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UNITED STATES NUCLEAR REGULATORY COMMISSION

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RISK-INFORMED UPDATES TO SELECTED

SRP CHAPTER 2 SECTIONS

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PUBLIC MEETING

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MONDAY

OCTOBER 22, 2018

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The Public Meeting convened in the TWFN Auditorium, 11545 Rockville Pike, Rockville, Maryland, at 9:00 a.m, Daniel Mussatti, facilitating.

NRC STAFF PRESENT

DANIEL MUSSATTI, Facilitator

FREDERICK BROWN, Director, Office of New Reactors

ANDREW C. CAMPBELL, Division of Licensing, Siting and Environmental Analysis, Office of New Reactors

MICHAEL LEE, Division of Licensing, Siting and Environmental Analysis, Office of New Reactors

MICHAEL D. MAZAIKA, Division of Licensing, Siting and Environmental Analysis, Office of New Reactors

JENISE-MARIE THOMPSON, Division of Licensing, Siting and Environmental Analysis, Office of New Reactors

C O N T E N T S

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

9:04 a.m.

MR. MUSSATTI: Okay. This is a small crowd. So I don't need quite as many notes as I thought I did.

I'm Dan Mussatti. I'm with the NRC's Facilitator Corps. I'm going to be trying to help you today to make sure that this meeting is timely. And that the information goes back and forth in an easy manner.

We're going to take a break somewhere around ten o'clock for a few minutes. It's a short break. So, if you're going to go up to the -- try and get a cup of coffee or something like that, please try to come back on time as fast as you can.

And we're going to try to start on time so that we can get through all of this. The prob -- what we're trying to do is have the meeting broken into two pieces.

The first part is going to be the presentations from the NRC Staff. And after that, we're going to have an opportunity for the public and all the people that are sitting here in the room to ask questions.

We did not plan on having these questions

and comments responded to by the staff at the time. If it's a short little yes or no kind of an answer, then yeah, we'll probably do that.

But, we're in an information gathering mode today. So, we're probably going to be responding through what our reactions to your comments on the actual changes to the -- to the reg, or to the NUREG.

We have a court reporter in the back of the room who's going to transcribe this today for us. So, when you do speak, I'd ask you to line up behind the microphones.

And when I call on you to speak, start with your name and your affiliation. And then speak clearly and slowly so that we get a real good transcription here.

Also, what you say may not be what you thought you were trying to say. Or what we hear may not be what you're trying to tell us.

So, it's a good idea for you to follow up any comments that you have in -- that are verbal here, with something in writing. So that we make sure that we've got as accurate assessment of what it is that you're to say as possible.

There's an email website that is

available to you that's in the paperwork that's been handed out. And it will be in one of the, I think, in one of the final slides will have that in it as well.

Feel free to send us your comments, additional comments, and a transcription of whatever it is you were trying to say here, if at all possible.

Other then that, I don't think I need to go into a whole bunch of rules about, you know, one at a time and all that. You've been through all of this stuff before. And we know how to have decorum in our forum.

So, what I'd like to do now is I would like to introduce Fred Brown, who is the Office Director here. And let him take over. The switch is on the bottom.

MR. BROWN: Well, thank you. And good morning to those in the room, largely staff. And hopefully on the line. And hopefully we will be Skyping here before too long.

Thank you for coming. This is actually a pretty important topic. The Standard Review Plan is really at the heart of what we do as an agency in licensing.

It's important to our applicants because

it lays out the expectation for a submittal. Particularly, or specifically in this case, for an operating reactor.

And so the amount of work, the analysis, the documentation that's specified in the SRP, can drive actions on the part of an applicant.

It's important to the Staff because it's what we use to ensure that we've thought of the things that we need to think about. And that we're making the findings we need to make.

And it's -- the Standard Review Plan is also important for adjudicatory and legal purposes. To define the structure of the analysis that the Staff has planned and has taken in order to perform a review.

The Standard Review Plan goes back quite a ways into NRC history. And if you look at the document over the years, you will notice that it has grown significantly.

While the regulations themselves haven't changed that much, there's been a tremendous amount of operating experience. And that operating experience is primarily associated with the large light water reactors that we've licensed over the years and we've now got 40 or more years of operating

experience with.

And so the Standard Review Plan, which started out identifying what the regulatory requirements were, and then the findings against those requirements, has served as a knowledge management tool for the technical Staff to remember and to think about things that have happened with the operating fleet.

Now, as we find ourselves no longer generally reviewing large light water reactors with active safety system, rather what we're reviewing more of now, are passive safety features and small modular reactors or System 3 -- Generation 3 pluses, it's been referred -- they've been referred to.

And as we start to think about non-light water reactor reviews, we have the opportunity to go back and revise the Standard Review Plan to get back to the basic fundamental question of what is it that an applicant has to demonstrate?

What does the Staff have to have findings on? And how can we focus both the application itself and our review on the things that are most applicable and most safety significant for the new designs that we're being asked to review.

And so it's kind of interesting, the

leadership of the agency has been thinking along the lines of the importance of revising the Standard Review Plan. And organically within the organization, some of the Staff and branches have been doing the same things.

So, what we're going to talk about today are some sections of the Standard Review Plan where we've had a convergence of interest and thought. And that convergence is timely, and it's leading to what we're calling a pilot.

But, it also is a little less then perfect in the presentation. So, there is a regular ongoing SRP update process.

And this year the folks that will be talking this morning about the chapters that we're going to talk about, were scheduled to revise their sections.

And had started to approach those revisions from a how do we focus this on the level of effort ought to be commensurate with the safety significance.

The unfortunate -- and I mean, that's obviously good. And it's consistent with a broader look at the Standard Review Plan to achieve that same outcome.

The slightly unfortunate thing is that in an ideal world we would have started with an entire chapter or a subchapter 2.4, rather then 2.4-3 for instance. And so the Staff will -- today will talk about how what we published in the Federal Register Notice should be read in the context of a slightly broader change.

But if you take the time to listen to that and understand, I think that what's going to be described is a very positive approach to having applicants focus on what's most important for their site. And for the Staff to focus its efforts on what's most important for those sites.

In addition, the structure, the format and structure that we publish really is more consistent with what we've historically done in the SRP. And so that's -- that's the other area that we're really interested in public comment.

Both in this meeting and then in written comments for our Federal Register Notice solicitation for input on structurally, how can we redo the Standard Review Plan in a way that it both focuses the effort of the applicant. And focuses the effort of the Staff on the findings required for the Regulation.

So I think conceptually what you're going to hear today is a really good first effort to focus the Standard Review Plan content. And an openness to engage on how we can go beyond just structuring the content too actually structuring the process and the document, the SRP itself.

So we look forward to active engagement and participation. Hopefully we'll have Skype up here.

But, I would now like to turn the mic over to Dr. Andy Campbell. Who will get into more of the details.

MR. CAMPBELL: Thank you Fred. So, I'm Andy Campbell. I'm the Deputy Director of the Division of Licensing, Siting, and Environmental Analysis here at the NRC.

And my area of responsibility includes all external hazards. We have an external hazards center of expertise. And within that flooding, seismic, other sorts of external hazards are covered, both natural as well as man made.

So the review scope -- so today's meeting, the review scope for the proposed changes of four Standard Review Plan sections. So, we're going to cover those four.

The scope of the proposed changes summarized in the Federal Register Notice includes hydrology and meteorology, which was Federal Register 49132, or 83 49132, surface affirmation 83 FR 41939.

So Chapter 2.4 was selected as a test case for risk informed performance-based revisions. To focus our efforts on what we're going to be calling consequential events, and consequential floods.

So, recent application of NUREG-0800, which is the Standard Review Plan, as you heard, includes early site permit and combined operating license reviews. We've completed to date, with complete licensing, we did reviews at other sites. But, some withdrew and some are still suspended.

But five early site permits have been issued. And eight combined operating licenses have been issued. So, that's a significant database of work in these areas.

We've also, since 2012 been reviewing 50 -- what's called a 50.54(f) letter response, an information request following the Fukushima Daiichi nuclear power plant accident where both an earthquake, but more importantly a tsunami caused a total station blackout. And resulted in meltdowns of three reactors.

So, that review encompassed both seismic and flooding reevaluations of about 60 reactor sites. So there's this large database of work in the external hazards area in terms of impacts.

Staff identified opportunities for improving the efficiency and effectiveness of NRC's regulatory review process. There are lessons learned from this extensive set of licensing actions and reviews.

There's large indication from that of where we can do a more risk informed performance-based approach in terms of the principals. And there's really a more focused set of review criteria when you're doing a flooding and/or seismic analysis. And today 2.4 is talking about flooding.

So, the purpose of this meeting is to begin a dialog with stakeholders. We're in listening mode.

We want to get your comments on the general approach to the Standard Review Plan updates, which Fred talked about, and you'll be hearing about as we go through the presentations. We want your feedback on proposed risk informed performance-based revisions to Chapter 2.4.

And we also want recommendations on how

risk informed performance-based approaches can be expanded to other SRP chapters and sections. And we're seeking recommendations on modifications to the Standard Review Plan format itself.

We will also be discussing potential future SRP updates to Sections 2.3, 2.4, and 2.5 in the coming calendar years of 2019 and 2020.

So the staff that -- on the update team, I'll just -- you can see the slide. Or if you can't, it's Hosung Ahn -- Dr. Hosung Ahn, Dr. Stephanie Devlin-Gill, Joe Giacinto, Dr. Mike Lee, Dr. Nebiyu Tiruneh, Brad Harvey, Mike Mazaika, Laurel Bauer on geology, Gary Stirewalt -- Dr. Gary Stirewalt, Jenise Thompson on geology, and project management is Hoellman, Notich, and Rankin.

And with that I'm going to get -- start with hydrology, Chapter 2.4 updates. These are the tsunami hazards and channel migration. That's going to be Dr. Mike Lee.

Surface deformation updates, which is SRP Section 2.5.3 is Jenise Thompson. And onsite meteorological monitoring program update is Section 2.3.3. And that's going to be Mike Mazaika.

And with that, I'm going to turn it back to Dan. And let Dr. Lee begin his presentation.

MR. MUSSATTI: Okay. Before we start the presentation, I've got a little housekeeping work here that needs to be done.

We have found out that we have some technical difficulties in trying to get the webinar to connect. And we know that there are some people that are online listening on the phones that have been trying to figure out what's going on.

We don't think we're going to be able to get the webinar to actually fire off. But, if you're listening on the phone and you can follow along with the slides, you're more then welcome to do that.

And we will see what we can do about trying to take your questions later on if you have them. To get the slides, if you would go to the NRC.gov home page, there's a calendar right there on the front page, right in the middle that has today highlighted.

If you click on that, it will give you this webinar and this morning's meeting as a meeting for the day. And towards the bottom of that you will be able to see the Adams number for the slides.

If you want the Adams number for the slides right now, grab a pencil. And I can give you that number so you don't have to go to the web -- to

our web page to get it.

The ascension number under Adams is ML18292A592. One more time I'll say that number for you. It's ML18292A592.

And we'll try to work on this, like I said, to be able to get your questions today. If not, please mail in your questions or your comments to the information that's -- the address that's on that announcement.

And we will include that in our work in the future. Thank you.

MR. CAMPBELL: So, I'm going to introduce Dr. Mike Lee, who's going to talk about the 2.4 section tsunami hazards and channel migration. Dr. Lee.

MR. LEE: Thank you Andy. For those that are participating remotely, I'm going to turn to slide one.

And what I -- we've done here is just kind of show graphically or in cartoon form the points that Andy's pointed out or acknowledged earlier, that the SRP update process kind of benefitted from some lessons learned. First with the ESP and COLA reviews that were done over the last decade or so and more recently.

We've been working with our licensees in the context of the 50.54(f) review to examine the -- to reexamine the design basis for flood hazard reeval -- floods and seismic events.

So, if we can turn to slide two. And parochially now we'll just turn directly to flooding.

In the context of the flood hazard reevaluations and based on what the Standard Review Plan tells us to do in Chapter 2.4, we more or less looked at eight flood causing mechanisms. Which are laid out here for you.

And for the benefit of the folks on the phone, I'll just read them briefly. We have local intense precipitation. Which is basically a rainfall event that occurs over the footprint of the power plant.

We have flooding on streams and rivers, which maybe adjacent to a particular power plant site. We're concerned of course with dam failures and onsite water control structures.

You may have a breach of a dam upstream that leads to kind of a transient flood event that migrates downstream. Or you could have a flood -- you could have a dam breach if you will, for a cooling system, a water storage system that's onsite.

Storm surge applies to those sites which are located predominantly in marine settings along the coast. Seesh (phonetic) is a -- more or less an atmospherical phenomena that occurs when a -- when you have resident vibration of the water surface on very large bodies of water like the Great Lakes.

Tsunami of course is an event that we're all very interested in. That occurs again, in reference to a marine setting.

You may have ice induced flooding due to some ice jam upstream or an ice dam downstream of a nuclear power plant that's adjacent to a river. Creating backwater event -- effects and the potential for flooding.

And lastly, we're always interested in channel migrations or diversions. Particularly in reactor sites that are in what you might consider to be a dynamic environment in terms of riverine processes.

So if we could turn to slide three. Okay. So, having done these evaluations collectively, we began to see a few things.

We found for example that not all sites were subject to the same -- to all flood causing mechanisms.

And in particular we found that only a few flood causing mechanisms were actually found to be consequential in terms of defining the design basis or challenging if you will, a design basis in terms of water surface elevations.

So, we found for example that LIP and associated drainage were practically at all power plant sites. Flooding from streams and rivers, hypothetical failure of dams and other onsite water structures were also challenging some design assumptions, as well as storm surge.

So, turning to slide four. We also found that most flood causing mechanisms were not discrete events.

They usually occur in combination with other site -- some other type of flood causing mechanism.

For example, you may have a heavy precipitation event that occurs over a large watershed, and that may have an impact both on the water surface elevation in some contiguous river or stream. But it also may begin to challenge a water storage structure such as a dam upstream from a site.

And that being said, we also found that associated effects were important. You know, water

surface elevation increases lead to other consequences like collection of sediment, hydrodynamic or hydrostatic loads can change, things like that are important for evaluation in the context of a reactor design.

We also learned that some flood causing mechanisms, I mean, it's not really a surprise, but are controlled by topography, geography, and/or climatic setting.

Not all sites are subject to the same flood causing mechanisms. A site out in the desert may not have trouble with a tsunami or ice dams or ice jams as opposed to inland sites, which typically aren't affected by storm surge or tsunamis.

So, we found basically that the hazard you might argue can be discretely defined in terms of a marine or coastal setting. Or a different suite of hazards for continental and inland locations.

And lastly, one of the other insights on slide six is that not all flood causing mechanisms are equal in terms of occurrence and consequence.

The magnitude of the event can change depending on the type of flood causing mechanism, the intensity, the duration, and the location. All of these things we found were important in reviewing

design basis at the operating -- within the operating fleet.

So, having reflected on what we've learned from both the ESP and the COLA reviews, as well as the 50.54(f) reviews, we can reach some general conclusions. And those are -- I began to address in slide six.

Not all flood causing mechanisms are equal in time and space. A rainfall event, for example, that you might associate with a tropical storm, is going to be a lot different from the rainfall event that you might associate with the synoptic storm that originates on the continent.

So you have a situation where the locations around the power block may be different in terms of flood events. The magnitude, intensity of duration is also not usually uniform across the power block. And the associated effects that I discussed earlier can also vary.

And so what we find though, is we began to see that we could distinguish between what you might consider to be a consequential flood in terms of defining the design basis, or challenging the design basis, versus a flood that was inconsequential, that had not material affect on the

design basis.

And more -- in our view the inconsequential floods do not contribute to defining the design basis. They're just not important if they don't provide us with any design challenges.

So, turning to slide seven, and thinking about what we might do in context of revising or updating the Standard Review Plan, particularly for Chapter 2.4, this leaves the Staff's judgement at this time that the definition of a consequential flood should be the focus of the review.

It always has been if you think about it. We're always interested in what the design basis flood elevation is for a particular flood causing mechanism.

So, what we're proposing now is in terms of revisions to Chapter 2.4. That we rely on a hierarchical or graded screening approach to identifying consequential flood causing mechanisms.

And for those flood causing mechanisms that are found to be consequential to defining the design basis, we believe that the Staff should focus its review on inundation maps that identify the location, magnitude, intensity, and duration of flooding.

These are the things that were key in our 50.54(f) and ESP and COLA reviews. And that you also -- the Staff would also be examining the description of associated flooding effects in the context of any consequential flood causing mechanism.

So, if we can turn to slide eight, please. So, for the flood causing mechanisms found to be inconsequential, this is one of the key revisions we're proposing to how we address these issues in the context of the Standard Review Plan, that the safety evaluation report in whatever section in 2.4, would be limited to a single statement that the flood causing mechanism in question was found not to be applicable at the site.

And there would be some technical justification. But we don't think we needed an encyclopedic evaluation anymore, if I can use that term.

That the slightly longer technical explanation for why a flood causing mechanism might be inconsequential, would be in Chapter 2.4.1. Which is the hydrologic summary chapter that appears at the front end of Chapter 2.4.

And then the Staff would look to that summary description, supported by some technical

rationale, possibly even including an analysis of a limited extent to say why this particular flood causing mechanism wasn't applicable to the site.

For example, you may have a slight that's a -- you may have site, excuse me, that's in a Mediterranean type of climate, and you wouldn't expect ice to be an issue.

So, we can, you know, accept those types of arguments, I think, with some reasonable degree of success to differentiate between types of floods that are consequential versus inconsequential.

But, turning parochially now to what we made available for public comment, we upon reflection and we see that we still need to add a little more fine tuning to our writing.

And what the Staff's intent is in terms of what we're looking for or proposing for applicants to consider in the future, we would say, I think I'm on the third tick. Oh, yeah. There you go. Thank you.

On slide eight. That this section, for example, if you're in an inland site, let's say in the Midwest somewhere, we would expect for purposes of the tsunami discussion, we'd say this section we're proposing is only applicable to a site where tsunami

flood causing mechanisms are found to be consequential.

So, we're trying to, you know, improve our thinking. And communicate that in terms of writing as we seek public comments.

So turning to slide nine, please. So, what we're -- what you saw in the Federal Register Notice that appeared this past September, was a glossary of terms that include the description of LIT.

And so when we get into our review of 2.4.1, we're proposing ultimately to include this glossary of terms as an appendix to Section 2.4.1 of the SRP.

For 2.4.6, some of the description -- some of the revisions we made including introducing this new terminology, which was identified in a series of footnotes, we streamlined the reference list.

We don't think we need to be in a position to tell applicants nor the Staff what references are pertinent to the evaluation of tsunami hazards. We think this is something that the Staff should be very aware of in context of doing their reviews.

And at the same time, the literature is always changing. So, we don't want to find ourselves

in a position of having to update the reference list periodically based on changes in the literature.

And the same can be said for channel migrations and stream diversions. The changes we propose were similar in terms of cleaning up the writing, or refining the writing, and adding a new terminology via footnotes.

We also found for the purposes of the 50.54(f) reviews and the ESP and COLA reviews that reliance on imagery from satellite platforms is very useful to rely on. So, we've introduced that type of review feature into the SRP.

Okay, so turning to slide ten, please. In terms of the longer vision for what we're thinking about or proposing that we do in terms of revisions to Section 2. or Chapter 2.4 of the SRP, we're proposing that we're going to do some extensive rewrite of Section 2.4.1, the hydrologic description to differentiate between consequential and inconsequential flood causing mechanisms.

We're proposing that the Staff place its emphasis review, emphasis that is on the evaluation of consequential flood causing mechanisms, because these are the most -- flood causing mechanisms most important to defining design basis.

We're proposing too simply the discussion in some respects, and to eliminate references to the discussion of water use by -- outside of the reactor area.

These are issues that are typically handled in the environmental assessment, or EIS phase. We don't think we have to re-review that information in the license application.

We're also going to introduce a glossary. Which is the list of new terms that we propose that appear in the FRN.

For floods, for 2.4.2, we're proposing that we repropose that SRP to focus on local intense precipitation. As I mentioned earlier, just about every site that we looked at for the purposes of the 50.54(f) reviews had issues relative to local intense precipitation.

So, we believe it's important now that we update the SRP to address that particular flood causing mechanism. In introducing the LIT concept, if I can use that term, we're going to also address how we evaluate the probable maximum precipitation estimate that's important in making that -- in performing that review.

And then we're also going to propose some

methodologies for how you might evaluate LIT. Lastly, we're also proposing -- again, and this is in terms of the broader vision.

We're proposing that we combine SRP Chapters 2, 4, 12 related to groundwater behavior and 2, 4, 13 in terms of the accidental release of radionuclide affluence into one SRP chapter.

We think it might improve the efficiency of the Staff review. And reduce some redundancy in the SRP if we combine those.

So, as Andy mentioned before, as we make new SR -- as we work through the SRP review process and get new SRP sections available, those will be noticed in the Federal Register.

The Staff is always open to meeting with the public on any issue, you know, relative to these updates. We particularly believe that we're going to have public meetings later on down the road relative to the Section 2.4.1 on the hydrologic description, LIT, and groundwater.

So, I thank you for your time.

MR. CAMPBELL: Thank you Dr. Lee. Thank you Mike. So, next I'm going to introduce Jenise-Marie Thompson, who is a geologist in the Division.

And Jenise is going to talk about service

deformation, SRP Section 2.5.3. Jenise?

MS. THOMPSON: Good morning. Hi, I'm Jenise Thompson. And I'm a geologist in the Office of New Reactors. And I was the lead for the updates to SRP Section 2.5.3, surface deformation.

For this update to the SRP we looked at three key insights and lessons learned. The first was our most recent SRP update which was done in 2014.

And the focus in 2014 we added information related to the using the site safety audits and REI development. We added information related to the geologic mapping, license or permit condition.

And as always with these SRP updates, we look at lessons learned from recent reviews. Another thing that we looked at for this particular update were insights from the 05.504(f) reviews. Can you go back, please?

So, we looked at the risk informed approach that was used successfully for flooding. It allowed licensees to focus on the hazards that are most likely to impact the site and adversely affect the SSEs important to safety.

And kind of thought of how we could apply that to our review in surface deformation. And then

we also looked towards our ESP and COL review experience, where we noted that there's a variable potential for surface deformation based on numerous site specific factors.

So, considering that each site is unique based on their unique geology and their geologic setting, we think that the risk informed approach that was used by flooding in the 50.54(f) reviews maybe applicable to the review of the potential for surface deformation at a site.

Next slide, please. So, looking also to our regulatory statutes, our siting criteria are in 10 CFR, Part 100.23. And we were tasked with evaluating the potential for tectonic and non-tectonic surface deformation.

And something else that informs our reviews is the geology of North America. It's relatively diverse geologically.

The tectonic and structural history is not uniform. It's varied depending on where you are. And therefore the potential for surface deformation is going to vary spatially as well.

So, factors such as subsurface lithology, the local and regional geologic structures, anthropogenic activities, are all factors to consider

when assessing the potential for surface deformation at a site.

So, next slide, please. So, using all of this information, we're on slide three of SRP Section 2.5.3, surface deformation.

So, using all of this information, our update to SRP Section 2.5.3 is that the investigations for a potential for surface or non-tectonic surface deformation still need to be conducted for each individual site.

But these investigations should be commensurate with the geologic assessment of evidence for potential for surface deformation.

So, looking at the level of detail or documentation or burden, it should be consistent with that geologic assessment of evidence as to whether there is a potential for surface deformation, either tectonic or non.

And whether that surface deformation is likely to impact the site and affect structures, systems, or components that are important to safety.

So what this means, to give you an example, in a hypothetical site that's underlain by granite, perhaps there is a quaternary or recent 2.6 million years fault near the site. Let's say five

miles.

You could reasonably expect to say that the level of detail that you would need to provide for surface deformation due to karst, would be much less then the level of detail you would need to provide for tectonic surface deformation associated with that recent fault.

So your surface deformation, your level of detail is going to vary depending on what the mechanism is.

So, we also our final, you know, I guess major change or update to this was looking at the potential for non-tectonic surface deformation due to anthropogenic or human activities.

So, mining, underground fluid injection. As we continue to alter the subsurface, we learn more about how those activities may affect not only the subsurface but the surface, and deformation of that surface.

So that's something that we've learned that we should be including within the scope of surface deformation in SRP Section 2.5.3.

Next slide, please. So to summarize, we saw how effective the use of a risk informed approach was for flooding. And we identified a way that we

could apply it to assessing the potential for surface deformation that could adversely SSEs important to safety.

And we added non-tectonic surface deformation due to anthropogenic activities or effects at the site.

So, looking ahead, this is -- SRP Section 2.5.3 is one of five Sections in 2.5. So, looking ahead we hope to use insights from this update of 2.5.3 to inform future updates of 2.5.1, which is geologic characterization information, 2.5.2, which is vibratory ground motion, 2.5.4, the stability of subsurface materials and foundations, and 2.5.5, the stability of slopes.

And all of that is relatively far off in the distance for us. So, we're looking at 2020 before we undertake any future updates in 2.5.

MR. CAMPBELL: So, with that thank you Jenise. Next I'd like to introduce Mike Mazaika. He's a meteorologist in the Division.

And Mike is going to talk about onsite meteorological monitoring program. Which is SRP Section 2.3.3.

This is a section really focused on technology and monitoring. And so with that what we

wanted to do was include this in the update.

It is more about incorporating lessons learned from as the technology increases. And also some of our experience with monitoring programs increases.

So with that Mike, could you go ahead? Thank you.

MR. MAZAIKA: Thank you Andy. Good morning folks. For you horse racing fans, we're at the top of the back stretch now.

For you ice hockey fans, I'm the caboose among the SRP sections that's -- that we've discussed today. Caboose because I'm an old hockey goalie. And it's a hockey thing.

For the rest of you, we're almost done. There are only four slides in my presentation.

The first one is a brief look back. The second one discusses some lessons that we've learned from our reviews.

The third is a look forward of sorts. Anticipating the kinds of issues that we might have to review in the future for siting small modular reactors.

And the fourth and final slide in this set is also a look ahead. But at other sections

under SRP Section 2.3 and that we're slated to update. If I could just have the next slide, please.

Standard Review Plan Section 2.3.3. deals with our review of the onsite meteorological measurement's program. That's set up and run by an applicant before a new facility or a new unit gets built. Or by a licensee once the facility is operating.

In and of itself, meteorological or MET monitoring is not a risk informed activity. And was not covered by the 50.54(f) letters that were discussed earlier for hydrology and geology.

However, MET monitoring programs may provide supporting data for risk informed activities. For example, dispersion modeling analysis and severe accident analysis.

Listed here are some examples on this slide of some of the things that were necessary to be updated in this proposed revision. Hopefully the folks that are online have access to the slides now.

I didn't plan to read them for you. But, to summarize, the first item is aimed at making the Staff review guidance more consistent with the guidance that we give to applicants to set up and run their MET monitoring program. And that's discussed

in Reg Guide 1.23, Onsite meteorological Monitoring Programs.

The third item recognizes that other agencies are involved with meteorological monitoring. For example, the EPA, industry organizations like the American Nuclear Society.

That for efficiency we don't have to reinvent the wheel, but we can reference those documents. But that those documents get updated over time as well.

The last two items on slide two, they're intended to identify some of the linkages that we have with other regulatory guides and where monitoring procedures are called for. They include Reg Guide 1.21, 1.33 for example, that deal with quality assurance requirements and the monitoring that occurs once a facility is operating.

Can I have the next slide, please? This would be slide three. That's not me falling over. That's my cane.

This next slide shows some lessons learned that the Staff has from our reviews of the combined license in early site permit applications over the last ten years or so. Standard Review Plan under Section 2.3 was last updated about ten years

ago.

It's also important to understand that these proposed revisions also have their roots in two other places. I came from the consulting industry, and as a user, a reader of Regulatory Guide 1.23 and other related guidance, and being aware of what the NRC Staff looks for in performing its reviews, this allows us to include perspectives from the regulated community.

But that's not the end of it. And that's why you are here today online or in person. Why we make these proposed updates available for public comment. Your comments add value to these documents as well.

Again, I won't read what's on the slide. But they're representative of some of the things that we've seen along the way. And that we considered important enough to address in this update.

The first item, there's nothing like boots on the ground early in the review process to understand how a monitoring program is sited, how it's set up, how it's operated and maintained, how it's documented. This is a preventative exercise if you will. It's a training opportunity as well for younger staff and for older staff alike.

The second and third items represent some additional clarifications to those topics that we considered important enough to be included. The second related to new facilities proposed to be located at existing plant sites.

The third related to how measured data will be used. We don't measure just data just for the sake of measuring data. It has an application. And we have to be aware of how those data, how those numbers get used.

The fourth item was added to reflect changes. In this case, wind measurements. But it also applies to other MET data.

And being cognizant of how those data should be processed based on how they're going to be used. And that's a benefit that we had from considering other agency and other industry guidance. Next slide, please.

This next slide is intended to highlight some of our thinking ahead to the siting of the next generation of reactor technology. For example, small modular reactors. Which might, because of their smaller output, because they're smaller in size, they might be deployed in non-traditional or remote locations that are subject to harsh environment

conditions.

We've done some pretty good, I think initial noodling about the potential issues that applicants might encounter. And that we're going to have to deal with as reviewers.

There are also some ideas that applicants might need to take into account when they're planning and operating their MET monitoring program at such locations. And because the Standard Review Plan is primarily guidance to the NRC staff that we need to have a leg up on before the fact.

For those of you that are familiar with or involved with meteorological monitoring programs, hopefully the potential issues listed on this slide will strike a cord and get you all thinking as well. These will also be reflected in planned updates for other SRP sections.

And the next and final slide. That leads to another look ahead. Standard Review Plan sections that we're planning to update in calendar year 2019.

Of the five sections under Section 2.3, we aim to update SRP Section 2.3.1. There are about 20 climate related items that are considered under this section.

Unlike SRP Section 2.3, the bulleted

items listed here have a more direct linkage to risk informed considerations. But they're characteristics of a particular location. And their implication to the design and operation of a facility are taken into account by the engineering teams.

Under Section 2.3, our review is more limited to evaluating whether or not these conditions can be reasonably expected to occur at a proposed location.

The update to this section will consider whether all of the climate related items and the current revision are necessary to be included going forward.

And finally, the planned revision to SRP Section 2.2. Which deals with local meteorologicals more closely related to SRP Section 2.3.3, in that it presents comparisons of the data that you acquire from the onsite MET monitoring program.

Which will be obtained over a relatively shorter period on the order of two years. And we want to evaluate the representativeness of that data against long term conditions by comparison to nearby offsite measurements.

So, with that I'll be quiet now. I don't see many heads bobbing. I appreciate your attention.

And I'll turn the podium back to Andy.

MR. CAMPBELL: Thank you Mike. So, with that what I'm going to do is cover, in my closing remarks, a recap and the path forward.

So, for future SRP revisions for SRP Chapter 2.4, I'm on slide one of the closing remarks. Hydrology is 2.4. So, updates are to be announced in the Federal Register, and we'll have additional public meetings to follow.

In particular, 2.4.1 will be announced. And that really provides the overall scope and vision that we have for the whole hydrology section. And also, you know, the linkage to our risk informed performance-based approach where revising the Standard Review Plan.

The early calendar year 2019 updated drafts will be announced in the Federal Register for, as I just said, 2.4.1, the hydrologic description. And 2.4.2, local intense precipitation.

Which Mike Lee, Dr. Mike Lee pointed out, we found all of the sites were affected from the Fukushima work. And that was mainly, let's keep it clear, that was mainly because most sites did not have a design basis for local intense precipitation.

And because we were asked, and the sites

were -- the industry was asked to reevaluate their local hazards with respect to their design basis, essentially all of the sites didn't have a design basis, or many of the sites, to all of them, didn't have a design basis for flooding from a rainfall event.

So, there are a whole series of interactions that took place in terms of what do we need to do? What does the industry need to do for local intense precipitation?

And there is a White Paper that NRC reviewed from NEI that looked at a variety of different things that will be considered in -- for a site, evaluating the impacts of local intense precipitation on the site.

That doesn't necessarily mean every site was challenged in terms of consequential flooding for a particular event. It's just there was no design basis set up for the many, many sites.

So, we also have -- will be presenting a draft NUREG on site specific probable maximum precipitation. For those of us that have been involved in local intense precipitation reviews, the hydrometeorologic reports produced by NOAA, are old.

They pretty much stopped producing them

in the '80s in terms of updates. And so stepping into that void, the private sector has developed methodologies to evaluate locate intense precipitation.

And we've reviewed a lot of these in the -- over the course of the Fukushima work. As well as some of the COLs.

And so with that we've learned something about local intense precipitations in terms of -- and flooding for whole watersheds, in terms of the site specific probable maximum precipitation approaches that pretty much follow the World Meteorological Association guidance. But there are some differences.

And so lessons learned from that, from a large number of views, will be considered and laid out in the NUREG. And then expectation Staff would have for utilizing that information.

Also, SRP Section 2.4.8 cooling water canals and reservoirs will be updated. And SRP 2.4.11, low water effects will be evaluated. And these will be updated in the SRP.

So, future SRP revisions for SRP Chapters 2.3 and 2.5. So, 2.3 was climatology. So, 2.3.1 is the regional climatology.

This is late calendar -- I'm on slide two of the closing remarks. 2.3.1 regional climatology and 2.3.2 local meteorology will be sometime late in calendar year 2019.

Also late in calendar year 2020, we are going to have updated drafts announced in the Federal Register for several geology sections. SRP Section 2.5.1 which is geologic characterization information, 2.5.2 vibratory ground motion, 2.5.4 stability of subsurface materials and foundations, and SRP 2.5.5 stability of slope.

So this is -- these are our plans in terms of these updates. And as I said earlier, we will be having Federal Register notices for all of those.

So, next steps. I'm on slide three of the closing remarks. So, this visit we want your comments. We're in listening mode today.

We want to hear from you about what you think about the sections that have been presented in the Federal Register. And also your general thoughts about the whole approach that we're having, that we're talking about.

So the closing date for submission of public comments for 2.3.3, 2.4.6, 2.4.9, and 2.5.3, i.e., the sections we have talked about today, would

be Monday, October 29, 2018. So that's the end of the month.

Comments can either be submitted too online. And that's a http://www.regulations.gov. The Docket ID number is NRC-2018-0178.

Or you can mail it in, in the regular mail care of Ms. May Ma, Office of Administration, Mail Stop TWFN7. That's Two White Flint North 7. A60M, that's a mail stop. U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

We intend to respond to all public comments. And availability of public comments disposition to accompany Federal Register notices announcing the availability of the final revised SRP sections.

So, as we announce the final, we will have a full section of dispositioning every single comment or set of comments that have been made on that section.

For SRP sections discussed today, the final SRP revisions are expected some time in calendar year 2019.

And so with that I'm going to turn it over to Dan Mussatti, our Facilitator. And we'll open it up to public comments.

Take it away Dan.

MR. MUSSATTI: All right. Thank you. According to our agenda, it is now ten o'clock. And we were planning on having a short ten minute break in here before we start with the comments.

Which will give me an opportunity to try an experiment here, since we haven't got the webinar up and running because of some bandwidth issue or whatever. We do have the phone lines open. And we're hoping that the people that are on the phones would have an opportunity to be able to ask their questions live.

So, while everyone's taking a break here, we're going to perform a small experiment to see if we can actually communicate with the folks on the phone. And have it heard in the room here and by our court reporter.

So, if you could be back by ten after, I would certainly appreciate it. And we stand temporarily adjourned here.

Could I get the phone lines opened up so we can see if we can communicate? Okay. Is there anybody on the line?

(No response)

MR. MUSSATTI: If you're on the line,

we're not able to hear you yet. We're still working on it.

Okay. Mark, could you put slide three up again so that I can read it off to these folks that are on the phone in case they're still there?

Oh, you're calling in to see. Okay.

MR. NOTICH: We're going to experiment.

MR. MUSSATTI: Right. We have an experimenter right here in the room. Yes, please.

In case you're on the phone and we're not able to hear your comments live, please remember that http://www.regulations.gov will gladly accept your comments to us.

Just make sure you include the Docket ID, NRC-2018-0178. That's probably your most efficient way to be able to get that information to us.

That's also the -- on the last slide that was presented by Andy just a few minutes ago.

And we're trying a live version. I've got a gentleman in the room here that's trying to call me live. You can hear me.

Okay. He can hear me, but I can't hear him. Is there some setting in the booth that we can play with?

Yeah, you're not coming over the

speakers. Okay. It doesn't look like this experiment has been very successful.

We will proceed with comments from whoever is in the room when they get back. And when there aren't any more comments, I guess we're done.

So, I'll see you at about ten after.

(Whereupon, the above-entitled matter went off the record at 10:05 a.m. and resumed at 10:16 a.m.)

MR. MUSSATTI: We are going to be abandoning the telephone line that we have. And we're going to open up a regular conference line upstairs here that we should be able to have people call in then.

So, it's going to take another minute or two to be able to get that set up upstairs. And until then, I don't think we're going to fill up a full two hours with comments anyway. So, bear with me, please.

MR. CAMPBELL: And are we going to announce the number the number they need to call?

MR. MUSSATTI: We'll get the new number here in a minute, as soon as we get the conference information from the guy that just ran upstairs.

MR. CAMPBELL: Okay.

MR. MUSSATTI: All right. We're ready to make a change. Grab a pencil and a piece of paper so you can write down some numbers.

And we're going to ask you to hang up in a minute. And then to dial into this new number. The toll-free number is (866) 617-1024.

Once again, that number is (866) 617-1024. And we would like to have you use this pass code to get into the line, 2406646. 2406646.

So if you've got that information now, please hang up. And give it a good strong ten count. And then try calling back in again to these new numbers. Thank you.

(Phone dialing)

MR. MUSSATTI: This is the NRC.

(Phone speaking)

MR. MUSSATTI: Can you hear me now?

(Phone speaking)

MR. MUSSATTI: All right. We're going to have to -- we're going to give it a little more time as people are signing in here.

But, we're going to have to have just a little bit of patience amongst you folks on the phone as you're trying to make your comments. Eventually you will be heard.

But, when you're trying to talk over each other it's going to be a little confusing. So, bear with us, because we have no way to be able to really manage who's talking next, other then you guys helping us out with that as much as you possibly can.

So, we're back from our break. Hopefully everyone had a chance to follow through this morning on the slides that we had.

And we're going to take questions now. I'm going to start with -- since we haven't heard from you all day long, I'm going to start with one question from on the phone first.

And please state your name and affiliation when you start. I have no comments on the phone?

(No response)

MR. MUSSATTI: Cool. We'll go to the room then. Would somebody in the room like to speak?

(No response)

MR. MUSSATTI: This could be a very, very fast comment section.

(No response)

MR. MUSSATTI: Back to the phones. Anybody on the phone that would like to speak?

(No response)

MR. MUSSATTI: Okay. Back to the room.

(No response)

MR. MUSSATTI: All right. Einstein said that insanity is defined as doing the same thing over again and expecting a different result. I'm only going to do this one more time.

Back to the phones. Is there somebody on the phone would like to make a comment?

(No response)

MR. MUSSATTI: And now back to the room.

(No response)

MR. MUSSATTI: Okay. Andy?

MR. CAMPBELL: Okay. So this is Andy Campbell. Maybe I can stimulate some questions.

One of the things we wanted to get information on was not just your input on these particular sections, but the overall approach to revising the SRP.

Are there any comments on that overall approach? Both as articulated by our Office Director, Fred and by myself, as well as the Staff approaches that you saw in each of these sections that you can see in the slides.

Anybody on the phone want to make comments about that?

(No response)

MR. CAMPBELL: So, let me repeat the next steps in terms of public comments. Even though there may not be some comments at this point, we do direct people to the slide deck on the public meeting announcement.

The closing date for a submission of public comments on SRP Sections that are in that slide deck that we've talked about today, the hydrology, the meteorology monitoring, and the ground deformation section, and the tsunami section and the channel migration section at 2.4.

The closing date is the end of the month. Not quite the end of the month, but October 29. That's next Monday. And with that said, you know, if someone feels the need for an extension, we will consider that.

And again, www.regulations.gov. With Docket ID Number NRC-2018-0178.

(Background noise)

MR. CAMPBELL: Was that a comment?

(No response)

MR. CAMPBELL: Okay. And then you can also respond via standard mail to Ms. May Ma, Office of Administration, Mail Stop --

(Telephone interference)

MR. CAMPBELL: BWFN-7-A60M, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

And so with that, I'm going to turn it back to Dan.

MR. MUSSATTI: Okay. Normally by now I'd be reminding you that we need you to fill out your feedback form for us. But, I'm pretty sure I know what the feedback's going to be on this meeting.

I'd like to again apologize and voice our frustration here that the electronics didn't work as well as we wanted it to today. I'm hoping the meeting was informative to everybody.

This isn't the only meeting that's going to be on this. There's going to be other opportunities for people to comment on the SRPs further on down the line as well.

And what I'd like to do is adjourn the meeting. I don't think there's anything left to do, is there?

(No response)

MR. MUSSATTI: All right. Well, we'll see you the next time. And thank you up in the booth for all your help.

(Whereupon, the above-entitled matter

went off the record at 10:22 a.m.)