughly, to help people do that and be appreciated.

MR. NOWLEN: Okay, we will do that. So, that -- but that will be a part, because I do have -- I mean, there will be a detailed response, and we had some discussion here, about the HRA section, but we'll add that to it. I had not raised that explicitly.

Okay, let's see, PWR-18, must address the issue of time average model versus configuration specific model.

So, this is really a parallel to PWR-3 and PWR-5, and so, we're referring you back to those same comments and our responses would be the same here.

We are proposing to add some discussions, but fundamentally, we're not changing the report.

MR. MITMAN: We could lift the language that's in the draft standard, and put it into this document, recognizing that it's a draft standard, subject to change.

You kwon, maybe we ought to talk about that, Steve, and see if we want to pursue that.

MR. NOWLEN: You mean, in terms of defining POS's?

MR. MITMAN: No, in terms of --

MR. NOWLEN: In terms of the average outage?

MR. MITMAN: -- average outage, all right, and --

MR. NOWLEN: Okay.

MR. MITMAN: It's been a very big subject for the shutdown PRA standard, and we worked really hard on that, to try and address the issue and resolve it.

I'm not sure we've got it fully resolved, but we could lift language from that, and plop it in here.

MR. NOWLEN: Yes, well, yes, we were somewhat reluctant to lift too much language from the standard because again, two years ago when this was drafted, the standard was in such flux, that it was very dangerous to pull too much out of it.

So, now, to the extent that it's stabilized, I think that's good, but we have to be careful, if we're going to lift it and say, you know, right now, the draft says this, and that has implications for us, dah-dah-dah, that's okay, but we have to be a little cautious.

MR. MITMAN: Absolutely, but maybe we can use language that says, "Subject to a final approval of the standard. Until then, you can use this definition."

MR. NOWLEN: Yes.

MR. MITMAN: I don't know, we should sit down and think about it, because there is a lot of knowledge that has been thought about, it's been talked about, you know, again, it's not like we're in a void and we don't have any information about how to do average outage.

There are issues involved with it, but we're not in a void, and so, anything we can do to --

MR. NOWLEN: Well, but what I wanted to avoid doing was having this report take positions on what would be appropriate correct, relative to defining POS's.

Now, I can say, you know, if you choose to define POS's this way, these are the implications for the fire analysis.

MR. MITMAN: But there is --

MR. NOWLEN: So, as long as we don't cross that line, I'm okay with that.

MR. MITMAN: But there is two different things here. You know, POS's is one thing and average outage risk is another, and we need to be a little careful, because in Reg Guide 1.200, there is a definition of POS, okay, and that is a regulatory position.

MR. GALLUCCI: So, we could reference that.

MR. MITMAN: Yes.

MR. NOWLEN: I don't have a problem with that.

MR. GALLUCCI: So, POS, you can do --

MR. NOWLEN: Yes, I think I'm probably a little --

MR. GALLUCCI: And this is an example discussion or something.

MR. NOWLEN: Yes, I'm a little sloppy when I used the term, because to me, average outage is just an alternative view of low power shutdown POS's, in a sense.

I mean, I use it in my -- I'm not a specialist here, but in my own mind, it's like, okay, what is the plant that I'm analyzing? What is the condition of the plant that I'm trying to analyzing, and to me, you know, whether it's some sort of average thing or whether it's a very specific POS or whether it's a very specific outage, where I know I'm going to maintain this system, but not that one, I don't care from this perspective. You tell me what you want analyzed and I'll analyze it. But this is a little different.

MR. MITMAN: You know, we need to be careful about POS's. That is one definition of POS's that has

been approved.

I assume that when -- if and when, the shutdown standard is approved, we'll probably revisit that definition, to see whether that needs to be changed to be made consistent with the definition that's in the standard, and of course, we'll look at, whether we agree with the definition in the standard.

But so, I assume that this document will be revisited, to make sure the agency's position is clear on what we find acceptable or not.

MR. NOWLEN: Okay.

MR. MITMAN: But as far as average outage, that is not addressed here. It is addressed in the draft standard, and there is --

MR. NOWLEN: Yes.

MR. MITMAN: -- language there, that helps clarify the issue.

MR. NOWLEN: Okay.

MR. MITMAN: So, it's not finalized.

MR. NOWLEN: Okay, good enough. We'll follow up with you on that one.

MR. WACHOWIAK: So, back on PWR-12, you said that LERF was outside of your scope, but the document says it covers LERF.

MR. NOWLEN: Yes, that was misleading. We

cover it a pretty high level.

MR. WACHOWIAK: It almost looks like you covered it at the level of, you mention it, but --

MR. NOWLEN: Kind of. Well, we cover it largely to the same extent that the at-power method covers it.

I mean, the at-power method doesn't say a lot about --

MR. WACHOWIAK: It doesn't have LERF specific things, but I think --

MR. NOWLEN: No, it doesn't.

MR. WACHOWIAK: -- the comment though, does deal with something that is LERF specific. You may -- saying that it's not covered by the document is one thing. Probably, the response should be, it should be covered by LPSD guidance, rather than fire guidance.

MR. NOWLEN: Well, yes, that was our response to that one, is that, that is something that is better dealt with in general, for low power shutdown, rather than trying to deal with it exclusively in the fire context. It's a bigger issue than us.

MR. WACHOWIAK: Okay, but you do say to calculate LERF?

MR. NOWLEN: Yes, yes, it's in there, same way it is for the at-power method, okay.

MR. ZEE: Can we go back, PWR-17. It's easy.

MR. NOWLEN: Which one?

MR. ZEE: PWR-17 item echo.

MR. NOWLEN: This is a long one.

MR. ZEE: Yes, it's the -- the comment introduces a thought, or a concept, in that very last sentence, about whether or not -- or at least my read of the comment is something along the lines of whether or not other metrics, such as time to -- or time to uncover could be used as the screening metric, for example, or something like that, so that you don't always jump -- I mean, so, I'm not sure if this document gets there or you tried to stay away from it, or whether it ought to be something that's introduced as something that could be integrated into this thing.

MR. NOWLEN: Well, again, it's another place where we would follow the lead of internal events low power shutdown.

I don't think I would do anything different --

MR. ZEE: Okay.

MR. NOWLEN: -- because it's fire. At least, I can't think of anything I would do different.

MR. ZEE: Okay.

MR. NOWLEN: Because it's fire, I mean, you know, all these things are valid points.

MR. ZEE: Okay.

MR. NOWLEN: There may be other metrics, but right now, CDF and LERF were the ones that were in the standard we were working with.

MR. MITMAN: And again, this is a point that came up in the low power shutdown standard development, and Gene Hughes was very encouraging. He wanted to encourage use of other end states, including boiling, and one of the things that I cautioned people about were that -- is, you can actually get to core damage and never go to boiling, and the clear example of that is a BWR with a drain-down event, say, to a CRD nozzle on the bottom, and you can drain the reactor faster than you can boil it, if you open up a big enough hole.

And so, boiling risk, while a very useful tool, isn't a comprehensive tool for --

MR. ZEE: Agreed, but I think the concept is whether something could be done. I don't know that the comment is suggesting you should use time to boil.

But I mean, in the early days, we would keep track of time to boil, time to uncover it, right?

MR. MITMAN: Very important information and useful information, yes.

MR. ZEE: But the inference is, there isn't an affluent number, but if time to boil, time to uncover it, is a very long time. I mean, that qualitatively tempers, in my mind, how numerical review you should apply to it.

MR. MITMAN: Well, and I disagree with you, because you could have a cavity flooded and the time to boil could be 24 hours and the time to uncover from boiling could be more than 48 hours.

But if you open up a 10,000 gallon a minute leak, through a shutdown cooling loop, you no longer have 24 hours, and so, screening out flooding conditions, because the time to boil is greater than some value, can miss whole chunks of risk.

MR. NOWLEN: But back in the context of this report, okay, I want to come back here. I'm not going to take a position on that issue, at all, in this report.

MR. ZEE: Okay, because your position is, if that kind of a concept exists, it would have already existed in the guidance for --

MR. NOWLEN: It's already an internal event low power --

MR. ZEE: Low power shutdown.

MR. NOWLEN: -- PRA.

MR. ZEE: Okay.

MR. NOWLEN: And I will follow on to that.

MR. MITMAN: Okay, if the internal event shutdown methodologies allow other end states for screening or for whatever --

MR. ZEE: Right, right.

MR. MITMAN: -- then they certainly should not be prohibited here.

MR. ZEE: Right, I mean, because I can see how I can work my way in fire space, to accommodate the concerns you have, because I mean, I can enter into a POS, that internal event site says, time to boil, time to uncover is very long, so, I don't need to worry about it, and then I have to come along and I have to reconfirm whether that exclusion from internal events remains applicable, given what I need to consider for fire, and I overlay my spurious, and I say, oh darn, I got a couple of drain valves that aren't de-powered, so, I could have a drain out event, and now, that basis is valid. I need to revisit is.

Or oh, guess what? If I just de-power them, there is no reason for them to be powered, that source of drain-out goes away and then I can invoke that release.

I mean, so there is, in my mind, a way to make it all work.

MR. MITMAN: Yes I just don't want --

MR. ZEE: It just shouldn't be --

MR. MITMAN: I'm flooded out by --

MR. ZEE: A blind criteria, just go and do it.

MR. MITMAN: My POS is flooded, I'm done.

MR. ZEE: Okay.

MR. MITMAN: I don't --

MR. ZEE: Understand.

MR. MITMAN: I'm very resistant to that --

MR. ZEE: No, but I --

MR. MITMAN: -- level of screening, but you know, if you go out and do your detailed analysis, and you come up with methods to protect the core --

MR. ZEE: Okay.

MR. NOWLEN: Okay, but again, I won't be taking positions in this report. So, don't expect it.

PWR-19, moving on. This questioned the use of the terms 'at-power' versus 'full power'.

That is this -- we will accept and we will replace the accepted terminology, now is at-power. We're not suppose to use full power anymore. This was just something that changed, as we were drafting this report. We just talk about full power PRA. The accepted practice now is at-power.

So, we didn't mean anything, but we're going

to go through the report, scrub full power. We will refer to at-power. So, that one is fairly straight forward.

PWR-20, let's see, assumptions should not be conservative. They should be best estimate and identified as important. If the fire brigade -- they cite this particular example, fire brigade is credited. The path between the fire brigade equipment and the physical analysis here should be reviewed and response time adjusted.

Longer response time should be used if there is a possibility maintenance or other activities, dah-dah-dah, secondary combustibles, quantity type position, where in doubt, conservative assumptions should be used and carefully recorded. I think that is what they're -- and they say it's not limited here.

We do not agree with the observation here. There is no intent to force the use of conservative assumptions, when you know better.

What it says is when in doubt, conservative assumptions should be used. That is standard PRA practice. That has always been standard PRA practice, and so, you know, again, we are not advocating that conservative assumptions are in any way, required. But when I doubt, you have to err towards the conservative

side of the spectrum, right.

So, but you know, again, our intent is that you will use as much information as you have to get as realistic assessment as you can, and there was no implications otherwise.

MR. ZEE: Well, this is an interesting one, and this is the beginning of where I was -- mentioned earlier, where it's -- this particular passage is quoted in a document that is the beginning.

One of the examples of -- in order to do this, and not to embed conservative into the analysis, you have to do POS and potentially some times within the POS, specific calculations, in order to do it, because I have this one nuance and in order for me to meet this requirement, I have to analysis a certain way, that would very, very conservative for all the other times during the outage.

MR. MITMAN: Well, you're required -- the draft standard requires you to do analysis at the POS level. That is a requirement. That is not an option.

So, you're going to have to do fire analysis, at the POS level. The intent is to be able to do the analysis at the POS level, and have an average risk level for the POS.

Now, what you're suggesting, I think, is

that you may have to split the POS, because of the change in the fire hazard.

MR. ZEE: Because of the activities that might be happening at the time, and then that's what --

MR. NOWLEN: Well, but that gets endemic, though, because that applies to a lot of things and my expectation there would be that you would say, by and large, this access path is maintained free and clear.

But we do know that in some point in the POS, we're going to be bringing stuff through and it's going to be restricted access.

I would expect that you would reflect that as some fraction of the time, I'm going to have a delayed response. By and large, I'm going to have the expected response. I don't know.

I mean, we didn't say anything that would prevent you from doing that, doing a split, and I understand, we're getting into to the one to many mapping problems, but I don't see any reason why --

MR. MITMAN: But this gets down --

MR. ZEE: I have this -- you know, okay, maybe I don't understand something, or maybe I don't understand a term here.

But in the back -- I have this nagging

feeling in the back of my mind, that what is floating around in my head, in terms of what a time average risk for the outage means to me, is different than what it means to you, Steve.

MR. NOWLEN: It may well be.

MR. ZEE: And it may be different than what it might mean to someone else.

I mean, what it means to me is, I'm calculating -- I'm not calculating a single parameter that exists for a small period of time, and averaging over the entire outage and repeating that for every parameter, and then doing a single calculation.

I am thinking time average is, I'm actually doing specific POS calculations and then I'm time-waiting those results over the entire duration of the outage.

MR. MITMAN: Well, I'm not sure what or how you would use an average outage risk value, okay, and you know, I think -- but how do you --

MR. ZEE: And that part, I agree with you on, because I struggle with the -- that is sort of like, it's a number. I don't know what I'm suppose to do with it.

MR. MITMAN: But having said that, that doesn't mean that there is no reason to do an outage

risk analysis.

MR. ZEE: Right.

MR. MITMAN: Okay, and I mean, in general, the risks at flooded-out are minimal compared to the risks at lower water levels, shorter times to boil.

To me, the insights that improve the risk profile, that increase the level of safety, where they need to be increased and they don't always need to be increased, is by looking at the insights and the individual POS's, all right.

Now, what the shutdown standard suggests is moving towards, as you calculate the POS, a core damage frequency for each of the initiators in each POS. Now, that is -- it's not constant equipment availability during a POS. It allows for variation.

But if the variations get to be too big, then that stipulates the creation of a new POS, all right, and I don't see anything different here that if you've got some welding going on in the turbine building --

MR. ZEE: I agree, so, I think what you're articulating is what is floating around in my head, what gets me back to what Rick said, which is the 2,000 fire scenarios times 'x' number of POS's, they'd be divided into whatever else I need to do, plus so many extra scenarios, I need to get rid of some of them, I mean,

I guess it's sort of the semi-rhetorical comment. I think I'm just treading over old territory.

But I mean, this is --

MR. NOWLEN: Well, we can --

MR. MITMAN: Yes, but if it's simply, you know, rerunning the same calculation in multiple configurations, okay, that is a job the computers are very good at, and the methodologies like ORAM and EOS, that do that and do that very quickly, you know, yes, you know, you go get a cup of coffee or you set it up, you go home and you come back the next day.

The things that difficult is when you have to come up with new HEP values for each configuration, and now, you're doing that 20,000 times and you have to come up with a new value.

MR. ZEE: Well, but that is what some of this stuff speaks to, because if my brigade effectiveness varies, then I got different rate terms for suppression.

I mean, this talks about pathways and response times, which is a concept that doesn't exist in the current guidance anymore, right? Because right now --

MR. NOWLEN: Well, it's still in there, it's just that --

MR. ZEE: It's qualitatively, right,

because we have upper and lower bound numbers that sort of speak a little bit to that.

MR. NOWLEN: Right.

MR. ZEE: So, it's sort of harder than average, easier than average. But in terms of how to actually specifically do this, it's not described.

MR. NOWLEN: No, but again, the idea here is that if -- you know, okay, I anticipate that there are sort of two conditions, either it's nominal, you know, there isn't any obstruction, or at some specific period, you expect there will be obstructions.

And so, again, I see it as, you know, it's kind of an exposure time, sort of concept, what is the exposure time when I expect to see delayed brigade response, or you know, I mean, these other things.

What is the exposure time when I think this door is going to be open, because I'm moving through it, and those things are easier to factor in, you know, things like multi-compartment scenarios have already been developed. You know what they are. It's just given you pull the hatch, it's a 1 instead of a .01, or whatever.

So, and then, again, the whole thing with low power shutdown is, there is an exposure time element. You know, how long are you in this state, that comes

into play, and this is just another wrinkle on that aspect, and I think it's -- again, a lot of these end up being dependent.

You know, my suppression system is out because I'm doing -- you know, my access path is blocked, because I got all these welders in there.

So, I think a lot of these overlap, but I mean, I do acknowledge that, you know, when you bring these kinds of concepts in, it's a complicating factor, there is no doubt, but by the same token, you can't just ignore it. I mean, you can't assume that it's always nominal. You know, that is being optimistic.

Our best configuration is when we're at-power for most areas of the plant, containment being a clear exception, but the best access.

So, if we simply take that and says it's always nominal, we're not going to be correct, either.

Now, I agree that it's a balancing act of how far do you dig, having the screening tools and knowing where you're going to, you know, put your resources to deal with the issue, or the question, I should say.

MR. MITMAN: And there is allowance for group -- what was the term, grouping? Is that what we used?

MR. NOWLEN: POS grouping.

MR. MITMAN: And so, you know, that is an acknowledgment that, you know, you can take multiple POS's and take a bounding -- if you can live with it, you can take multiple POS's, group them together, do the one analysis, instead of doing multiple POS's, where you think that there is minimal difference between the two.

MR. NOWLEN: Right, and then again, the gist of this comment was really the impression that you were required to take conservative assumptions, and that is not the intent here.

We'll review the language and make sure that that is clear, but there is no intent to impose a requirement to do conservative assumptions. It's just, you know, the -- as it's now, it's accepted, I mean, that is common practice.

When you don't know, you can't be optimistic. You can be as realistic as possible, but you can't be optimistic.

MR. MITMAN: And maybe we just need to strengthen that in something up front.

MR. NOWLEN: Yes.

MR. MITMAN: Add that point, explicitly. We've re-established the phone connection, right?

MR. NOWLEN: Yes, there was someone, there

was at least one more, one person on it. We're not on 'mute'.

MR. GONZALEZ: I think most of them might have the plan, hopefully, of calling back in later. But I don't think there is anyone on the phone right now.

MR. NOWLEN: No, there was at least one. No, there was one more who was responding.

(Off record remarks)

MR. GONZALEZ: Thank you.

MR. NOWLEN: Okay, so, we will add some clarifying words there, because it clearly wasn't our intent.

So, 21, separate stand-alone assessment for each POS is unreasonable, not feasible. This is the -- okay, we've been debating this at length today.

It was not our intent, that -- and let's see, is this specific? Mid-loop also applies to other portions that assume separate stand-alone, POS should be completed, no gain.

Let's see, I'm not sure why. It was not intended that -- why do I -- oh, Section 4.13, oh, okay.

Section 4.13 is the seismic fire interaction analysis. I was trying to figure out how I got my comment tied to seismic fire interactions.

So, what it's saying is that the implication is if you repeat the seismic fire analysis for every POS, and that was not our intent. This is, first of all, a qualitative assessment.

The idea was that you would be performed once, but you would consider the issues raised in the context of the changing plant conditions.

So, when you do your seismic fire analysis, you would think about the different POS's that you're transitioning through, and whether or not that has implications for the seismic fire interaction analysis, I don't know.

I can't think of any examples where it would, but again, there was no intent to imply that you would have to repeat it for every POS separately.

So, we're going to accept this, in part, and clarify that it was not our intent, but rather, that you would do a single consolidated review, that would consider the different POS's that you're dealing with, okay.

MR. MITMAN: Does the comment really say Section 4.13?

MR. NOWLEN: Yes, it did. Yes, the comment began with a reference to Section 4.13.

MR. ZEE: It made a whole lot more sense

to me, when it wasn't connected to 4.13.

MR. NOWLEN: Yes, when I first started reading this, I thought, wow, okay, and then I said, "Oh, we didn't mean for the seismic fire," but yes, this actually began with a reference to Section 4.13.

MR. ZEE: I mean, I like the concept that this comment raises, beyond Section 4.13, which is something I think we talked about, right?

I mean, how to do that, we said it was something that has to be covered by the internal events low power shutdown process, but I mean --

MR. NOWLEN: Yes, and I think --

MR. ZEE: But if you invoke that concept, I mean, this makes a lot of sense.

MR. MITMAN: So, if understand the comment correctly, it's saying, just look at your high risk evolutions, essentially, or high risk configuration, or POS's, and only look at fire risk during those POS's?

MR. ZEE: You should do more for those. You should do less for the others, and the way I'm reading, based on what we talked about earlier, is for the ones that you've reconciled, are not inherently higher risk POS's, you just make sure that that characterization remains valid, given a fire consideration.

It seems like you use those, you have sort of a qualitative part that let's you filter out things that you need to use, something extra, and in a way, I'm kind of thinking about it in the context of, am I going to learn something new from the fire analysis that I didn't already learn from having done the internal event side of it?

MR. NOWLEN: Well, again, you're getting into screening methodologies and --

MR. ZEE: That is true.

MR. NOWLEN: -- you know, what needs to be carried forward to a higher level of fire analysis.

MR. ZEE: Right.

MR. NOWLEN: And that is, you know, that is a challenge. It's identified as one of the things that we'd have to think hard about. I mean, it depends a lot on how you define your POS's.

MR. WACHOWIAK: So, this comment started out as referring to 4.13, on seismic, but in the middle, it says, this also applies to everything else in the NUREG.

So, I think when whoever wrote it started writing it, they saw it in the seismic and then when they got done with their question, they said, "Hey, you know, this applies to everything."

MR. NOWLEN: Okay, yes.

MR. WACHOWIAK: So, I think this part -- this thing really goes to this idea that this is all -- you know, maybe this is all really good stuff, but we don't know if it can actually practically be done, because of the size of the problem that we're setting up here.

MR. NOWLEN: Right.

MR. WACHOWIAK: And that we have to find ways to simplify this down from 20,000 different calculations to something that is reasonable, like 2,000, well, 2,000 is not reasonable, either.

But anyway, so, something more of a reasonable set, and I kind of like what Kiang threw out there a second ago, so, the plant operating state is flooded up, right, so, we've got a long time to boil, and so, maybe the only things that we need to be looking at are fires that can cause a drain-down event, to turn it into a short event, that it wasn't before.

That works for that one, but it doesn't necessarily work for all of them.

MR. NOWLEN: Right, well, and this comment event says, "Action should be based on POS states which have a high internal events risk," and you can't go directly there, right.

MR. WACHOWIAK: Well, once again, it's based on what can change your insights, as to why that is a low risk state.

MR. NOWLEN: Right.

MR. WACHOWIAK: So, the spurious operation is a new thing, that wasn't considered in the internal events version.

MR. NOWLEN: Right.

MR. WACHOWIAK: And that, you should be looking for spurious internal -- or spurious events, or sort of things, spurious events that can turn this in -- from a long duration, because you have to count on boil down and all of that, into a short duration, because it's really a flood problem, at that point.

MR. MITMAN: Yes, and you know, in SDP space, we do not analyze loss of shutdown cooling or loops in the flooded-up condition, okay, but we do analyze losses of inventory in a flooded up condition, again, based on the long times, and but in the context of fire, especially in beat up yards, where if you were to have a spurious opening of say, a suppression pool isolation valve on the running loop shutdown cooling, that gets ugly, fast, especially if you can't close the valve because of the fire.

It happens about every five years in the

industry, that somebody manages to find a way to get both the shutdown cooling valves open and the suppression cooling valves open, and they always terminate it, every time they've terminated it by closing one set of valves.

Okay, but in the context of fire, you might not be able to close the valve.

MR. WACHOWIAK: Right, so, you might be able to tailor the analysis, to look at those scenarios. You know which cables can cause the spurious operations of those valves. Okay, so, the next is the case where you have some other reason why they opened and now, because of the fire, you can't get the other valve closed.

So, it's not only which ones caused the valves to open, but you're mitigating strategy, which fires caused your mitigating strategy to fail. So, you just have to -- it has to be a comprehensive set that goes into that assumption.

MR. MITMAN: And I agree with all this discussion, you know, but keep in mind, that the strength of the PRA is finding vulnerabilities, and if you screen too much at the beginning and only look at what you know is ready risky, you're no longer looking for new vulnerabilities.

So, you have to do it in an intelligent, rational way, so that you don't stop looking for new

insights and new risks that you didn't understand before.

MR. ZEE: I think if we follow the process that we're kind of tabling here, I mean, we're kind of throwing some ideas out.

I think if you embody that kind of a process, it does qualitatively get you to a place where you see that insight, and if you can't offset or mitigate that insight by changing your operating practice or doing something like that, then it stays in your analysis, you carry it on.

But then if you change your practices, then you effectively discovered the insight and used that insight, and you're actually managing your risk, which is, I think what we all want to have happen.

MR. WACHOWIAK: While I agree with what you're saying, we still are -- have a potential here to put ourselves in a place where we have a problem that we know how to set up, but we don't know how to solve, because it's just too big.

MR. NOWLEN: Well, again, there is a pretty strong discussion that is going to be strengthened, on the need for screening.

We have to be able to screen and focus our attention, and that is a challenge. We don't have good rules for that.

So, that is going to be strengthened. There was already a discussion, but it's going to be strengthened quite a bit. We have another comment coming up on that.

MR. WACHOWIAK: Okay.

MR. NOWLEN: But in this context, I am not going to recommend you screen, based on internal events risk. It's not appropriate. There has got to be a different basis.

So, again, getting back to this comment, away from the philosophical disagreement -- discussion, we are accepting this, in part. We're going to clarify specifically, the seismic fire and extend that, and say we really expect this to be sort of a one-time with the various considerations.

The other parts, you know, there aren't any -- I mean, we've got other comments that we're addressing, elements that are brought in here, in terms of other areas where the same implication applies.

But I mean, at some level, ultimately, yes, you are analyzing by POS, and the extent to which you can make -- say, nothing has changed, so the analysis is the same, absolutely, take advantage of it, all right. We don't ignore that.

But at some level, you are, in fact, going

to define a set of POS's and you're going to do a fire analysis for each of those.

So, that is as far as we intended to go with that comment.

Okay, let's see, 22, it would reduce confusion, this is Section 4.17, which is quantification?

MR. ZEE: It's on walk-downs.

MR. NOWLEN: Walk-downs, okay. Reduce confusion for different POS's, walk-down. Functions would not change, redundancies of walk-downs.

Yes, we agree with this one, and we're not sure about the specific observation that, exact same conditions for different POS's.

But the idea was that, yes, we do expect that, you know, walk-downs and what not, will be done in a consolidated manner. We're not expecting that you'll walk down, you know, once for every POS you're analyzing.

I think the idea is that you -- that you will have to walk your plant down, again, but when you do that, you will be thinking about the changes that are going to happen, as you transition from one POS to another.

No one expected that you would go back. Let's see, I think I got off. Transient, okay.

So, again, we do expect that this has some merit. This is actually something that I think would be good to pilot, you know, see how this works out, and we don't have that luxury right now. I've got something wrong in my spreadsheet, because I'm talking about POS screening approaches, so, something is a little off.

But anyway, we're accepting this comment and the recommendations will be worked into Section 2.2, as additional considerations, relative to the analysis.

MR. ZEE: But you're going to affix 4.17, a little bit?

MR. NOWLEN: Yes.

MR. ZEE: Yes, because there is one bullet that actually does say that, "Separate set of walk-downs should be created for each POS."

MR. NOWLEN: Interesting.

MR. ZEE: Which, I don't think is what you guys intended.

MR. NOWLEN: Yes, something may have gotten off here, a little bit. My spreadsheet doesn't seem to line up, quite perfectly.

Yes, I think, you know, our view is that when you do the walk-downs, you need to think about each of the POS's you're going to be going through, but not necessarily a separate walk-down for every one.

MR. ZEE: Okay.

MR. NOWLEN: Okay, so, let's see, that was -- was that 22? Yes.

Twenty-three, if you approach and have taken the fire CDF may be in the range of 1E-01 to 1E-02. I'm not sure of the basis for that one.

Treatment of transient combustible, cutting and welding activities alone will increase by at least an order of magnitude, given the alternate means of decay heat are unavailable for almost all of the outage, and the significant safety systems are out of service, the plant has fewer defenses.

This is suggesting you go revisit some fundamental aspects of the at-power method. Much of the turbine building is in cold shutdown. Can a fire really start?

Well, we've addressed that. We actually have some words in there about equipment that is not working. Buses are de-energized. Many electrical fires during test and maintenance. Seems it actual -- actually, hot-work and transient combustibles are the real fire threat during plant shutdown. We don't necessarily agree with that, entirely.

I mean, so --

MR. MITMAN: But the premise of the comment

is, that the risk is going to be .1 or --

MR. NOWLEN: Right.

MR. MITMAN: -- at 10 percent or one percent, and obviously, that is not true, because we haven't seen any core damages from outages, outage fires.

MR. NOWLEN: Right.

MR. MITMAN: Okay, so, but a lot of the initiators will go away, because of de-energized equipment, some of the initiators will go away because of de-energized equipment.

MR. NOWLEN: Right.

MR. MITMAN: Also, there should be additional credit given because you're already depressurized and so, you can bring to bear, systems that you couldn't use other under -- under at-power conditions.

Likewise, the times to core damage are going to be longer, which should lower the HEP values, and so, I can't say I understand 6850 well, at all. You know, those aspects would be taken into consideration? Is that a true statement?

MR. NOWLEN: Yes.

MR. ZEE: They would be.

MR. NOWLEN: One of the issues here is that, you know, these numbers that are cited, I think have

no real basis. I don't know where they came from.

But if you add the fire frequency for all the sources, they're roughly on that order. So, that is saying every single fire goes to core damage, when you're in a shutdown state? I don't think that is reasonable.

So, I don't give much merit to the specific numbers that are tossed out here, but beyond that, the four specific points that are raised, these are all potential considerations that would apply to the fire frequency. It could impact the nature and likelihood of fires, and these points are already covered in the report.

So, we have Sections 4.8.1 and 4.8.2, discuss how these conditions, in addition to others, might impact fire scenarios and extensive discussion and -- of equipment operating status, and how that would impact the potential and the nature of fires.

For example, you may have a pump that normally has a pressurized oil system, and when it's -- the pump is shut down, the oil is still there, but it's not pressurized.

So, you might still have a fire, but it's less likely and it's going to be of a very different nature.

So, there is already discussions like that in the report, and we do recommend that those things be considered, when you develop both fire frequencies and the fire scenarios that you're going to analyze.

MR. MITMAN: And do we give credit for the additional people that are around during an outage?

MR. NOWLEN: That is --

MR. WACHOWIAK: That is transient combustible, yes.

MR. NOWLEN: Yes, that is a --

MR. WACHOWIAK: Actually, no.

MR. NOWLEN: That is -- well, that is a question that will need to be addressed, but I'm hoping that we'll get some insights from the event data, because certain types of fires, because there are people around -- well, like you said, they cause fires. But they're also there to put them out.

So, I would expect to see the effect reflected in fire durations, for example, and in the nature of fires.

I mean, I think we'll see welding and transient fires go up. I don't think it's orders of magnitude. I think there is an increase, but I wouldn't expect to be that large.

MR. MITMAN: Well, but there won't be any

fires in the at-power analysis, in containment.

MR. NOWLEN: That's is one, yes.

MR. MITMAN: Due to transient combustibles, right?

MR. NOWLEN: That is true, containment is --

MR. WACHOWIAK: That is not true.

MR. MITMAN: No?

MR. WACHOWIAK: Depends on who does your peer review.

MR. ZEE: It depends on who does the peer review, because basically, what we're being -- what peer reviewers have been driving the industry to do is, I think there has been a few instances, even if you're inerted, they're asking you to do something for transient fires inside the otherwise inerted area.

MR. WACHOWIAK: Because the rationale is that you're allowed one day before the outage and one day after the outage, to be de-inerted.

So, you have to factor in that time waited, you know, one percent of the time the containment is de-inerted, is what the rationale they've been giving.

MR. NOWLEN: That is outside a requirement of the standard, that says you don't have to postulate at-power fires in --

MR. WACHOWIAK: I'm just telling you, some of the peer reviewers are saying --

MR. ZEE: Well, that's in 6850, but the standard doesn't --

MR. NOWLEN: No, the standard says that.

MR. ZEE: Yes, but their premise is the fraction time is not in there, but I think if I come back around to what Steve was saying, you're right, I mean, there is a way to get to all of these attributes, but it's -- you know, we talked about the data and frequency, and there is these other parts that have to be dealt with. That stuff is embodied in the other parts, and until the other parts are done, this can't be addressed.

MR. WACHOWIAK: So, I've got a question for you on this piece.

Let's just look at a simple one, a bus being de-energized, so, you say that that -- if you know that it's going to be de-energized for the, you know, for the POS, then you don't have to consider that, as an ignition source.

Okay, but does that mean you just don't analyze that particular fire scenario, or do you take that bus duct out as equipment and increase the other ones that are still energized?

MR. NOWLEN: That is an issue. Right now, we do not make that recommendation. We say that it's a point-by-point consideration, that if you're -- you're coming in, you're doing a scenario, I counted this bus, but for this POS, I know it's de-energized, or I know it's de-energized 50 percent of the time, even.

Then I think it's appropriate to factor it in. Do I expect you to go back and reconstruct the plant wide frequency and say, for that period, my frequency shifts to these other cabinets? Currently, it does not recommend that. I don't know if we explicitly said don't do it, but --

MR. WACHOWIAK: That would be nice, to explicitly say, that that is what you intended, because I think you have multiple people interpreting that differently, kind of like the inter-containment.

MR. NOWLEN: It's a tough one, and I think from a practical standpoint, you almost have to do it that way, because again, this bus --

MR. MITMAN: Do it which way?

MR. NOWLEN: Do it the way -- do not try and adjust the other frequencies to reflect that you aren't putting a fire in this one.

MR. MITMAN: So, I think what we're getting at here is, there is an initiating event frequency for

high energy buses, per plant.

MR. WACHOWIAK: Per plant.

MR. NOWLEN: Right.

MR. MITMAN: And then you divide that by the number of buses that you have.

MR. NOWLEN: Correct.

MR. MITMAN: And so, that is what you do for at-power, if the frequency is --

MR. WACHOWIAK: Whatever it is.

MR. MITMAN: -- 'x', and you've got 10 buses and it's one-tenth of an 'x'.

What we're saying here is, well, at shutdown, three of the 10 buses are de-energized, and so, now, you don't divide the frequency by seven, you should still divide them by 10.

MR. NOWLEN: But just don't build scenarios in these three.

MR. MITMAN: Right.

MR. NOWLEN: Yes. No, I think it will work better for things that we conclude are the same for at-power and low power shutdown.

I mean, you know, if you can argue that it's the same for both, then you're -- it's less error.

MR. MITMAN: Right.

MR. NOWLEN: If we get to the point where

we're splitting things out and saying, "No, this is different at shutdown," then it becomes a little more problematic.

But you know, the problem is, again, that this is a shifting target, and it may be down for some period of time, that is relevant to a particular POS, and then it's going to come back up, either later in that same POS or during another POS, and I don't think it would be practical to be constantly shifting fire frequencies over the entire course of an outage, even within a POS.

MR. WACHOWIAK: So, what you're suggesting is to use component based frequencies in the shutdown fire PRA?

MR. NOWLEN: Ideally, that is where we expect this will head, is that we will have component based frequencies, and you simply apply component based frequencies to energized components.

MR. ZEE: Right, the sooner we get to that, the --

MR. NOWLEN: The sooner we get to that --

MR. ZEE: -- the better off everyone will be.

MR. NOWLEN: But even that, begs the same question, is because the component level frequency is

going to assume that they're all energized, all the ones that counted.

So, but again, I think just from a practical standpoint, it's not something you're going to be able to manage easily, and we certainly did not recommend it, and I don't think we -- I'd have to review the report again, whether we made an explicit statement, that you don't have to do that.

But we certainly didn't say you should do it.

MR. WACHOWIAK: Yes, I think that --

MR. NOWLEN: But I understand your point.

MR. WACHOWIAK: -- to answer this, maybe this comment or maybe other ones, I think you should put something in to explicitly say that this is how you intended that counting to work, otherwise, we're going to have a back.

MR. ZEE: Right.

MR. WACHOWIAK: Where you will write down that -- or somebody else will write down an interpretation that you didn't have, when you wrote the document.

MR. NOWLEN: Understood, okay, understood. That, I'm sure will be a point of discussion, because I don't know.

MR. WACHOWIAK: Well, because it can be interpreted several ways, which is the right way to do it?

MR. NOWLEN: Yes, understood.

MR. WACHOWIAK: So, we should --

MR. NOWLEN: Yes, well, I have my opinion. I'm not sure that everyone shares my opinion, at this point. So, we'll have to talk, I took a note.

Okay, let's see, PWR-24, low power shutdown fire PRA presents a technical challenge to the ability to capture the dynamics of significant contributors of fire, dynamics relate to status of the plant, as it transitions, the equipment, et cetera, dynamics of the containment as the plant moves, vessel inventory, dynamics of system operability, maintenance, you know, lots, this is another fairly long comment. I don't want to read it all.

Movement of locating ignition sources, I mean, you know, doors, barriers, all these things change, and yes, they do, and these dynamics, the comment goes on, "These dynamics make it difficult to prepare an outage model and likely, impossible to provide a realistic assessment of plant risk at any point in time or through a work shift. Outage specific PRA would likely be required for each outage."

You know, granted. It's hard to argue that no, those are not issues that complicate our lives.

But you know, most of these factors are also equally applicable to internal events, low power shutdown. I mean, you know, the issues of the plant changing state and the status of containment and the status of equipment, all of that.

That is an inherent issue for low power shutdown. It's not -- that is not the --

MR. MITMAN: Well, for low power shutdown, okay. It is an inherent issue, that -- it's my understanding the industry solved a decade and a half ago, with linkage of outage models to outage scheduling software.

And so, yes, it's an inherent aspect of outages, but it's one that has been solved.

MR. ZEE: Only for the macroscopic view that the outage risk management were looking at, at the time, all right, because the schedules have large brackets for systems, and lots of things happen within the system and a lot of the extra things that they consider for fire is detail way beyond what we're ever going to get out of the schedule.

I mean, I'm going to enter a system outage. When, though? When the system is out of service, is

returned to service, but there is welding happening in the sub-spots inside. I don't know when it's going to happen.

Doors are going to be open at certain spots in there, that I don't know. I mean, there is a lot of detail.

So, you're right, I mean, but that view, like I said, was very macroscopic, and it was necessary because the only way to practically run it was to raise the level of resolution to a point where you could get the two tools to talk to each other, because if you weren't able to do that, it became an unmanageable problem.

And so, now, I think this just raises that spectrum, are we at that spot again, and unless we can find a way to have the scheduling tool automatically give us the intelligence on what is happening, when, it becomes an untrackable problem.

MR. MITMAN: All right, two comments. The sophisticated outage scheduling software that I was familiar with in the early 90's tracked work orders and tracked fire permits, all right.

True, almost everybody did it with a system -- system modeling, when they brought information over, but the outage scheduling software knew when the work

-- the detailed work was going on.

So, you know, there is an inherent capability to do that.

Now, on the flip side, if not -- if the managers of safety in an outage aren't thinking about the consequences of individual work activities, and what else is going on in the outage, then how can you say that you understand the risk profile?

If there is a high risk evolution going on, that's being driven by a new fire work permit, or a new fire vulnerability, that you haven't factored into what else is going on in the outage, how can you claim that you know that that configuration is safe?

MR. ZEE: I'm not arguing that there isn't a need. I'm just simply saying that the practicality of how the problem has to be addressed, and how big of a problem.

MR. MITMAN: But that is -- one of the premises for not doing any of this, is that there is nothing new to be learned, okay. There is no regulatory application, okay. We don't need this because we understand everything about this, okay, and there is nothing to be learned, and it's just a regulatory burden, with no potential gain.

Okay, and you can't make the arguments both

ways, that there is nothing to be gained when -- if you don't understand the risks.

MS. ANDERSON: I don't think that is the argument. I think the argument is that right now, with the state of knowledge and the state-of-the-art, there isn't necessarily anything -- we wouldn't really get much better insights.

If we had a much better state of knowledge and much better state-of-the-art, then, yes, we could get -- quantify some sequences and get some really good insights, but we don't have that, right now.

Quantification isn't always better, I guess is the --

MR. ZEE: Right.

MR. MITMAN: I'm not arguing for quantification. I'm arguing for understanding the risks.

I don't care whether you quantify them, or you qualify them. I'm arguing for know what the risks are, and manage the risks, not only during outages, but in your -- the way you write your procedures, the way you perform your modifications, and the modifications that you want to do.

MR. WACHOWIAK: So, you think that right now, when the outage risk is assessed, by using a system

outage window, system window, and they're not -- we'll just -- I'm not sure if they are or not, right now, looking at the individual work orders that go into that system window, you think that something is being missed there?

MR. MITMAN: Because we haven't looked at fire risk explicitly --

MR. WACHOWIAK: So, this is associated with fire risk, not just -- it's not -- you know, in order to do this thing, have to open this cabinet and de-energize this thing, there might be something that goes on, that makes another system unavailable.

You're saying from a fire point of view, the individual steps that are going on within the system window may change the fire risk in ways that we don't understand.

MR. MITMAN: We learned something from doing the IPE's and the IPEEE's, okay. We identified vulnerabilities, okay. I think that there is probably low hanging fruit in the fire area, also.

All right, that we could learn about and improve safety on, if we did the analysis. I don't know how much -- you know, we beat the --

MR. NOWLEN: Yes, we're --

MR. MITMAN: -- the philosophical stuff to death.

MR. NOWLEN: We need to get back to here, because we're back into the philosophy of life and low power shutdown and risk analysis.

That is outside my scope. So, let me get back to here.

The bottom line is, this particular comment actually didn't make any recommendations, as to what to do about any of these things. I mean, the fifth point is the one that is really fire specific, and you know, this whole report is talking about all these things and how we're going to factor them into our analysis, you know, barriers and changing fire sources and the importance of location shifting.

So, that is readily covered. I mean, the only way I can look at this is another comment that says, don't publish. This report is not helpful.

So, you know, beyond that, we're really not -- we're not proposing to make any changes in response to this particular comment.

Let's see, G-25 is another one that is similar, guidance appears premature, it would be more appropriate in the near term, to consider risk during outages, rather than using qualitative approaches. We've already talked about that, and you know, the role of qualitative approaches. That was not our charter.

Our charter was to look at the quantitative approach.

The things goes on to pick on some of the specific assumptions, fire ignitions sources are pre-defined by the fire PRA. Low power shutdown should only consider changes that might be associated with low power shutdown conditions, in terms of equipment or trains that are in an out of service. This represents significant dynamic input.

I mean, we agree, and you know, the question, as to how deeply you're going to be able to reflect this is valid, but these are the things that change in low power shutdown, and you will have new sources, you will have sources that are basically out of play for some periods.

Now, I think, you know, at some level, you're going to have to deal with that.

Assumption two, low power shutdown PRA has already been completed, and you know, it's picking on the fact that we don't know how to do that.

Well, we've talked about that. You know, this isn't adding anything in particular new. So, I don't see it as anything new. They do bring in the issue of hot shorts, during at-power is nearly unlimited, without even considering low power shutdown configurations.

Well, I don't know how to solve that problem for you. I understand the challenges.

Assumption three identifies the importance of HRA, but HRA methods are not defined. Again, there are, as Jeff has said, and you have a fire HRA method, and we have low power shutdown HRA methods that are under development.

We're anticipating that those will merge to a low power shutdown fire HRA consideration. I don't see that as, as great a barrier as it once was.

When we did 6850, we didn't have anything for fire HRA, and even there, we chose that we're not the right ones to solve the fire HRA problem. That needed to be the HRA community.

I bring the same assumption here, is that you know, this is not something this report is going to solve. But again, it's already identified as a challenge, going forward.

Fundamental elements of credible methodology, again, I'm taking this as another 'don't publish' sort of comment. There aren't any recommendations for changes to be made in the report.

You know, it goes into lack of realism, compound conservatism, so, again, I'm just taking this as a general criticism of the method overall.

Now, this is where we got the suggestion, the one suggestion was to change the title to a framework for low power shutdown fire PRA, and so, that part, we're accepting. This was, in fact, the source for that change, but the rest of it, you know, I just -- lot of the -- it's just beyond the scope of this document, to deal with some of the challenges here, and I don't think they are explicitly picking on anything we wrote, just pointing out that there are challenges, and we agree, there are challenges.

So, again, this is where the title change came from, and that is the only part of this comment that we're accepting.

Let's see, PWR-26 is another, there is no standard presently being -- low power shutdown is presently being developed. So, we've covered this. This one is already covered above. In fact, PWR-15 was a very similar comment. So, I'm not going to get into that again, you know, which comes first, chicken or the egg? In my mind, we should evolve them together.

Let's see, PWR-27, walk-downs will not be able to capture the desired data, unless they are performed during the work activity. Insights are needed to support scheduling. Discovery of risk significant activity while the activity is already -- it is not a

benefit to that specific outage.

Again, I don't have any specific recommendations for change. I would not anticipate that we would say, there is no utility in doing walk-downs. I don't think that would be a reasonable alternative.

The point raised is, it has validity, but it's also unavoidable, and equally applicable to the at-power walk-downs, right.

When we walk-down a plant, it's a snapshot in time. I walk in, and I see something today. I come back tomorrow and it's different.

That is just life, you know, and we live with it and internal -- or at-power, I think we have to live with it, during low power shutdown, as well.

You know, our recommendation is that you do the walk-downs and you think about the things that are going to happen during the outage. You know, you think about where major work activities are going to be taking place, you know, where you're staging equipment in advance of the outage, you know, all of those things.

I think that the walk-downs do, in fact, have utility. I think it is a reasonable expectation that you'll do walk-downs and use the insights to the extent you can.

So, again, here, given no specific recommendations, I don't really have any specific suggestions for changes to the report, that is. We're not planning to make any. I think walk-downs are a valid part of it, and a reasonable expectation.

Okay, let's --

MR. WACHOWIAK: That whole thing kind of goes to the granularity of what we were talking about before.

MR. NOWLEN: Yes.

MR. WACHOWIAK: If you don't know what is going to happen, what is actually to happen in the individual activity, going in and looking at the room doesn't do you any good, or much good.

MR. NOWLEN: If you have no knowledge of what is going to happen during an outage, yes, I agree. But I don't think that is a reasonable assumption, that they don't have any knowledge of what happens during plant outages.

The other element that you can bring into this is that PRA is no longer a snapshot in time, that is put on the shelf and never looked at again.

We have -- we're getting closer to sort of living PRA's. So, my expectation is that the people doing this, I mean, there is going to be an outage at

some point, they ought to come in and see what happens during an outage, if they've never been in a plant during an outage. It's a crazy time at the plant, right?

They should see that. They should understand that.

Now, does that mean --

MR. WACHOWIAK: No, they have to sit in the work control center, running the PRA model. They don't have time to go out and walk around in the plant.

MR. NOWLEN: Yes, and that is a terrible shame.

MR. WACHOWIAK: That is what it is, now.

MR. NOWLEN: Yes, a mime is a terrible thing to waste. Sorry, where did that come from? Something like that.

Anyway, I think that -- there is nothing different --

MR. WACHOWIAK: But is there guidance that says what you should be looking for, during the walk-down?

MR. NOWLEN: Yes, yes.

MR. WACHOWIAK: Okay.

MR. NOWLEN: And you know, it talks about -- you know, you have to -- you know, what you want to do is, you want to walk through and think about the things

that are going to happen during outages, and you know, we understand that, you know, like I say, you should come back and actually walk down during an outage and see what is really happening.

Well, okay, that is not timely for that outage. But for the next outage, maybe it is, and it will also depend a lot on, you know, what's your resolution here.

I mean, if you're trying to reflect specific outage conditions, then the insights from the prior outage do, in fact, carry forward to the next outage, because, you know, instead of doing this train, I'm going to do the other train next time.

You know, well, you saw what they did the last time, now, you know what is going to happen to this one, this time, right?

I mean, so, there is -- I think there is definitely utility in not only walking down while you're at-power and think about what is going to happen during an outage, but also, during the outage, during any given outage itself, to bring those insights in, as well.

Now, is it perfect? No, I mean, I'm not going to be able to reflect in my PRA that, well, I walked down the plant today and I found a bag of trash over in this corner that I didn't know was there. So, I'd

better go rerun my PRA, you know, I don't think anybody is going to do that, right?

MR. WACHOWIAK: That's an SDP.

MR. NOWLEN: Yes, that's SDP. Yes, we'll let the inspectors go there, which they may want to. I mean, that may become an issue, but again, this is PRA, and so, I just see the comment as a bit off base.

MR. WACHOWIAK: As long as we're clear on what it is you're suppose to be looking for during the walk-down, I think you can always do more.

MR. NOWLEN: Yes.

MR. WACHOWIAK: And the models aren't perfect, by any means, and it's recognized, what they do and what they don't do.

So, if you know what we're looking for during the walk-down, and I assume, because I don't remember reading through that part a while back, looking for new ways to ignite fires and new ways to obstruct people from getting to places where they need to go.

MR. NOWLEN: Yes, and I think, you know, again, walk-downs by definition are sort of a qualitative judgmental sort of thing, how are you going to -- you know, but you do want to try and reflect the plant, as you expect it to be.

We also had the other comment about

walk-downs, and I think there may be one more here on walk-downs, as well.

Okay, PWR-28, this is the boundary between low power and full power, has not been defined, and I am not going to try and define it for you, either. This is also similar to PWR-19, it's a terminology issue that is not unique to fire. It really can't be resolved by this report, and we're following current practice, and we'll continue to do that, I think.

MR. MITMAN: Let me take a look at that.

MR. NOWLEN: Okay.

MR. MITMAN: I may be able to find some language that helps.

MR. WACHOWIAK: And it probably also depends on whether or not you've done a low power shutdown before.

MR. MITMAN: Yes.

MR. NOWLEN: Okay, like I say, it's not -- even if -- you know, it's an issue that folks have to think about, but I think the standard is going to take a stand on it.

MR. MITMAN: The internal event shutdown standard, yes.

MR. NOWLEN: Yes, and whatever they do, we'll follow suit. This report is not going to solve

that one for you.

MR. MITMAN: I mean, one way -- there is a real issue with low power, the low power POS's. If you don't think that much has been done in shutdown, you know, the low power POS's, there is just --

MR. WACHOWIAK: It's a pretty gross assumption.

MR. MITMAN: There is even less done for low power, but this is a 'don't throw the baby out with the bath water' thing, too. It's that you can't do low power, that doesn't mean you shouldn't do shutdown.

MR. NOWLEN: Okay, let's see, PWR-29, documentation here should -- and elsewhere, should have size differences from at-power to low power for specific tasks. For example, task one, the document should justify why no new fire areas were needed for shutdown.

This is, again, the -- I mean, this is exactly how the report is written. So, I'm not sure where this comment is coming from.

I mean, one of the things, when we first wrote this, we actually took the original at-power method and we edited it, and we said, you know, this is what is different, and it was crazy. I mean, it didn't make any sense at all, because we were only changing very specific passages here, there and elsewhere.

So, we completely reformatted, and what the report does now, is exactly this, it says, given that you're going to low power shutdown, these are the differences. These are the things that are new. These are the things that are different. These are the things that don't matter anymore.

So, you know, we're rejecting this comment. It was already -- and in fact, the format of Chapter Four follows the format of Volume Two of the methodology, which is the task-by-task methodology. We decided not to make it separate chapters for every task. So, there are sub-sections under four, right.

But 4.1 is task one in 6850. Four-point-two is task two. So, you know, that is the structure. So, in effect, we've already done what they've asked for. I guess they just didn't pick up on that.

There is a place, and now, there is a new Chapter One, that is strictly introductory materials, structural discussion, but other than that, Chapter Four follows place-by-place.

So, we're not doing anything more on that comment.

Now, on the specific issue of the, why no new fire areas are needed for shutdown, that is not quite

correct. The report actually does say that you need to think about whether your global analysis boundary encompassed all of the areas needed for shutdown.

We don't think that is likely, that you would introduce anything new. You know, your global analysis boundary is probably going to catch everything, but it's not assumed that that is true. There is a verification step.

Okay, let's see, PWR-30, this paragraph discusses the case where component selection will need to be augmented, however, the example, loss of redundant train due to fire while the other train is out of service, is not good.

This is exact, but there is one in the -- when the refueling cavity is full, tech spec will allow a single RHR, however, this does not help to identify additional components.

Operating RHR training is important, but there are no additional components that need to be identified because of that unique condition.

We talked a lot about this one, amongst folks and the general consensus was that this cited example was valid, at least for some POS's, and for some analyses. It's also valid for more than just the case, when the refueling cavity is full.

Many systems will be out of service at various stages, and the impact of out of service equipment needs to be considered when selecting equipment.

You know, again, if you're -- systems that may not be credited in the at-power PRA, because of the redundancy or minimal risk impact, may have a different importance when you go into low power shutdown states.

The guidance is simply a caution that the analyst should consider such factors, when you're developing your component list, and so, our basic response there is that we are rejecting the comment. We think it's a valid example, and a valid cautionary note, in terms of selecting equipment.

Okay, 31, the issue of potentially high consequence related equipment needs more thought for shutdown. The addition of item C does not provide adequate clarity. I don't recall exactly what item C is.

Let's see, events for at-power, such RCS/RHR suction valves spuriously opening, Section 2.56 provides such an example in the original document. Some other example for shutdown would be helpful, for example, spurious failure of valve, resulting in rapid drain-down. Jeff has mentioned that a couple -- with

the containment hatch off.

The cited example, we think is a good one, and we do plan to incorporate it into the document. So, we're basically accepting this, and we will add that example.

We've also asked -- Jeff was going to think about whether or not he could -- he's gone, now. Jeff was going to see if he could come up with other examples, as well.

MR. GALLUCCI: You may also be able to pull some out of fact 40, which was the low power shutdown fact, because it had some examples in there.

MR. NOWLEN: Okay, let's see, this next one is another one that we are accepting. Let's see, page 20, step six, new item C introduces a term 'fuel bundle damage' that may be quite different from core damage. It seems as this term may include mechanically damaged fuel bundled during transfer. This general topic needs to be clarified.

Yes, actually, Section 2, right now, already says that accidents associated with fuel handling, the spent fuel pool and dry cast storage are outside the scope, and that was per the draft standard. I don't know if that is still true.

But at the time, those were all excluded.

So, what we're going to do is simply delete that particular statement from 4.2 item C. That appears to be a legacy issue from an earlier draft, when we didn't have the standard yet, and at one time, the expectation was low power shutdown may include all of these other things.

So, but it's basically, it's obsolete. It shouldn't be there and it's going to be deleted.

MR. WACHOWIAK: Okay, and look at your number two, under C, as well. That seems like it specifically is talking about fuel handling outside of the --

MR. NOWLEN: Yes, we're proposing to delete all of C.

MR. WACHOWIAK: Okay.

MR. NOWLEN: All of C is just gone.

MR. WACHOWIAK: It's indented funny, anyway.

MR. NOWLEN: Yes, it is. Yes, these are just -- like I say, it's something that we had in an early draft, that just didn't get cleaned up. So, C is gone. C is dead.

Let's see, the next one, PWR-33 is another one we're going to accept. This is also item C. So, again, we're deleting the entire item. So, that will

-- C will simply be gone.

Let's see, this next one, we're also accepting. Page 22, third paragraph, this paragraph discusses a situation where a fire door does not -- where a fire does not cause damage to any fire PRA, equipment or cable, but during which operators preemptively trip the reactor.

Let's see, does not need to be considered for the -- it discusses the analogous situation, which makes sense for low power, but not for shutdown, cold shutdown or other non-power modes.

For example, fire within a plant Mode 6, fuel movement, the operators would likely suspend fuel movement, but they would not transition on a Mode 6.

The additional case is a really good example, and it's clearly consistent with our intent to the section. So, we're going to add the discussion and clarify the intent there.

So, again, we're accepting that comment.

MR. WACHOWIAK: So, the comment or new -- that section is associated with places where you don't have -- you're screening an area because it doesn't have the potential to cause an upset of the plant, in full power?

MR. NOWLEN: Right.

MR. WACHOWIAK: But they're saying, okay, low power, you should do that, too, and to clarify that.

Is it really -- in shutdown, is it really an upset of the plant or would it be a change in plant operating state?

MR. NOWLEN: Well, that is kind of the gist of the comment, is that they're not necessarily -- you know, at-power, you may preemptively trip the reactor, if you think something is going bad.

We actually say, that is not the fire we're worried about. We're looking for the fire that forces you to do something and causes loss of mitigating equipment, and things like that.

It's not the one that --

MR. WACHOWIAK: It's not the planned stuff, okay.

MR. NOWLEN: Right, or it's not the one where, you know, I've got a fire in the tool shed, and you know, we're shut down anyway, in a couple of hours, why don't we just go ahead and shut down, I don't know what it is.

But there was a time when folks would automatically assume any fire would cause a trip. So, you really didn't get to screen anything out, at all, any fire, anywhere in the plant, was assumed to at least

cause a trip.

And 6850 says, no, no, no, don't do that. Only assume that it will trip if there is a reason to trip, and so, this was paralleling that discussion, but when you're already in an outage, it doesn't make so much sense.

So, the way we took it is that they're saying, you know, there are better examples, once you're into the outage, that is -- you know, you're not going to change plant operating state because of something, and that that would be an additional example.

I mean, if you're at low power, yes. You know, if you're in start-up, you may trip the plant back down, but once you're in an outage, you're not likely to change operating states. So, that is the way we took it.

Again, we're going to accept it and incorporate it into the text.

MR. GONZALEZ: Steve, before we continue, let's take a 10 minute break.

MR. NOWLEN: That is a very good idea.

MR. WACHOWIAK: We wanted to see how long Steve would last.

(Whereupon, the above-entitled matter went off the record at approximately 2:20 p.m. and resumed

at approximately 2:30 p.m.)

MR. NOWLEN: Okay, so, that was 35. Thirty-five is another one that we're accepting. We are into a rash, where we're going to accept most of the rest of these.

Separate model may mean -- may need to be developed for each POS. In practice, separate model is created only for groups of POS's.

This is a fair comment. Discussion of the report was meant as a sort of worse case scenario type of discussion. You know, at worst, you may end up there. We agree that the discussion should be expanded to include other cases, where an intermediate solution would work, grouping POS's, it might require on minor tweaks, compared to another, and a POS that may screen without detailed modeling.

So, we're accepting that comment and we're going to adjust the text, accordingly.

Thirty-six is another accept, step 1.2 identifies an example of a special condition that could be taken into account, an open door of an active electrical cabinet that is normally closed. This may be identifiable for a specific outage, but is unlikely, this level of detail would be identifiable for an average outage. It can occur, dah-dah-dah.

We agree, we're going to clarify the discussion, in addition to the highly specific case of a known open cabinet. We expect that there are going to be others that may impact the characterization of a fire.

Also, you may be able to look at it from an exposure time period. If you're scheduling, you know, for example, routine cleaning of a particular bank of cabinets, then each cabinet will be open for some fraction of time that could be reflected.

You can incorporate that example -- that knowledge. The intent of the discussion, basically was to allow for those kinds of things to be brought into the analysis, not that you would require they be brought in, but that you allow for it to be brought in with some reasonable expectation.

So, again, we're going to accept this, clarify the discussion, add the additional examples, and that should address it.

Let's see, 37, first paragraph discusses the LERF model for a case with containment open to atmosphere and claims LERF model could be very simple, however, the ability to isolate containment must be evaluated, time available, support, et cetera.

Observation is true, and the text may be

somewhat misleading, as worded. So, that point that we intended was that even including the considerations that the comment brings out, that's still quite simple in comparison to the models used for containment failure for at-power.

So, we're going to revise the text to reflect the intent, and basically, say it may be quite simple in comparison to the containment failure model using the at-power PRA. That is what we were meaning, compared to at-power, this could be a lot simpler.

Okay, let's see, 38, we're also accepting, table one would benefit from the additional column, to explain why these fire ignition frequency bins are specific to shutdown conditions.

The basis actually was provided in the original at-power method. This document didn't repeat it, but the comment is a good comment, and what we're planning to do is bring at the very least, an abbreviated version of the discussions from 6850-101 1989, and we'll either add that to the table as the suggestion here was, or if it gets a little too much, we'll put it in the general text, somewhere. But one way or another, we'll bring those discussions forward.

Let's see, 39, fourth bullet says the ignition frequency is the same among all POS's,

presumably, we meant all low power shutdown POS's, true.

Two errors, first at-power should be considered as a POS. We've talked about that. That is not the current language. So, all POS's, we will clarify and say all low power shutdown POS's.

Second is just the fundamental assumption that it will be the same, for all low power shutdown POS's, when they are actually much more like -- certain things are more like at-power, less like shutdown.

That, you know, initially it's correct. We were meaning that it would be all low power shutdown POS's, and we'll revise the text accordingly for that. We're not going to -- we're not yet ready to transition to the at-power, just another POS.

But as to the second power, that is -- we're not going to go to the at-power as a POS. Balance of the comment is also correct, that in theory, the frequency should be a function of the POS. Unfortunately, our ability to do that is effectively non-existent right now.

With the new database, we think that may change, and I think one legitimate question that is raised here is, is low power more appropriately lumped with at-power, as opposed to shutdown, in terms of fire

frequency?

That is probably a good assumption. You know, when I thought about it --

MR. WACHOWIAK: It's the way the data was extracted from the database.

MR. NOWLEN: Right.

MR. WACHOWIAK: You guys didn't look at, well, this is low power, so, it should go in the shutdown bin.

MR. NOWLEN: Yes, in fact, we did. Most of the ones that happened during start-up were counted as at-power, same thing.

So, that part, we'll mention in the report. I don't have that down here, so, let me take a note.

So, we are going to, again, accept this comment, at least in part, and we're not going to do the at-power as a POS thing, but the rest of it, we will, and we'll make a note that in -- you know, in the future, and in fact, in 6850, because that is a good point, as well, that low power has been treated as an at-power thing, and that that may be the correct answer going forward, that we should be making a different split than we have implied.

So, again, we're accepting that, mostly, not entirely, but mostly.

Let's see, the walk-down, let's see, PWR-40, the walk-down discussed to identify shutdown specific ignition sources would be effective only if it occurred over a number of outages, and at numerous times during each outage.

It would be more effective to consult with outage planners, maintenance supervisors and previous records, regarding the occurrence of hot-work.

We agree with this comment. It's a good observation. We are going to expand the text to include this suggestion. The original intent was the expectation that walk-downs would give a general impression, as to what goes on during an outage, and so, that is why we had recommended that folks doing this, actually walk down during an outage, to learn from that.

No single walk-down is going to give you all the information you need, things change day to day. But I think the suggestion of looking at past records and maintenance records and maintenance practices and things is very good.

So, we are going to accept the comment, expand the text and incorporate those suggestions.

Forty-one, table three entries for ICDP and ILERP, meaning -- the meaning and intent of CDF within in-tact trains and systems unavailable are not clear.

Yes, these are just incremental CDP and incremental LERP and we'll just make sure that those are clearly defined in the text.

So, we're accepting and we will ensure that the acronyms are defined, both in the text and the list of acronyms, because they apparently didn't make the acronym list.

So, let's see, 42, page 35, table four provides an interesting proposal for screening criteria, but this is another area that should be addressed by the internal events low power shutdown PRA, first.

It is not clear what is being screened, fire areas, fire scenarios, POS's or a combination. Screening would be more appropriate, if done by POS group, groups that share commonality. The screening of 10 percent of internal events, COF, could be extremely low for some POS's.

That is true. The concept of screening by POS groups, we think has potential merit and we'll add that to the text, as a possible approach to explore for the future.

We will also clarify to reflect what is being screened, but screening POS's for a fire based on internal events risk is really not what we do.

So, I don't believe that we said to screen

by 10 percent of internal events risk, if so, that is a carry over from 6850, and it's an obsolete concept. Did we say that?

MR. WACHOWIAK: Yes.

MR. NOWLEN: We did? That needs to be fixed, as well.

MR. WACHOWIAK: Right.

MR. NOWLEN: You know, the standard overrode us on that. So --

MR. ZEE: Well, the Reg Guide did.

MR. NOWLEN: The Reg Guide did, as well. So, that is just an obsolete concept. So, again, it's a carry over from 6850, that was unintended.

We do acknowledge that that may be very low, you know, if the internal events number is very, very low, 10 percent of that number is very, very, very low, or something like that.

So, that is true, but the fundamental thing is that we just don't screen fire, based on internal events. So, we need to clean that up. That was an error on our part.

Forty-three, let's see, page 38, first paragraph discusses consideration of de-energized equipment for some POS's as a factor in determining fire likelihood. Is this equivalent to not counting that

piece of equipment to prevent the total -- this is a point you raised, Rick, to preserve the total fire ignition frequency for that component, something else needs to increase. This becomes very complex.

Yes, it doesn't really tell us what to do here, but it is a valid comment, and our recommended approach is that no, these are not equivalent. That is, that saying, "I'm not going to put a fire here, because the equipment is de-energized during this POS," is not the same as not counting the equipment.

MR. WACHOWIAK: Right.

MR. NOWLEN: Because of the population preservation issue.

The approach, as written, represents a compromise between the alternatives, but we really do think it's the only practical way to do this, that to try and require that every time you take one item out of the -- out of play, because it's de-energized, that you increase all its others in, accordingly, is just not practical, and we don't intend to recommend that.

We do think that the errors, by the way, are going to be small. We're going to be taking a small fraction of equipment out of play, at any given time, and it would be really complex, and again, the idea that we're going to component level of frequencies, I don't

think we're going to take that into consideration.

So, this one, we're basically accepting in principle. There aren't really any specific changes recommended in the comment, but we are going to be addressing the points raised in the text, and I'll bring in the same comment that we talked about earlier, make it a bit more explicit, that we are recommending you not, in fact, do that.

Forty-four is figure two. This is another one that it was an issue in the PDF file, and so, we're accepting that. I consider that to be a typo, in effect.

PWR-45, page 46, first full paragraph, the discussion of table six notes that there are relatively few differences. It would be helpful to summarizes the differences and the bases for the differences.

This comment is also accepted, the differences being referred to could be easily highlighted. This is not hard. Primarily, they're associated with certain fire sources, and would not be considered in the low power shutdown fire PRA, at all.

For example, the turbine generator exciter is not going to be a fire source, when you're shut down.

So, we are accepting that comment and we'll revise the text, as they have indicated, and we'll

clarify exactly what the differences are.

Let's see, PWR-46, page 50, this is again, the same comment of PWR-20, picking on the bullet that said, when I doubt, conservative assumptions. There is always some doubt. Well, true, but again, the idea is we are as realistic as we can be, without being optimistic.

Forty-seven references seven, eight, nine and ten do not seem to match the reference in Section 5. We're accepting this, and we'll clean up and make sure that the references are properly cited.

I suspect what happened is something got inserted above, and these didn't bounce down accordingly. So, we'll simply do a clean up and make sure that catch those.

Let's see, both 48 and 49 were already covered by Susan. Those were HRA comments. So, I'm going to skip over them.

PWR-50, tab 16 should emphasize documenting the differences from at-power fire PRA. We agree. We accept the comment as written. The section basically repeated what was already in the at-power document, and so, what we'll do is, we'll go in and we'll be more careful about highlighting the differences and revise the text to say, we're really interested in understanding what

you learned about low power shutdown. So, again, we'll accept that comment.

Fifty-one, we are also accepting, tab 17 includes a possibility that separate walk-downs will be necessary. This one, actually, we touched on before, as well.

We agree, that was not really the intent. Grouping POS's and the idea that you can do a walk-down where you think about what is going to happen to the plant, as you transition and things of that nature, the suggestion on interviewing outage planners is also excellent.

So, again, we're going to accept this and we'll revise the text, per the comment.

Fifty-two is another accept. Last bullet says, on page 59, this walk-down may take place after the low power shutdown fire PRA is completed. Odd suggestion, to perform a walk-down after a study is done.

This is a recommendation aimed at PRA maintenance and updating. You know, again, we don't put PRA's on the shelf to collect dust anymore. We try and use them and keep them current.

I have little doubt that the standard will require maintenance and updating of low power shutdown, as it does for at-power.

So, again, the intent here is looking forward and maintaining the document. What we will do is, we are -- it doesn't say delete that. It says it's odd. So, we are accepting the comment and what we're going to do is clarify what our intent here is.

MR. WACHOWIAK: Put it in a funny font, or something, to make sure it's odd.

MR. NOWLEN: Yes, we will number --

MR. WACHOWIAK: Are you really intending to say that the walk-down may take place, you know, may -- is kind of like saying you're allowing -- or do you mean, if the walk-down takes place after --

MR. GALLUCCI: It's not the 'may', in the sense of a standard.

MR. WACHOWIAK: Yes, it's not --

MR. NOWLEN: No, no, it wasn't intended that way. The idea is that you may be doing your PRA before you do an outage, the next outage.

MR. WACHOWIAK: So, you just can't do the walk-down ahead of it.

MR. NOWLEN: Yes, you can't -- you're not going to wait for an outage to do this walk-down, so that you can do your PRA.

So, the idea is that -- and the specific recommendation is that they do a walk-down during an

outage, and so, the idea is that we recognize that this may come, at some point later, after you've finished your PRA, but that is okay. The idea is, do it anyway, gain the insights, document them and bring them in when you do your maintenance and updating of the PRA.

MR. WACHOWIAK: You may want to add pre-amble sentence to that bullet, that says, what you're saying there, that sometimes, you want to complete the shutdown PRA before you have your shutdown, and some of the walk-downs are therefore, confirmatory, and if you do that, this is what you have to do.

MR. GENNARO: I'd say this confirmatory walk-down may take place after.

MR. WACHOWIAK: Then it wouldn't be so odd.

MR. NOWLEN: Right, yes, we didn't explain our intent there, very well. That was clear. So, they found it odd. We'll explain. It does kind of come out weird, though. Why would I walk down, once I'm done? So, you know, we agree.

MR. WACHOWIAK: Get more dose.

MR. NOWLEN: Yes.

(Off record remarks)

MR. NOWLEN: PWR-53 was an HRA comment. So, I'm not going to go there. Susan already addressed that one.

PWR-54, flood around the spent fuel pool is a bad example of unique outage configuration. A better example would be large transformer replacements or EDG. Overhauls, again, we're accepting this. These are good examples and we'll incorporate them into the text.

MR. GALLUCCI: Are we keeping the spent fuel pool and just adding, or we're replacing it, because they said it was a bad example.

MR. NOWLEN: It is a -- it probably is a bad example, because we're not doing spent fuel pool risk. So, yes, we will replace examples.

Again, that was something that is probably a legacy from an early draft, where we thought spent fuel pool and things like that were going to be in play, and we just didn't catch it, when we cleaned up.

But these are good examples. We actually do like the example. So, we're going to bring those specific examples in.

Fifty-five, fires in early containment at-power are analyzed. They usually have no impact since there are limited sources and targets.

What we said is that you don't -- this is in the context of, you may need to bring the containment back in play, because you didn't analyze it when you

were at-power, if it was inerted.

Now, again, the standard and -- 6850 gives you a -- no frequency, if you're in an inerted BWR containment.

Now, I'm hearing today for the first time, that someone expects you to do an inerted containment fire frequency because there is one day on either end that you might be at-power. That is news to me.

I would not have expected it. I don't think the standard requires it. So --

MR. WACHOWIAK: Neither do I.

MR. ZEE: I don't either.

MR. NOWLEN: Well, this is your own guys doing this to you, right? I mean, this is the peer review.

MR. WACHOWIAK: We know.

MR. NOWLEN: Okay, good, then I'm not going to try and solve your problem for you, I'm sorry.

I think --

MR. ZEE: Well, I have it on the record, though, Steve said --

MS. ANDERSON: Well, actually, we do.

MR. NOWLEN: I never would have expected that.

MR. ZEE: Put it in bold font, please.

MR. NOWLEN: Okay, so, that said, bold font, Steve said, you know what that will get you? That and a buck will almost get you a cup of coffee.

MR. GALLUCCI: That is about as -- what Ray said, when they were giving things, the comments out before.

(Off record remarks)

MR. NOWLEN: I am just a contractor. I used to begin all of my industry presentations with a slide that said, "I'm just a contractor."

MR. ZEE: Okay.

MR. NOWLEN: Okay, so, but yes, I think that our clear intent was that you would not do fires inside of an inerted containment.

Now, that said, low power may bring it back for you.

MR. ZEE: Right.

MR. NOWLEN: If you're in low power operations with a non-inerted containment, then I think it's back in play, but at-power, you know, the presumption has always been the routine configuration of the plant while operating at full power conditions, and that is inerted. So, I'm a little surprised.

MR. GALLUCCI: You can probably figure out the source of the comment, by which peer reviewers had

been bringing this up.

MR. NOWLEN: Right.

MR. WACHOWIAK: No, you can't.

MR. GALLUCCI: No? It's been more than one?

MR. NOWLEN: So, in terms of -- sorry.

MR. WACHOWIAK: Go ahead, keep going.

MR. NOWLEN: In terms of this comment, we're going to accept it in principle, and we'll revise the text to say, assuming that fires is an inerted containment, were not analyzed, consistent with the at-power guidance, then dah-dah-dah, okay.

MR. WACHOWIAK: Okay.

MR. NOWLEN: Okay, so, that is the way we're going to address it, but I think it's a mis-interpretation of what the at-power guidance says. So, talk to your peer review folks.

Let's see, 56, Section 4.7, screening criteria are ambiguous and may be beneficial to say CDF and LERF as instantaneous for the single PAU analysis. This would take the impact of time out of the consideration of screening.

This really paralleled their comment 15, and so, we refer you back to that comment.

Fifty-seven, text is missing in the flow

chart. This is the same typo thing, apparently a lot of people with it. It looks great on my computer. But again, we'll fix that one.

Fifty-eight, this is another typo on the reference of 1921, apparently released in November. I'm not sure what exactly we said, but we'll accept and we'll fix the typos.

Fifty-nine was covered by Susan. That is another HRA comment. So, we can skip over that.

Here is another reference that is apparently PWR-60, reference 13 is incorrect. This should be reference 12. Comment accepted. We're going to have to do a general editorial clean up on our reference list, and especially now, that Jeff has recommended that we expand that reference list considerably. We don't have that many references in here. But we'll clean it up.

Sixty-one, Section 4.15, "Uncertainties are addressed," only in that they are identified and evaluated for impacts to the particular application that uses the model.

I am not sure what they're asking me to do here, so, this one is a little bit difficult. If anyone has any insights here. The closest match seems to be step two at the bottom of page 57, guidance for addressing

uncertainties largely differs to the analyst, to decide what is necessary and appropriate.

That would likely include consideration of the intended application, but may also include compliance with the ASME standard, which continues to evolve in this regard.

We all know that uncertainty is an evolving area. So, I am not real clear on exactly what this comment is getting at, and if anyone has insights, I'd be happy to do something. But for now, I'm not sure what to do.

I mean, in a sense, I agree. I mean, uncertainties, the extent to which you have to deal with uncertainty depends a lot on what you're trying to do with the answer. But again, I'm a little unclear here.

So, if there is any additional clarification, we'll consider it.

MR. JULIANS: Okay.

MR. NOWLEN: Hearing none from the phone, I don't know if we have anybody left on the phone.

(Off record remarks)

MR. NOWLEN: I've heard several.

MR. JULIANS: Yes, there is nobody out here.

MR. NOWLEN: Okay, thanks, appreciate that.

(Off record remarks)

MR. NOWLEN: Okay, so, that gets us through the PWR Owners Group set, which takes us to EPRI's comments.

EPRI, the sort of first one, what I called EPRI-0 on my spreadsheet, was kind of an introduction to why they thought we were premature.

MR. WACHOWIAK: Yes.

MR. NOWLEN: So, I didn't really provide a specific response to that comment, per se.

EPRI-1, we covered. This was the recommend the draft be withdrawn. So, we've covered that one.

MR. WACHOWIAK: Well, it is withdrawn, until such a time when you've piloted it.

MR. NOWLEN: Yes.

MR. WACHOWIAK: So, maybe delayed is a better term. I just get worried with what we're setting up. It's real easy to set up this -- not real easy. It's easy to set up this problem, but I think it's going to be a problem that's hard to solve. I think we're in traveling salesmen sort of space here, and we just are worried that we're setting ourselves up to have to have an analysis that can't be practically solved.

MR. NOWLEN: Understood. I guess it looks

like we'll have a little time. We can come back and revisit that discussion again, but you know, we've been there. I'm not going to go back there again, right now.

MR. WACHOWIAK: Okay.

MR. NOWLEN: So, let's get through these last few, and then come back, if you'd like.

Let's see, I have two EPRI-1's. The second EPRI-1, which is actually the one they put a 'one' on, so, I guess that's why I did that, sorry.

Application and maturity of methods, you know, we agree conceptually, but you know, this paralleled Doug True's comments, and NEI's comment one. This was really a lot of the basis for the recommendation not to publish.

So, I am not sure I'm going to go into that in any further detail, at this point.

EPRI-2, assumptions and limitations, must provide detail, sufficient level for user-owners on how to implement it, includes multiple assumptions and limitations fundamental to the PRA development, with several issues dismissed as beyond the scope, as written, the assumptions will likely lead to high level conservatism.

Again, I think here, it parallels the others, and I think the change of the report title to

a framework should help there.

We also very clearly called these things out as challenges, you know, that we're not dealing with the POS issue. I am not going to solve the low power shutdown fire HRA method. So, I think we're pretty clear on that.

MR. WACHOWIAK: Yes, I think changing from a methodology, which it's really not, to a framework, helps there, because it doesn't leave -- well, everything is more of hole, than having something with a bunch of holes.

MR. NOWLEN: Understood. Okay, so, that fairly well addresses that one.

EPRI-3, adaptation of low power shutdown PRA to fire PRA, the method presented begins with the 6850 and builds the low power shutdown, dah-dah-dah. This is an expansive scope of the analysis, and it -- and I think that is suppose to be an expansion of the scope of the analysis, by not recognizing the similarities between at-power and low power POS's, and an approach to POS development. Minimizes grouping in an effort to be comprehensive.

This is getting into, you know, things we have talked about at some length. There was no intent to minimize the grouping of POS's, from the standpoint

of the plant response modeling, in particular.

I think that, you know, again, we're going follow whatever internal events decides to do there. They define POS's, we analyze them.

I think there is also -- you know, the greater challenge in fire is grouping things in the fire context, where significant changes may occur from POS to POS, or even during the course of the POS, and how we deal with that, some of the issues Kiang has raised, all legitimate questions.

There was a specific comment here that term 'instantaneous CDF' needs to be defined. This may mean bounding. Agreed, that part, we agree, and we will be -- we'll update the text to define those terms clearly.

MR. WACHOWIAK: Because if you've recognized it as a bounding CDF for the POS, then some of the simplifications Kiang talked about can be made and then just recognition and the uncertainty may be that it is bounding. It's not exact throughout the whole thing.

MR. NOWLEN: Right, the next part of the comment says, "The example presented considering -- concerning spurious actuation of a high pressure pump, while the reactor vessel is closed, but in cold shutdown, suggests this sequence leads directly to loss of DHR."

Example implicitly assumes that all PWR's either have pores or rely on them for pressure relief, not the case. Furthermore, dah-dah-dah.

Let's see, what did we say about that? This one is a little outside of my own personal knowledge base. I am not the systems guy.

MR. WACHOWIAK: Yes, I think there are a couple of plants that may have that condition, but not all.

MR. NOWLEN: Okay.

MR. WACHOWIAK: And not even most.

MR. NOWLEN: Yes, so, the response I got, and I believe this would have been Jeff Rochen's, cited clarification and the example are valid. The authors will consider the cited discussion and the text will be revised.

So, we're basically accepting that part of the comment, and we will adjust accordingly.

Let's see, what is next on this list? This is another lengthy comment that has several parts.

Not clear, it is not clear in Chapter Four, if the reported shutdown frequencies are annual frequencies or if they have already been adjusted.

Now, they are annual frequencies, so, they'll -- they were done on an annual basis. So, we'll

clarify that. You would, of course, have to adjust for the time in the mode.

Useful, could be summarized in two paragraphs. We beg to differ. The way of frequencies by the fraction of the time in the POS do the same as at-power fire PRA.

We think it's a little more complicated than that. So, that is -- let's see, what did we say, explicitly? Yes, this is sort of contrary to most of the other comments, which tend to call for far higher levels of detail and guidance. So, we're not intending to accept that part of that comment.

Let me get back there, again. Let's see.

MR. WACHOWIAK: Are we going to get your table with the comment filled in?

MR. NOWLEN: With the answers?

MR. SALLEY: Didn't plan on it. We didn't plan on it, no.

MR. NOWLEN: I don't know. Limited discussion of what constitutes a fire that disrupts the POS, this is a highly conservative assumption.

All fires are assumed to cause a plant trip. That is not true, right, but we already talked about that. It's, 6850 does not say all fires cause a plant trip. So, that is not true.

The intent with low power shutdown was to follow what 6850 does say, which is that you need a fire that causes a disruption, and we already talked some clarifications to that language.

But again, we disagree with the premise that 6850 says you assume trip for all.

So, that is basically it for that comment. We are accepting several parts of it, and we're going to add clarifications, accordingly, and then we're rejecting some of the other parts of the comment. So, is it clear enough, which ones are which? I tried to cover them.

MR. WACHOWIAK: No, but tomorrow, it may not be.

MR. NOWLEN: Tomorrow it may not be. I can't help you tomorrow. I'm only here today.

(Off record remarks)

MR. NOWLEN: Tomorrow, no, my brain is already on the beach in Hawaii, even though I am not there, yet. Sorry.

Let's see, EPRI-4, Section 4.5 states the following, "A separate model may be needed for each POS." This parallels kind of what we just had, and we agree, it was not our intent to imply that you would have to develop an independent model for every POS, although

it clearly reads that way. We are going to fix that text.

So, we are -- let's see, yes, we are accepting this and similar to other changes, we're going to update the text. We've already talked about grouping, as well. That will be included, and yes. So, basically, we're accepting that comment, and it does parallel some others.

Let's see, EPRI-5, low power and hot standby modes. Low power has more in common with at-power. We have run into this before, as well, PWR-8, was a very, very similar comment, and it's also -- this also gets you tied up into, you know, is at-power just another POS, low power looks like at-power.

We agree, in principle, that there is probably more commonality. We talked about things like the fire frequency, maybe it makes more sense to group low power with at-power for fire frequency purposes.

So, again, we'll -- we've already talked about some of the responses there. Again, we're going to stick with the accepted terminology, which keeps at-power as a -- or I'm sorry, low power and shutdown as separate modes.

EPRI-6, outage types and modeling, one of the technical challenges has been defining the boundary

conditions of the analysis, given the differences in scope of maintenance, the differences in scheduling that can arise, et cetera, et cetera.

This is really about defining POS's, and we agree, but again, it's a general issue, relative to low power shutdown PRA, and I'm not attempting, with this report, to solve that challenge.

So, we are rejecting this comment, and we'll defer to the larger community, to solve these issues.

Seven, procedures, the document outlines a cursory treatment of procedures, conservative realism, and these must be addressed in detail. The at-power EOP's do not have simply based counterpart to shutdown. This really was more Susan's. So, we should have made her talk about this one.

But I think she did, in fact, talk about it. You know, we recognize that the procedures at low power shutdown conditions -- well, shutdown, in particular, are different, and that is something that I think is already acknowledged in the general low power shutdown HRA guidance, which there is guidance out there.

So, we're -- it's not our intent to repeat all that here. What Susan tried to do is highlight the areas where, you know, low power shutdown and fire were going to be different from, in particular, at-power fire,

and you know, these are true. The procedures are different, but we're not going to try and go into detail, as to how you deal with that.

I think we acknowledge the fact that the procedures are going to be different, and that that will have to be treated. So, we're not proposing to do anything specific, in response to that one.

MR. WACHOWIAK: So, on EPRI-6, that second paragraph there, that talks about the peer review portion of it --

MR. NOWLEN: Did I skip that?

MR. WACHOWIAK: You talked about the thing, in general, but you didn't talk about the second paragraph.

I think if it -- we can probably fix this by saying, if you do a model for a specific outage, it's not a new fire PRA low power shutdown model. It's an application of the model that you've already developed and peer reviewed. That would be your interpretation?

MR. NOWLEN: Say it one more time.

MR. WACHOWIAK: Okay, so --

MR. SALLEY: Before you say it, couldn't outages be very different?

MR. WACHOWIAK: Well, that is the thing, but you're not going to have a peer review for every

outage PRA. Peer reviews are expensive.

MR. SALLEY: I'm just wondering the differences of the outages.

MR. WACHOWIAK: The outages are going to be very different. That is why it's hard to define an average outage model, because there is no average outage.

MR. NOWLEN: Every outage is a bit unique.

MR. WACHOWIAK: And so, the way that I've used fire PRA's for outages, or not fire, low power shutdown PRA's for outages, not fire PRA's, was that you get the schedule for the outage and you map each change in the plant state, to one of your plant operating states, and you do a PRA for those different slices, and then you either sum them up, if you want a number, or you don't. You just look at what is going on at that particular time.

And we just want to make sure that what we're not setting ourselves up for is that every time we create a new outage, that we're saying we have a new PRA, that has to be peer reviewed.

MR. GALLUCCI: Won't the peer review process more be of how your methodology is flexible, so that you can incorporate different configurations from different outages?

MR. NOWLEN: Well, that is the --

MR. GALLUCCI: I think that the peer review would be more at that level for low power shutdown.

MR. NOWLEN: But the peer review is also a standard thing. The standard has to set expectations there, and maybe that is the approach the standard takes.

I guess for me, I'm not going to take a position on that, in this report. I mean, I don't even know what the standard says right now, exactly, on peer review.

But you know, my personal view, yes, I would --

MR. WACHOWIAK: Well, it would be the low power shutdown standard, which doesn't exist.

MR. NOWLEN: I would probably just, you know, off the cuff, as a contractor, with no NRC enforce-ability, and plausible deniability on Mark's part, I would lump that under a maintenance kind of thing. I am maintaining my PRA to reflect the next outage.

Maintenance does not require a peer review. Even an update only requires to focus scope peer review on the portions updated.

But if you're doing --

MR. WACHOWIAK: But even if you get into that, though, let's say, you find the configuration that is different than what you had before, and it's a high

risk configuration, and then you have to do something to address that high risk configuration --

MR. NOWLEN: Well, now, you're in update space.

MR. WACHOWIAK: -- now, you're into update space.

MR. NOWLEN: That means the focus scope review of that part of it.

MR. WACHOWIAK: Now, luckily, configuration risk management for an outage is not something that requires Reg Guide 1.200 quality PRA.

MS. ANDERSON: Technical adequacy.

MR. WACHOWIAK: What is that?

MS. ANDERSON: Technical adequacy.

MR. WACHOWIAK: Technical adequacy, it's too late in the day for me to say that.

MR. GALLUCCI: I suspect that peer reviews for low power shutdowns will look at some general POS's that are pretty much applicable to every one, and everybody has the model, and then as Steve is saying, in the maintenance update portion, there will be some discussion as to how if you come up with a new high risk evolution, the current methods are -- what is your methodology in place for incorporating these special cases, because I think that --

MR. WACHOWIAK: This is a low power shutdown thing, not a fire PRA thing.

MR. GALLUCCI: I think the peer review process will be amended for low power shutdown, because it just is impractical to have a new one, every time you have a new configuration, yes.

MR. NOWLEN: Did we have a comment from the phone?

MR. JULIANS: I just was requesting that the speakers identify themselves.

MR. NOWLEN: Okay it's Rick Wachowiak and Ray Gallucci.

MR. JULIANS: Okay, I recognize Rick and I thought Ray, I got confused, it sounded like somebody else. Sorry, thanks.

MR. NOWLEN: Okay, no problem.

MR. WACHOWIAK: Okay, so, yes, it's really a low power shutdown standard issue, in Reg Guide 1.200 issue, at this point.

MR. NOWLEN: Yes.

MR. WACHOWIAK: Okay.

MR. NOWLEN: Okay.

MR. WACHOWIAK: As is the average shutdown PRA, which I still don't understand.

MR. NOWLEN: Okay, yes, and definitely

something that the standard committee should take up, though.

MR. WACHOWIAK: Yes.

MR. NOWLEN: It's an important question. Let's see, EPRI-8, was on spent fuel bundle damage, and again, that was a carry over and we're deleting that whole discussion.

So, PWR-32 picked up on the same issue.

MR. WACHOWIAK: Yes.

MR. NOWLEN: So, we're basically accepting and deleting the offending text, and that is the last one.

MR. GONZALEZ: Do we want to open?

MR. WACHOWIAK: Are you asking who was on the phone?

MR. GONZALEZ: Yes.

(Off record remarks)

MR. JULIANS: The speaker who asked the question who the speakers were was Jeff Julians.

MR. NOWLEN: Thank you. That was the question.

MR. JULIANS: I wanted to see if you guys were listening.

(Off record remarks)

MR. WACHOWIAK: You are asking for any

further comments from the phone?

MR. GONZALEZ: Well, we said we had time, we're going to go back to that EPRI-1, NEI-1, and that general comment.

MR. SALLEY: Well, before we go back and rehash, guys, is there anything else?

Like I said, the purpose of this meeting is to get input from you, from all the stakeholders. Is there any other input that we would want to receive here?

MR. WACHOWIAK: Yes, and it goes back to the same thing.

I think that somehow, before this becomes something that creates items in the standard or creates some requirements on a regulatory application, we got to try it on a couple of real plants, and I know you said that that was set up before and it was dropped, whatever.

But to me, it really looks like we're setting up a complete problem here, something that is real easy to set up, but it's going to be impossible to solve, because it's just going to be so big.

MR. SALLEY: Hearing you say that, though, Rick, I got two questions.

Number one, for a lot of the stuff in here,

don't we need other programs to filter in information?

Case in point, we talk about the frequencies, that we need to do a whole bunch of work to get the frequency stuff right, before we would even pilot this, or if we went into the pilot, how would we handle that missing frequency?

MR. ZEE: I guess my point is, is that --

MR. SALLEY: That's my question. You know, this is like a circle, okay, where does the circle start and where does it end?

MR. WACHOWIAK: I think we can -- and I'll let Kiang go in a second, here.

I think we can take the frequencies that we have, and determine whether or not the problem we're setting up can be solved, recognizing that the frequencies might be wrong, or recognizing that the non-suppression might be wrong, or recognizing -- you know, saying we'd have to circle back and incorporate those things in, as we go.

But the test that I want to see is, are we putting together something that we actually can feed to our computers and get an answer back in a reasonable amount of time?

MR. SALLEY: Well, let me turn the question

on you, Rick.

If I went and, let's just say that everything that we discussed today, Steve and Felix went and revised, and I had the revised document, could I hand it to you, and you'd do it in a pilot and make a run with this document, at a site, or would that be a disaster?

MR. ZEE: I think it would be a disaster.

MS. ANDERSON: Yes.

MR. SALLEY: But why would it be a disaster?

MR. ZEE: Well, here is my thought. My thoughts, and maybe I'm a little bit on the dooming loom side.

I think the notion of embarking on anything we want to call a pilot, is setting someone up to say, you know, get your pot of gold, because this thing could be an enormous problem.

I guess my thoughts are, is we're potential in different places in the spectrum of what we think the level of effort is going to be, and there is only a couple of voices that are saying this.

I'm thinking at this stage of the game, with how many PRA's have been developed, and people have been planning, does it make sense to do sort of a multi-day kind of a table top?

MR. SALLEY: Okay.

MS. ANDERSON: Like a study, rather than a pilot.

MR. ZEE: Kind of a pilot, and where we talk our way through, because we'll come to the table with our perceptions, in terms of what's in our fire PRA models, what our plants are doing for outage management, and talk our way through this, and for -- as we hit each of these bumps, we can say, "Okay, for this item, this existing project is going to handle it," and it will enable these other things, and instead of creating this sort of pile of things that have to be dealt with, so we understand what the barriers are, and like I said, I have one perspective, and maybe I'm off base or whatever, and other people will bring different perspectives. I mean, that is my thought.

MR. SALLEY: So, are you saying your proposal is, that we run this as a table top?

MR. ZEE: Do it as a table top.

MS. ANDERSON: And maybe with more than one plant.

MR. ZEE: Exactly.

MS. ANDERSON: You have to look at more than one plant.

MR. SALLEY: Because you know, okay, we've

all been around this business quite a while, and if I'm going to run a pilot, and I'm a plant, you're going to cause me aggravation, you're going to cost me money, you're going to cost me time, which is all fine and noble, but at the end of the day, I have to say, what is in this for me?

MR. WACHOWIAK: Right.

MR. SALLEY: Okay, I'm Shearon Harris. I got Hemyc. What is in this for me? How pause this 80-POD because I can save big time, multi-million dollar mode.

We saw this failure come at 6850, when people started piloting it, it became, "What's in it for me?" Well, not what I even thought.

Okay, I'm halfway done, I don't want to play anymore. I'm taking my power plant and going home, okay, and you know, we can't force the pilots, and on the other hand, like you said in the regulatory space, I can't show them a carrot, that in 2020 NRR is going to determine that you need a qualitative -- excuse me, a quantitative low power shutdown and you can get a head-start on it today. We don't have that stroke.

So, I see the pie. I'm listening to you, I'm hearing you, I'm saying, "Boy, those are all really good and noble things," but I don't see plants knocking

each other -- each other over, to say, "I'll be the pilot for this."

But a table top exercise, let's talk about that a little bit. How would you propose setting something up? How would you arrange that? NRR, would you want to play in this game? Would -- and understand my goal, understand my goal is to make this document the highest quality it can possibly be, for 2012, 2013, going on.

Okay, that is my objective here. So, you want to just --

MR. GALLUCCI: NRR will probably just observe, as usual.

MR. SALLEY: Observe?

MR. GALLUCCI: Yes, most likely.

MR. SALLEY: Okay, if you're going to observe, what is your thoughts on this table top? I'll turn it back over to the stakeholders.

MR. WACHOWIAK: I think that's something that is probably a good idea, and something that could be done in the time frame that we're looking at here.

MR. SALLEY: Who would we invite, for example?

MR. WACHOWIAK: A pilot is bigger than that.

MS. ANDERSON: You would probably want to invite a couple of utilities. Obviously, if you're talking about just a table top exercise, and you tell them what information they need to show up with --

MR. ZEE: Yes, it's a lot more innocuous, and it's not like they're embarking on a big --

MR. WACHOWIAK: And the requirement would be, it's a plant that has a low power shutdown PRA and a fire PRA.

MS. ANDERSON: Okay, so, now, we know who we're talking about.

MR. ZEE: Yes, the one --

MS. ANDERSON: We're talking about South Texas and Seabrook.

MR. ZEE: Well, I think we could make a list of, you know -- it would be nice if you had all these things, but minimally, you know, you should have this.

MS. ANDERSON: Right, well, this is basically what we did for level three, is we said, "This is our dream list," and maybe we can get 70 percent of it.

MR. ZEE: Right.

MR. NOWLEN: Because I think there are people, you know, anyone who is doing, you know, good, quality configuration management for low power shutdown

today, would also be potentially in the mix, as well. I don't think it has to be a full blow PRA. A lot of the insights come just from configuration management.

MR. WACHOWIAK: Well, even from the configuration, it's -- there is more there than what you might think, more than was represented, earlier.

MR. SALLEY: Well, from EPRI and the NEI, what kind of a response would you think I would get, if I optioned this out to the industry?

MS. ANDERSON: Well, I think you might get a better response if we asked, it depends on that.

MR. WACHOWIAK: Yes, I think we'd get a fairly decent response for a few day table top.

MR. SALLEY: You think we'd get support for a few day table top? How about the author? Do you see this increasing the quality of this?

MR. NOWLEN: Yes, I think it would. I mean, you know, there is a lot of gaps here, that we expected to be able to fill better, given the EPRI collaboration and you know, access to more plants and folks.

So, I think we certainly could. I think you'll -- you know, there are areas where it will work and there are areas where it won't work, so well. But I think it would be good, yes, and I kind of second that, I wouldn't jump into a pilot today. I don't know that

anyone would meet our entry conditions, today.

MR. SALLEY: Okay, going for a, let's call it, I guess table top is a fair word, we'll all use and we'll know what we're talking about.

Moving to a table top, would it be best if we revised this report, issued it for a draft again, and called that draft the table top, or do we have enough now, with this report, as is, to go into the table top?

MS. ANDERSON: I mean, I think you should revise it, before you go into the table top. It sounds like there was some constructive changes being made.

MR. WACHOWIAK: And we can use that time, to try to drum-up the participants in the thing.

MR. SALLEY: And then how would you envision this? Then we would take this one, go for a second draft comment period, knowing that we'd be going for a table top exercise during that second draft comment, is that what you're envisioning?

MR. NOWLEN: I would tend to put it out as a second draft, go to the table top.

MR. SALLEY: While it's in second draft?

MR. NOWLEN: While it's in second draft, do revisions, based on the table top, and if you want to go back for public comments again, then go back.

MR. WACHOWIAK: Yes.

MR. NOWLEN: After you've done the table top.

MR. SALLEY: So, there would be three?

MR. WACHOWIAK: No, you wouldn't send two out for comment.

MR. NOWLEN: No, only two.

MR. WACHOWIAK: The second is a draft for comment.

MS. ANDERSON: You could have like an internal draft.

MR. WACHOWIAK: It's draft for table top.

MR. GALLUCCI: The second one wouldn't go out. The table top wouldn't go out for comment.

MR. NOWLEN: Yes, don't ask for any comments on the second version.

MR. GALLUCCI: Right.

MR. NOWLEN: Wait until you've done the table top, which should improve quality, and then you go for a final revision, and your choice, whether you go for comments one more time there.

MR. SALLEY: Because what I'm kind of hearing, and just listening in parallel to what you're doing is, is you're doing this and the table top, yes, I see what you're saying. It's almost like when we go for a PIRT process, you know, we're starting to look

for okay, you know, what is important? What do we know? The general ideas, where are we -- where do we need to do additional research? What is really important?

MR. WACHOWIAK: Can this stuff actually be done, given what we have? You know, things like that.

MR. SALLEY: Exactly, so, I am kind of hearing this parallels to how we do some expert elicitation.

This is almost -- I hate to say it, because boy, that brings in that whole SSHAC nonsense --

MR. GALLUCCI: It is not. Does this have to go to ACRS at some point?

MR. SALLEY: I didn't see a plan, unless we had a need. I mean, I know that they had interest in bigger projects, like the level three, and that. So, I think they're out with those bigger issues, kind of in the --

MR. GALLUCCI: Yes, but once they get wind of it, they may want to see it, and what has happened.

MR. SALLEY: To get back to NRR, let me know what you think on that, Rick, what you guys think.

MR. GALLUCCI: We'll have to figure the timing on that, as well. It's probably --

MR. SALLEY: Make a long project, longer.

MR. GALLUCCI: I know.

MR. GENNARO: Just a quick question about the focus of this potential table top, just from what I've been listening in on the comments here.

It seems like a big focus of where a lot of these comment stem from are with your underlying low power shutdown model.

Are there really a lot of issues here, with the guidance, the technical guidance for low power shutdown fire PRA, that would be driving this table top, because if it's all going to be questions about, you know, POS's and everything, and you know, your averaging approach versus outage specific approach, you know, that really is more generic to low power shutdown.

MR. NOWLEN: I think there are elements of it. I would agree, there are things that you won't be able to do yet.

But I think there are enough aspects, you know, just like diving into frequency and screening, fire scenarios, you know, multi-compartment issues, walk-downs, you know, probably if you focus on the fire pieces of this thing, I think you could make some good progress.

Now, are we going to come to an agreement, as to how we define POS's? No, probably not.

MR. WACHOWIAK: And in the table top, I

don't think we want to, because what I think we want to do is, we want to have the participants come together with what they have, as plant operating states, and let's see if the method works independent of knowing the plant operating states.

MR. SALLEY: So, how do you see it? A BWR? A PWR? How do you see a break on this, as far as that, old plant, new plant, 805, Appendix R?

MR. WACHOWIAK: You probably want to look at --

MR. SALLEY: Which are breaks?

MR. WACHOWIAK: Yes, I think when we get in, we may want to try some limited set of POS's, and also, maybe -- you know, a couple of them, though, because we want to test this grouping thing out, to see if it kind of makes sense.

MR. SALLEY: Well, that's my question, Rick. So, what do you say we do, a BWR table top and then PWR table top?

MS. ANDERSON: Well, I think you --

MR. SALLEY: You want to put them all in the same group?

MR. WACHOWIAK: I think we can do it together. I don't think it's going to make that much difference.

MR. NOWLEN: Well, there is advantages to doing it together too, because if there are distinct differences, then you call those out and say, "You're going to run into this. If you're a BWR, then you're going to have this problem, but if you're a PWR, you're going to have a different problem."

MR. ZEE: But on one level, a scenario is a scenario. Doesn't care whether you're a BWR or a PWR.

MR. SALLEY: I just think of the modes of operation, when you start changing modes and such, they're extremely different from these.

MR. WACHOWIAK: They are, but I don't think -- if we don't have to dive in to what the specifics are of the mode, then I think we're okay with that, because it doesn't necessarily matter, too much.

What I'd really like to get out of it is to see, you know, are we really setting up something that generates 20,000 scenarios, or like you said, it breaks 70,000 scenarios, or are we setting up something that is -- can be reasonably addressed with a few hundred scenarios?

MR. SALLEY: What do you envision, as far as, this -- is this a two-day event? Three-day event? Is this a week? Is this two weeks? What level of effort would you see the participants putting into, to

do this? Would this be multiple table tops, or is this a single one-shot deal?

MS. ANDERSON: In-person, for like a week, I think, but there would be -- you'd need to put in more prep time.

MR. SALLEY: So, you see at least a five-day meeting?

MS. ANDERSON: Yes, three to five, would be my guess, and then, I mean, people would need to do a lot of work in advance, obviously.

MR. WACHOWIAK: Because they're going to have to come in saying, "Okay, the document says this, and this is how I interpreted this. So, if I was going to actually do this part, this is what I would have done," and they'll, you know, kind of have to know --

MR. SALLEY: How many people would you envision coming from -- you know, we'd be coming, Felix, Steve, and I don't know, Steve, would you bring Susan in, maybe?

MR. GALLUCCI: She would come, at least for the HRA section.

MR. NOWLEN: Probably for at least the HRA.

MR. SALLEY: Okay, and we got Ray and Jeff, are saying they would observe? Is that how --

MR. GALLUCCI: Yes, probably.

MR. NOWLEN: Well, we'd probably need --

MR. JULIANS: There would be one for HRA.

MR. NOWLEN: Jeff?

MR. JULIANS: I would observe the -- help with the HRA role.

MR. SALLEY: Okay, so, what would you see from the public, as far as what we'd need to do this?

What I'm saying is, you know, this is kind of one that if you have too few of people, it's not going there. If you have too many people, this is going to turn into a free-for-all. What is the right number of people to do this?

MR. WACHOWIAK: Yes, well, by saying you have to do homework up front, will cull a lot of people, but I think we need to have enough representation across the different fire PRA's that have been done, right, to get that flavor.

So, you know, you had the Erin fire PRA's and the Scientech fire PRA's. We need to kind of get a balance across that, to understand how the methods mesh together.

Low power shutdown, we're going to have to go back and talk to people about that, to see what -- who has what kind of quantitative things available.

MR. SALLEY: Right.

MR. WACHOWIAK: I'm only familiar with one plant, and I still don't -- and I don't know if they even still do what they did, when I was there.

MR. SALLEY: If we were to exercise this, then what I would want to do, Rick, would I be wanting to fall back to the MOU?

I mean, we've already got you in as EPRI, for the peer review for this.

MR. WACHOWIAK: Okay.

MR. SALLEY: And we would basically be saying, we're going to expand this peer review, and I'd be looking to you, to coordinate, talking with NEI, talking with other interested stakeholders, and putting together, we'll call that peer review, to bring back from this table top. Is that what you guys are seeing?

MR. GONZALEZ: We could do that.

MR. SALLEY: Steve?

MR. NOWLEN: I'm not quite sure. Say it again.

MR. SALLEY: I says what would -- if we would pursue this path, if we pursue this path, what I would do would be to look to you, Rick, and say, "Okay, we've got an MOU in place," and on this particular project, we've agreed that NRC is going to go and do our qualitative piece -- excuse me, our quantitative

piece, and EPRI is going to be a peer reviewer on this, which is what we've done, gone for public comment.

Now, that we've done that, and we're seeing there needs to be more refinement on this, we're going to go back into the process, and is it part of this peer review, we'll perform this table top?

MR. GALLUCCI: So, you're calling the peer review a table -- you're calling the table top --

MR. SALLEY: Peer review, part two.

MR. GALLUCCI: We're trying to work it into the process.

MR. WACHOWIAK: A portion of the peer review.

MR. GALLUCCI: Yes, you're trying to work it into the process.

MR. SALLEY: And at that point, if we play under all the rules and everything is above table, above board, then I'd be looking to Rick, to say, "Okay, Rick, you coordinate with all the interested stakeholders out there. You put the right number of folks together."

I'll bring the NRC people. We know what the MOU says, and you bring the folks in to do the table top, and we would hold it as a public meeting, similar to this, and do it for a week. A week long, is that what you're saying, Victoria?

MS. ANDERSON: About, that would be my guess, yes.

MR. NOWLEN: I think if you push it beyond a week, you'll have --

MS. ANDERSON: No, you don't want to go beyond a week.

MR. WACHOWIAK: You will lose people and things like that, if we go beyond a week.

MS. ANDERSON: But three days to a week.

MR. SALLEY: I think the one other thing I would want, Steve, and we need to think about this in our side is, I'd want to facilitate this somehow. So, I would need some facilitator to --

MR. NOWLEN: It wouldn't be a bad idea to do that.

MR. SALLEY: To do this? Can we think about who a facilitator would be, that would understand enough about PRA and low power shutdown and HRA, that could walk the issues and keep going?

MR. GALLUCCI: You may need two, because you may have to have a BWR session and a PWR session, separately, as well.

MR. WACHOWIAK: Yes, and I'm thinking we probably don't need -- I don't think we need to do that.

MS. ANDERSON: I think -- so, I think maybe

--

MR. WACHOWIAK: I don't think they're different enough to --

MS. ANDERSON: We need to get our fire PRA task force together, anyway. So, when we get our task force together next time, why don't we write out, sort of what we think -- what we think this would look like, and at that point, we can also maybe solicit volunteers.

MR. WACHOWIAK: Who is your NEI low power shutdown task force? I'll talk to Doug Hence, too, because we want to have to only do this -- or we can't only do this, looking at the fire side. We have to look at the -- we have to bring in the people that know their low power shutdown stuff.

MS. ANDERSON: Yes.

MR. NOWLEN: Well, it's either that, or you're going to just acknowledge that there are gaps, that this table top will not attempt to fill.

MR. WACHOWIAK: But the key is, is figuring out how to make these two things work together.

MR. NOWLEN: Right.

MR. WACHOWIAK: And once you set up the problem, is it something that you can deal with. So, we kind of have to do both pieces.

MR. NOWLEN: Yes.

MR. WACHOWIAK: Going with the fire PRA part, you know, it's almost -- you know, there is just a few individuals that we would need to have come through and do this, and we pretty much cover everybody who is doing them.

I don't know if that's the case with low power shutdown.

MR. GALLUCCI: One thing Mark has to be concerned about, he does have to get NRR buy-off to let this continue for a longer period, because theoretically, after this round of comments today, the thing could be put out into a final form, and so, I'm not the one to make that decision, but you'll need to get buy-in from whoever is -- I don't know if it's Alex's branch that has the user, or Donny has it, I'm not sure.

MR. SALLEY: We'll talk about it.

MR. GALLUCCI: Yes.

MR. SALLEY: We'll talk to both and again, it's an issue of, I guess we have to weigh how much quality, how much quality would this bring, if we went through the table top versus if we resolve today and issued it?

MR. WACHOWIAK: I would have a real hard time with issuing it today, because I think it sets up a problem that can't be solved. That is my opinion,

and I think that --

MR. SALLEY: Do no publish.

MR. WACHOWIAK: It said it, a few times.

MS. ANDERSON: Well, we're saying do not publish now.

MR. SALLEY: No.

MR. WACHOWIAK: We want to revise that. Let's see if we can figure out a way to make -- to either get rid of the issues that the industry has, that we're maybe setting up something that looks nice, but you can't ever attain, versus something that, you know, if we can get to a point where we're either convinced that that is not the case, that would be good, or modify it somehow, such that it won't be the case.

That would be the best situation, and then you'd also have -- on the NRR side, they'd have a carrot there, that may be somebody would use it, without having to go put a new regulation in.

MR. SALLEY: And the thing, too, this program has gone on way too long. Like I said, I'm on the second PM already. I've had one retire. I don't want anymore retirements on this project.

MR. NOWLEN: You better hurry.

MR. GONZALEZ: You're going to retire first.

MR. SALLEY: I'm worried about Steve, next.

MR. GONZALEZ: Steve, okay.

MR. SALLEY: You got a long time to go.

MR. GONZALEZ: I know.

MR. SALLEY: You got a lot of years to put in. But what I'm thinking is, okay, it's worth considering, and it's worth talking about it.

I think for you guys to take it back and talk on your side, with your folks in industry, and I think Felix, set something up with Donny, Alex, Jeff, Ray, you and me, and we can tie Steve in, and we can discuss the pros and cons on the regulatory side.

MR. GALLUCCI: Now, given Steve's schedule, when is a reasonable date for the updated revision?

MR. WACHOWIAK: Next week.

MR. GALLUCCI: Yes, that is --

(Off record remarks)

MR. NOWLEN: I'm already there.

MR. GALLUCCI: Are we looking at anything this year, or are we looking at --

MR. SALLEY: Yes, what I'd like to -- I'm thinking, you know what I'm thinking? Okay, well, what I'm thinking is for a table top, the table top would be nice in the winter, okay. That's kind of a nice winter thing to do.

(Off record remarks)

MR. GONZALEZ: Maybe we can do a meeting in a month or something like that. I mean, we really can't think there is no reason Steve?

MR. NOWLEN: Yes, Nine Mile will probably host us again. They hosted us in the winter.

MR. GALLUCCI: I'm thinking it's about six months, it would be about six months from now, that we can have the table top.

MR. SALLEY: You think it would take that long?

MR. GALLUCCI: I think it will, yes.

MR. NOWLEN: I would think more late winter, early spring.

MR. GALLUCCI: It would take that, by the time you get people to come in and stuff like that.

MS. ANDERSON: Well, and by the time they get here -- by the time you get the document in hand --

MR. GALLUCCI: We could set something up for March or April.

MR. NOWLEN: Yes.

MR. GALLUCCI: That's not too bad, actually, as things go. But that is something NRR will want to know.

MR. WACHOWIAK: But if we -- you know, we have -- we can start with this for planning, and it would be nice if we could have the filled out table that you said you weren't going to give us, but that would be nice, to say, maybe only for the people with the table top, I don't know.

But to say, you know, this -- start thinking about how you'd do this, the revised document is going to be out in a few months, because I don't want to -- we don't want to delay, trying to put the table top together until the document is out.

MR. SALLEY: Well, you know, I think we'll hold the comments in -- we could go -- like I said, if you're not going to go for public comment, we can have a preliminary document for table top.

MR. WACHOWIAK: Okay.

MR. SALLEY: And we do that in train, like we did --

MR. WACHOWIAK: Yes, that will be pretty quick.

MR. NOWLEN: But right now, January is a more realistic view of when that will happen.

MR. WACHOWIAK: That's fine.

MR. NOWLEN: You know, we have the expert panel.

MR. SALLEY: We've got too many other programs going right now. The expert elicitation, we need to bring that in on the circuits, and the part we've issued, we need to get that off of -- that is priority. This is not a high priority item.

MR. GALLUCCI: The heavy work on that will shift off the proponents to the technical integrators after the next meeting, so --

MR. SALLEY: Right.

MR. GALLUCCI: -- people like Steve will -- their heavy burden will be over by December, on that.

MR. SALLEY: But that task is a high priority. It's way up there on the list, and we need to get that one done. This one is --

MR. GALLUCCI: Well, that's why that's scheduled.

MR. SALLEY: This one is a lower priority. This is like a medium priority.

MR. GALLUCCI: But I don't see this and that really interfering with each other.

MR. SALLEY: Just the amount of time. I mean, we have some many people, so many Steve Nowlen's.

MR. GALLUCCI: Yes, but Steve will do his proponent, at the end of November, and then it turns over to me, Miskeiwicz and the two BNL guys, there is

only one -- after that --

So, there is going to be an interlude between December and maybe February, where the proponents will not be involved.

MR. SALLEY: Yes, but I've scheduled things this close, and if Steve catches a cold and takes a day off, then the schedule falls apart. We're not going to cut it that close.

MR. NOWLEN: Well, I have issues coming up around February also. So, that is -- but that's why I say, January is a realistic time.

MR. SALLEY: I think where we're at on this right now, is at the concept stage. You guys take the concept back. It may fall flat on your sites, saying, "No, we really don't want to do this," and Felix will set the meeting up with our counterparts and NRR, who own the user need, and we'll say, "Hey, here is what we got out of this meeting. What are your thoughts," and they may be for it. They may be against it. Something we need to discuss.

You guys need to discuss it. We need to discuss it. Right now, we're just -- I'm looking at this as brain storming.

MR. ZEE: Exactly.

MR. SALLEY: Okay, we spent the day doing

this, and in the effort of quality, what would you see as the next step?

MR. WACHOWIAK: I think that is a good idea, to do that, and have -- you know, let's try to shake the thing down some.

MR. GALLUCCI: Well, I would get the meeting with Alex and Donny, right away, to make sure they're onboard with even doing this.

MR. SALLEY: Again, we'll set that up, and then you guys --

MR. GALLUCCI: No use getting this all cranked up, if they said, "We'll have this out in six months."

MR. SALLEY: Understood, so --

MR. GALLUCCI: I don't think they do that.

MR. SALLEY: Yes, next week is not good. First of November. Get Donny out, the group up here for this, and likewise, it gives you some time to --

MS. ANDERSON: Yes, we'll get everyone on the phone.

MR. SALLEY: Because you don't know what you're going to see, coming in here.

MR. ZEE: So, how come whenever we do that, you're on the leeward side, facing west?

MR. NOWLEN: Am I?

MR. ZEE: Yes, because the water is always on your right.

MR. NOWLEN: I'm not suppose to do it that way.

(Off record remarks)

MR. SALLEY: What other suggestions? What other ideas do we have on this?

MR. WACHOWIAK: What's that?

MR. SALLEY: How about the -- get Felix and the folks on the phone, or if there are any other comments, ideas, suggestions, thoughts?

MR. GONZALEZ: We only have Jeff on the phone.

MR. GALLUCCI: We had two Jeff's, didn't we?

MS. ANDERSON: I think we just have the one Jeff.

MR. GONZALEZ: Anybody from the phone, who wants to say something?

MR. JULIANS: Yes, this is Jeff Julians. I do like the idea of doing the table top, pilot it and I think that's a good next step, after we do the update. I think it would be a good draft, to comment during the public meeting.

MR. GONZALEZ: Anybody else? I'm going to

take that as a 'no'.

MR. NOWLEN: I think he is the only one left on the phone.

MR. JULIANS: Do I get the word for the ones on the phone?

MS. ANDERSON: Yes.

MR. GALLUCCI: You're the last Jeff standing.

MS. ANDERSON: It will be in the mail.

MR. JULIANS: Okay, thanks.

(Off record remarks)

MR. NOWLEN: January.

MR. GENNARO: And then we need to know how much time you think whatever plants are interested would need for homework.

MR. SALLEY: Anything else we got? Any other ideas? Thoughts?

MR. GONZALEZ: Okay, with that, I want to thank everybody for participating in this public meeting.

Before you leave, we have feedback forms here. If you want to fill one out, and we'll greatly appreciate it.

Also, we'll be preparing a meeting summary, and let me know if you want a copy of it, and I'll make

sure you get it, and with that, the meeting is complete.

(Whereupon, the above-entitled matter concluded at approximately 3:40 p.m.)