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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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REGULATORY POLICIES AND PRACTICES SUBCOMMITTEE

STATION BLACKOUT AND RELATED REGULATION

+ + + + +

WEDNESDAY

DECEMBER 5, 2012

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ROCKVILLE, MARYLAND

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The Subcommittee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 8:30 a.m., William J. Shack, Chairman, presiding.

COMMITTEE MEMBERS:

WILLIAM J. SHACK, Subcommittee Chairman

J. SAM ARMIJO, Member

DENNIS C. BLEY, Member*

CHARLES H. BROWN, JR. Member

MICHAEL L. CORRADINI, Member

DANA A. POWERS, Member

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1 HAROLD B. RAY, Member
2 JOY REMPE, Member
3 MICHAEL T. RYAN, Member
4 STEPHEN P. SCHULTZ, Member
5 JOHN D. SIEBER, Member
6 GORDON R. SKILLMAN, Member
7 JOHN W. STETKAR, Member

8
9 NRC STAFF PRESENT:

10 EDWIN M. HACKETT, Executive Director
11 CHRISTINA ANTONESCU, Designated Federal
12 Official
13 JOHN H. FLACK, Consultant
14 JIM ANDERSEN, NRR/DE/EEEB
15 ERIC BOWMAN, NRR/DPR/PGCB
16 MIKE CHEOK, NRR/DE
17 MATT MCCONNELL, NRR/DE/EEEB
18 TIM REED, NRR/DPR/PRB
19 ROBERT WEISMAN, OGC

20

21

22 *Present via telephone

23

24

25

1	A-G-E-N-D-A	
2	Opening Remarks and Objectives	
3	Bill Shack, ACRS	
4	Staff Introduction	6
5	NTTF Recommendations and Evolution of	
6	Regulatory Approach	
7	Tim Reed, NRR	10
8	Key and Early Insights	
9	Tim Reed, NRR	11
10	Break	88
11	Draft Rule and Current Thoughts	
12	Tim Reed, NRR	100
13	Next Steps and Path Forward	
14	Tim Reed, NRR	139
15	Subcommittee Discussion and Closing	
16	Comments	
17	Bill Shack, ACRS	150
18	Conclusion	169
19		
20		
21		
22		
23		
24		
25		

P R O C E E D I N G S

8:30 a.m.

CHAIRMAN SHACK: This is a meeting of the Regulatory Policy and Practices Subcommittee. I'm Bill Shack, Chairman of the Subcommittee.

ACRS members in attendance are Harold Ray, Charles Brown, Mike Corradini, Dana Powers, Mike Ryan, John Sieber, Joy Rempe, Dick Skillman, Steve Schultz. Christina Antonescu is the ACRS - of the ACRS staff who's the designated federal official for this meeting.

The Near Term Task Force recommended that SBO mitigation capability at all operating and new reactors for design basis and beyond design basis external events be strengthened.

They proposed that rule making be undertaken to provide a capability to cope with extended loss of AC power using a combination of installed equipment to provide for core and spent fuel pooling and for reactor coolant system and primary containment integrity.

The staff issued an advance notice of proposed rule making to address these issues. However, they have also issued an order, EA-12-049, that required licensees to develop strategies capable

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1 of mitigating a simultaneous loss of all AC power and
2 loss of normal access to the ultimate heat sink due to
3 beyond design basis external events.

4 This is also to have adequate capacity to
5 address challenges to core cooling, containment and
6 spent fuel pool cooling capabilities.

7 It must be able to obtain sufficient
8 offsite resources to sustain these functions
9 indefinitely. The staff has accepted NEI 12-06 and
10 the FLEX strategy is an acceptable method for
11 developing the strategy required by the order.

12 During this meeting, the staff will
13 describe the status of the staff's rule making efforts
14 and how their thinking has evolved since the issuance
15 of the order.

16 The Subcommittee will gather information,
17 analyze relevant issues and facts, formulate proposed
18 positions and actions as appropriate for deliberation
19 by the full committee.

20 The rules for participation in today's
21 meeting have been announced as part of the notice of
22 this meeting previously published in the Federal
23 Register on November 15th, 2012.

24 We have received no written comments or
25 requests for time to make oral statements from members

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1 of the public regarding today's meeting. Also, we
2 have no requests for the bridge line phone connection
3 to listen to the discussions.

4 To preclude interruption of the meeting
5 the phone will be placed on a listen-in mode during
6 the discussions, presentation and committee
7 discussions. And I think Mike Cheok's going to lead
8 us off.

9 MR. CHEOK: Thank you. Good morning. My
10 name is Mike Cheok and I'm the Deputy Director for the
11 Division of Engineering and NRR. It's good to be back
12 to address the ACRS again.

13 CHAIRMAN SHACK: It's been a while.

14 MR. CHEOK: Yes, it's been. This morning
15 we will talk about our efforts to date on
16 recommendation 4.1 of the Near Term Task Force lessons
17 learned report.

18 This recommendation is to strengthen
19 station blackout, mitigating capability and operating
20 and new reactors for design basis and beyond design
21 basis external events.

22 In October of last year, the Commission
23 directed the staff to initiate rule making in this
24 area with the goal of completion of within 24 to 30
25 months of the staff requirements memorandum. This is

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1 an aggressive schedule and the staff's working real
2 hard to try to meet the schedule.

3 Since last October, we have obtained
4 industry and external stakeholder comments to the
5 advanced notice of proposed rule making process and we
6 have also conducted a public meeting to discuss issues
7 related to the effort.

8 We are currently in the process of
9 developing the regulatory basis for the rule and also
10 the proposed rule language. We have requested this
11 ACRS briefing because we are interested in hearing
12 your thoughts on this process.

13 Tim Reed is the lead project manager for
14 this rule making. Tim will provide some background on
15 the Near Term Task Force recommendation as well as
16 some key insights from the comments and from our work
17 so far.

18 He will also talk about our current
19 thinking on the framework for the rule making. At the
20 end of the presentation Tim will discuss the next
21 steps, the time line and future ACRS interactions.

22 I would like to introduce Eric Bowman to
23 the far left. Eric is the lead project manager for
24 the mitigating strategies order which is part of NTF
25 recommendation 4.2.

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1 Eric is here to discuss questions on the
2 order and how it factors into our rule making process.

3 Along with Eric is Matt McConnell to my
4 left, who is the lead for the electrical engineering
5 branch. Matt will address questions related to the
6 current station blackout rules.

7 With that, Tim?

8 MR. REED: All right. Thank, Mike. It's
9 a pleasure to be in front of the ACRS again. It's
10 been a long time for me. Quite a long time actually
11 and -

12 CHAIRMAN SHACK: At least it's not a steam
13 generator.

14 MR. REED: Yes, that's the 90s and then
15 50.69 in the 2000s so it's been a long - been a long
16 time.

17 As Mike said, the idea today is really an
18 open interaction. That's a little different, I think,
19 than the committee is used to. We really are
20 interested in the opinions, your opinions, expert
21 opinions.

22 (Laughter.)

23 MR. REED: And that's, you know, really I
24 - you know, my idea was to come here now and at least
25 so we can hear what you're saying and allows you to

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1 inform us - inform us going forward.

2 And, you know, the schedule right now
3 we'll get to the last slide was to bring this whole
4 package to you next year, next March and April and
5 that would be the subcommittee and full committee.

6 By then you'd have the whole thing and
7 this way we can get your input and hopefully we can -
8 we can do something within four months and obviously
9 put together a better product.

10 So that's the idea and it really is in
11 that context that we're here today. So just to start
12 with a little background, and I'm going to have a few
13 slides here to try to get everybody baselined and now
14 we're on the same sheet of music here and so we can
15 all then have a discussion on what kind of - the core
16 part of this whole thing - our insights and where
17 we're at right now in this effort.

18 But as Mike mentioned, just now we've got
19 our direction from the Commission last - in October of
20 2011 to initiate this activity as an ANPR and at that
21 time in the same SRM they also have a very, I think,
22 insightful direction to follow an approach that's
23 similar to what was done for B.5.b, which became 10
24 CFR 50.54(hh)2 as part of the power reactor security
25 rule making. That's where it ended up.

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1 Okay. So that's a - and that was really
2 in the context when you're looking at beyond design
3 basis, you know, events that you should - have a high
4 level of space kind of approach similar to what was
5 done there and that's exactly where we've been going
6 the whole way with both the strategies order as well
7 as this rule making as well.

8 We, of course, then followed that
9 direction. We put together an ANPR that was put into
10 the Federal Register on March 20th.

11 That was - you know, really the intent was
12 to get stakeholder feedback to help us do this,
13 really. ANPRs are not rule making.

14 They're really just tools to allow you to
15 put together a regulatory basis and decide whether
16 rule making as one of the options is the appropriate
17 one.

18 Of course, in this particular circumstance
19 we were directed to do rule making so that's kind of
20 a moot point. So we're doing rule making, of course,
21 but we really wanted the stakeholder feedback to help
22 us do that and we had a very - if you looked at the
23 ANPR it's kind of a brainstorming exercise, a question
24 format.

25 It's very open. It was very much intended

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1 to get kind of any feedback that might help us do that
2 and we did get 45 comment submissions and that was a
3 lot of input. I think that's a good input and it's
4 really helped us do our job.

5 And as part of that we had a open - a
6 public category three meeting also where we interacted
7 with the public and then external stakeholders to give
8 them really our thoughts in a verbal format that what
9 they saw in the Federal Register notice and that was
10 intended to help the feedback be more informed and
11 constructive and focused and help us do our job better
12 to put together this framework, this new rule.

13 Okay. So that's kind of a background,
14 just to get everybody on the ANPR and what that effort
15 was, and then as Mike just mentioned the - this really
16 stems from recommendation 4 and as part of the overall
17 Near Term Task Force report and to my mind 4 is kind
18 of the center of everything.

19 Every kind of - everything sort of
20 revolves around 4 so I'm sure this committee is well
21 aware many of the other Near Term Task Force
22 recommendations are closely linked to us and most
23 important to that, of course, is 8. But I'll get to
24 that in a second.

25 We stem mostly from 4.1 and that's kind of

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1 the label that's been put on us - 4.1. I'm going to
2 dispense with these labels here in a second, and the
3 order is often called 4.2 and as you'll see in a few
4 slides if you looked ahead, 4.2 was never really done.

5 The order became 4 and the rule making
6 became 4. They're virtually overlapping and they're
7 very broad and performance based.

8 And so it kind of turned into something
9 different than what the NTTF recommended - in fact,
10 something I think is much better.

11 Now, in terms of the other NTTF
12 recommendations we also - as I mentioned, 8 is very
13 closely linked to us because 8, if you're not familiar
14 with that, I don't believe 8 - Bob Bell and 8 -
15 they've been before the committee yet but 8 - that
16 Recommendation 8 is an idea where they were looking at
17 all these procedures and guidance that have been in
18 place post-TMI.

19 EOPs, of course, are requirements. There
20 were symptom-based EOPs put in place after TMIs,
21 you're all aware. But we also have severe accident
22 and management guidelines which are voluntary
23 initiatives, okay.

24 We had extensive damage mitigation
25 guidelines that were put in place to implement the

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1 B.5.b stuff and became 10 CFR 50.54 (hh)2 which Eric's
2 an expert on and lead.

3 So we have these different sets of things
4 out there and they're all treated a little differently
5 and the handling is a little differently and the NTTF
6 I think appropriately recognized that those things
7 more handled in a consistent manner that there might
8 be command and control issues, that there may be
9 treatment issues.

10 You should handle these things really
11 consistent and it was an idea, a sound idea, I
12 believe, to address that and make that all, you know,
13 basically addressed in one way.

14 Now, of course, for us we have another
15 whole set of stuff and it's pretty extensive stuff
16 called the mitigating strategies that's going to be
17 thrown into that.

18 And so it makes very - a lot of sense that
19 that would be dealt with in recommendation 8 in a
20 manner consistent with this other stuff out there -
21 the EOPs, SAMGs, DDMGs, okay. So that's why we're
22 closely linked with that recommendation.

23 Nine point 3 is a - stemmed from the
24 50.54(f) letters that we're also issued in March of
25 this year and that's going to staffing and

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1 communications and, of course, staffing becomes a big
2 deal in a situation like this.

3 You have enough staff to go out and take
4 over a lot of mitigating actions. If you don't have
5 the staff, obviously, you're not going to be
6 successful so that was part of that request and, of
7 course, communications issues both onsite and offsite.

8 When you have an extended alternating AC power it was
9 a big deal.

10 So that's part of us being successful in
11 mitigating strategies and it's actually built into the
12 mitigating strategies guidance, you may or may not be
13 aware. So that's actually part of our - directly part
14 of our effort here.

15 Seven point one, the order on the spent
16 fuel pool instrumentation, that's only the level
17 portion of 7.1. That, of course, became EA-12-051.

18 That level of instrumentation also falls
19 into what we do because we have a strategy, of course,
20 to maintain and restore spent fuel pool cooling and so
21 that level of instrumentation will be used and so that
22 folds into our effort here. So that's directly
23 related.

24 Five point one, reliable hardened vents
25 for mark one and mark two containment, I'm sure you're

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1 familiar with that - that also folds into the
2 containment function and mitigating strategy for those
3 designs. So whatever happens to that will also have
4 to be used as part of.

5 So these are the ones that most directly
6 impact us but I have a bullet there at the end that
7 says they kind of all affect us at one form or fashion
8 and I'll give you an example.

9 The one that might concern me the most is
10 2.1, and 2.1 for me is the root cause. I mean, it's -
11 if you don't have a sufficient external dense design
12 basis you need to revise that per an NTTF 2.1 and you
13 do change that, that would have a huge, I think,
14 direct impact on what we're doing in mitigating
15 strategies and particularly the way we're reasonably
16 protecting this equipment and we can get that to - a
17 little bit down the road here.

18 But so the 2.1 is not on here but it would
19 have a big impact. So I just want to give you a feel
20 that we certainly are aware that all these
21 connections.

22 It's made our job a little tougher but we
23 are trying to, of course, maintain that interaction
24 with all the other NTTFs and fold those into our rule
25 making as we go forward.

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1 So that's just a really high level of
2 baseline of where this thing fits in the NTTF. And by
3 the way, feel free to stop me anywhere along the line
4 - I'm sure you will - but I have a tendency to go too
5 fast and talk too fast so -

6 MEMBER ARMIJO: I have a tough little
7 question. We have an existing station blackout rule
8 and I'm sure it has words in it that address all of
9 these things to some degree and maybe some of these
10 things not at all.

11 What I'd like to hear is with the existing
12 station blackout rule where are the big deficiencies
13 that are going to be corrected with this ruling.

14 MR. REED: I'm going to get to that
15 probably in 10 and 11, I think, later on. If you'll
16 hold on that we'll definitely get that.

17 MEMBER ARMIJO: Okay.

18 MR. REED: If we don't, of course, hit me.
19 But I'm pretty certain because I have the electrical
20 branch folks here and we'll do that.

21 MEMBER ARMIJO: Yes, there's so many
22 things here that we're addressing in other areas that
23 some - I just want what's unique about the station
24 blackout rule. Is it supposed integrate -

25 MR. REED: Yes.

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1 MEMBER ARMIJO: - all of these issues into
2 one big -

3 MR. REED: Actually, it's in the rule
4 making space when you try to put something in the Code
5 of Federal Regulations as a starting point you got to
6 be mindful of what's already in there, all right, and
7 there are two sets of requirements in there that we
8 have to be mindful of them.

9 50.63 is the one that comes to mind
10 immediately is also all AC power from 1988. But
11 actually 50.54(hh)2 is in there too and we touch upon
12 - we can hit those too.

13 So there's two different sets and we have
14 to worry about the part 50 stuff as well as new
15 reactors. So it's a challenge. Definitely aware of
16 it and we'll get to that here in a second on how we -

17 MEMBER ARMIJO: Yes, because I'm a little
18 confused in that there's this NUREG-1776 which
19 reviewed the regulatory effectiveness of the existing
20 station blackout rules, concluded it was very
21 effective.

22 MR. REED: Yes.

23 MEMBER ARMIJO: So, obviously, it's not
24 effective enough if we're doing all of this stuff and
25 what I'd like to know where the areas where Fukushima

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1 told us we had problems.

2 MR. REED: Sure. We'll look at that and
3 we'll try to hit those slides, okay.

4 MR. CHEOK: And I think in one - in one
5 sentence what they were looking for is just the coping
6 capability - to increase the coping capacity of the
7 station blackout rules - that name.

8 MEMBER ARMIJO: That's the main objective
9 pretty much.

10 MEMBER CHEOK: Okay.

11 MEMBER ARMIJO: That's the mandated eight
12 hours, right?

13 MR. REED: I'm sorry?

14 MEMBER ARMIJO: That's the mandated eight
15 hours, right?

16 MR. CHEOK: That's not - that's not quite
17 a mandate but that's - one of the general mandate was
18 to make sure that we can cope with external events to
19 the extent practical.

20 MEMBER RAY: I think blackout versus
21 extended blackout is one way to think about it.

22 MR. REED: Okay. All right. So then
23 going to slide 5, we were aware, of course, of this
24 committee's thoughts that were expressed in your
25 October 2011 memorandum.

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1 We took, which are very good sound
2 thoughts, by the way, in regard to station blackout -
3 we took that and actually put that rate in the ANPR
4 and requested external feedback on the thoughts in
5 terms of, really, the capabilities at facilities that
6 deal with this kind of situation and what kind of
7 vulnerabilities might exist as well as going through
8 this kind of multi-phase thing and mobilizing
9 resources.

10 And I think you're probably aware this has
11 all been - we've been addressing all these as
12 development of the implementation guidance as well as
13 this rule making, and as I note there at the bottom
14 the first real thorough industry wide indication of
15 what the capabilities of these facilities are will be
16 in the integrated plans in response to EA-12-049
17 that's due on February 28th of 2013.

18 So the actual analysis that's going into
19 this extended loss of AC power events in terms of
20 understanding the vulnerabilities throughout including
21 reactor core pump leakage as well as criticality
22 issues and everything else that's ongoing for both
23 BWRs and PWRs.

24 That underlies these strategies in
25 developing these strategies and ensuring that the

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1 actions are taken are taken at the right time with the
2 right kind of capacities and what you need to do in
3 terms of maintaining or restoring these functions.

4 So that's ongoing right now and we can
5 talk about that here in a second if you like. But I
6 just wanted to let you know that we put that in.

7 If you weren't aware, we put that right in
8 the ANPR and we requested comments. And the next
9 slide -

10 MEMBER RAY: Let me ask a question here.

11 MR. REED: Yes, sir.

12 MEMBER RAY: You're talking about
13 capability assessment. Do we make any distinction
14 between the capability based on EOPs and those based
15 on the SAMGs to voluntary things that go beyond or do
16 we treat it all the same?

17 You assessed capability that is described
18 in a SAMG just as we would in an EOP?

19 MR. REED: I'm not sure I'm following you
20 on most of -

21 MEMBER RAY: The capability to cope with
22 an extended blackout in some respects you would rely
23 on a EOP here.

24 MR. REED: Yes.

25 MEMBER RAY: When you get beyond that you

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1 rely on a SAMG. I just looked at the words here about
2 capability assessment.

3 I'm asking do we treat the capability that
4 arises from SAMGs the same as we do EOPs, given that
5 they're voluntary and not subject to the same
6 inspection -

7 MR. BOWMAN: I think the best way to
8 address it is - this is Eric Bowman - for the
9 capabilities we're looking at, the capabilities that
10 are in the EOPs are, of course, being looked at.

11 We aren't looking at the capabilities that
12 are available through the Severe Accident Management
13 Guidelines per se.

14 However, for the responses to the
15 mitigating strategies order EA-12-049 there are FLEX
16 support guidelines being developed, which is the
17 industry term for the strategies and guidance that we
18 required for what to do when they get to the response
19 not obtained column in the emergency operating
20 procedures.

21 So that's where they'll be bringing the
22 portable capabilities into play, that those
23 capabilities will also be available for the Severe
24 Accident Management Guidelines but those capabilities
25 are not a voluntary initiative. They're requirements

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1 of the licenses following the EA-12-049.

2 MR. REED: Ultimately, in that
3 recommendation 8 rule making hopefully they all get to
4 the same regulatory pedigree - you know, the SAMGs
5 and EOPs and then ultimately down the road these FLEX
6 support guidelines would then fit into both the EOP's
7 a command and control structure before core damage as
8 well as the SAMGs, which is the command and control
9 structure after.

10 MEMBER RAY: Okay. Well, that's an
11 important element, from the way I look at it anyway.

12 MR. REED: Okay.

13 MEMBER RAY: Thanks.

14 MEMBER CORRADINI: Harold asked a much
15 more educated question so mine's not as educated. So
16 I was under the impression that FLEX was primarily for
17 prevention, not for mitigation. Am I off base?

18 MR. BOWMAN: No, you're right on base.

19 The program is set up -

20 MEMBER CORRADINI: So then the way he just
21 answered - I'm sorry. I didn't hear you.

22 MR. BOWMAN: The program is set up by the
23 industry and they've been doing analyses at the Owners
24 Group level and at the licensee level has as its aim
25 the prevention of core damage.

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1 The existence of the equipment and the
2 strategies, those will still be there and they can
3 still use them in their Severe Accident Management
4 Guidelines.

5 They'll have a greater degree of
6 capability than they did before and to a certain
7 extent some of the strategies look remarkably like
8 what they had in the SAMGs because they've got more
9 equipment.

10 MR. REED: Yes, and also add that the
11 order was just maintain or restore these functions
12 period. It didn't say before or after core damage,
13 okay.

14 So the order is broader and so, for
15 example, one strategy for, like, an ice condenser or
16 a mark three containment is that you need to do
17 something with your igniters, okay, right off the bat.

18 In other words, don't wait until later on
19 where you could have substantial hydrogen generation
20 and if that - then at that point you lose containment.

21 So that tells you that that wasn't
22 assuming that you were successful in precluding the
23 core damage. So we haven't always went along with
24 this - we buy into we're going to like the core damage
25 idea which is the FLEX objective - a good objective,

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1 no doubt about it.

2 You want to preclude a core damage,
3 obviously. But the order is broader and in one case -
4 I'll give you that example - you can see what we've -
5 we've gone to that strategy that would indicate that
6 you could get some core damage so -

7 MR. BOWMAN: Where the preclusion of core
8 damage comes into is they need something to do, some
9 engineering evaluation or analysis to - in order to
10 determine what size pumps and so forth - the hoses,
11 the hose runs, the piping runs and the electrical
12 supplies and loads. They need something to use as a
13 basis for it.

14 The order itself is effective for beyond
15 design basis external events so they also had to make
16 certain assumptions in their analysis. For example,
17 the existence of the stretcher systems and components
18 that are safety related, seismically qualified, et
19 cetera.

20 MEMBER CORRADINI: So I think I understand
21 your answer but I guess what I'm - what's going
22 through my mind is the environment that would be there
23 before core damage is easier to predict and less
24 uncertain.

25 So I understand where the FLEX concept

1 makes sense for prevention. The environment after
2 things go to hell in a handbasket is a bit more
3 uncertain and therefore I'm not clear that all this
4 equipment is going to be useful or as useful.

5 So I'm trying to understand the
6 assumptions that were made. I guess your answer to my
7 question was they kind of know well here and they're
8 making some assumptions as to what the environment
9 will be after the fact.

10 CHAIRMAN SHACK: But when it says the
11 order is capable of mitigating a simultaneous loss of
12 AC power and maintain core cooling containment and SFP
13 if you're maintaining core cooling I'm assuming I'm
14 not going to get core damage. So, I mean, you're
15 really aiming at -

16 MR. BOWMAN: Prevention.

17 CHAIRMAN SHACK: Prevention. I mean,
18 obviously, if it doesn't work then we all -

19 MEMBER CORRADINI: Get something around -
20 to get something around but I'm worried about the
21 environment when you got it around -

22 CHAIRMAN SHACK: Yes, but then - but the
23 whole goal here is not to get there, just like it is
24 in FLEX. I mean, obviously, once you're there you've
25 got the equipment.

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1 You're doing whatever you can do but
2 clearly the rules have changed at that point. But the
3 aim of the order is the same as FLEX, which is don't
4 get there.

5 MR. BOWMAN: That is definitely the
6 desired outcome. Yes, sir.

7 CHAIRMAN SHACK: Now, again, coming back
8 to sort of Harold's question, you know, one of the
9 problems with these performance based ones is it's
10 hard to assess your likelihood of success when I'm not
11 dealing with specific scenarios.

12 And so I get - and that's sort of one of
13 my questions is, you know, what's your degree and I
14 guess you really wouldn't know that until you see some
15 of these capability assessments and the integrated
16 plans.

17 But there's always this question of what's
18 the degree of confidence that these schemes will
19 actually work, you know -

20 MR. REED: You guys are actually getting
21 into slide 8 already, okay.

22 CHAIRMAN SHACK: Well, there's an HRA
23 that goes along with all this but I'll let you go on
24 with your presentation.

25 MR. REED: Yes, if we get to 8 I think

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1 this is - both these were on 8 and 9 and I think
2 that's where the guts of this thing is and we can - we
3 can hold it there.

4 MEMBER SKILLMAN: Before you proceed, so
5 far as pointing to what you're going to do in response
6 to the order, what you're going to do with information
7 that you find through your deliberations, what
8 consideration are you giving now to what emergency
9 preparedness is going to look like when this effort is
10 coming to closure?

11 Let me give you an example. Let's imagine
12 we're in a control room right now and we've lost our
13 switch yard or we've lost offsite power and we're
14 feeling good. Our emergency diesels are running. We
15 see 4160.

16 We see we've got power, and we run along
17 for 35 or 40 minutes and one engine stops running so
18 now I'm down to one. We've moved into our emergency
19 planning. We've pulled up the EPs, like Harold
20 mentioned.

21 We've got an unusual event or an alert
22 that with the second engine hanging on we're
23 frightened because we've just come from maybe 500 days
24 of full power operation. We have a full burden of
25 DKE. And we lose that second engine.

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1 So we are in a station blackout. 50.63 is
2 kind of terminated. We're into a new phase. Where do
3 we go from the EPs to the SAMGs and how do you look at
4 that now from an emergency preparedness perspective?
5 Because it's the emergency preparedness actions that
6 will save the day.

7 So what consideration are you giving to
8 that in a forward looking manner?

9 MR. REED: Let me give a shot and then
10 these guys can jump in. First, when you - once you
11 lose that second diesel generator you're in a blackout
12 and you have entered your loss of all AC EOP.

13 And, of course, at that point your
14 immediate actions would be try to restore offsite
15 power as well as so restore onsite power.

16 So you'd be trying to do those two and
17 those 50.63 - they come out of 50.63. So you try to
18 restore AC power. Of course, that's the best thing to
19 do to the emergency busses, okay. So that would be
20 ongoing.

21 Okay. In my mind, at some point very
22 early on and we've actually - we've been talking to
23 individuals now in terms of what we have now folding
24 into place - if you would have talked to the
25 dispatcher and they're saying boy, the grid is down -

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1 it's not coming back - it's not coming back anytime
2 soon, all right, and say your four-hour coping plan
3 or old framework, the 50.60 framework, and you talk to
4 your crews.

5 They went out and they tried to figure out
6 what happened to that diesel generator and why they
7 stopped running and they're saying, I've got to rip
8 these things apart - it's going to take eight hours,
9 okay.

10 MEMBER SKILLMAN: Or 36.

11 MR. REED: Or whatever, yes. At that
12 point I've asked people what will you do and they said
13 well, we're going to go to FLEX immediately. In other
14 words, so what you do is then start the - get the
15 FLEX, put it in place, have it in service before that
16 four hours, which is your total blackout grouping.
17 You're supposed to - say you're a four-hour plant,
18 okay, before that is up.

19 And so you can make - kind of restore
20 these functions per FLEX and in fact as you'll see
21 here in a second in our regulation the way we're right
22 now intending to go we're going to have a connector on
23 the current 50.63 that's going to point that out to
24 people that says, you know, you have a specified
25 duration for your old 50.63 but you shall basically do

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1 these mitigating strategies before that thing is over
2 if you get to that situation.

3 So we recognize the situation so right now
4 the way these FLEX support guidelines are being
5 developed, okay, this is a good answer. They are
6 being fitted into the EOPs in this manner.

7 And so when I get response not obtained,
8 okay, I have lost my offsite power. I've lost my
9 onsite power. I can't get it back.

10 I'm truly response not - I could even have
11 lost an alternating AC generator if that would have
12 happened. That's the extreme circumstance but say I
13 did, then I'd go with FLEX and that's where it links
14 in on the EOP side before core damage, okay.

15 MR. BOWMAN: The loss of the alternating
16 AC is not that remote a likelihood for a multi-unit
17 event because there are a number of places that don't
18 have as many alternating AC sources as they have units
19 on site.

20 So in a case like that, it would be an
21 immediate transition to the -

22 MEMBER SKILLMAN: So I hear you say that
23 the answer to my question regarding forward looking on
24 emergency preparedness is the insertion of the FLEX
25 activities somewhere between where you time out on

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1 50.63 and where you begin these new efforts on the
2 order.

3 MR. REED: And hopefully it's continuous.

4 MR. CHEOK: Not quite.

5 MEMBER SIEBER: But right now emergency
6 planning is deterministic and it depends on what
7 symptoms you have at the plant. When you get the loss
8 of offsite power your in an unusual event.

9 If you have a diesel failure or interim
10 alert, if the second diesel fails, your site area or
11 your general and offsite actions and emergency
12 plannings roll along regardless of how many hopes you
13 have of restoring power or how many alternatives you
14 have or what have you.

15 And so I presume that that will continue
16 to be that way in a deterministic fashion and, of
17 course, the site only makes recommendations. It's the
18 offsite authorities that make decisions about
19 evacuation, shelter and so forth.

20 And because they have the best knowledge,
21 first of all, they're the ones responsible and
22 secondly they have the best knowledge of how effective
23 an evacuation would be and how prepared they are to do
24 it and to make the decision as to what spares the most
25 people.

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1 And from our licensees' standpoint, the
2 idea is to do everything that they possibly can to
3 either maintain power supply or restore power supply -
4 that emergency planning takes its own path based on
5 various touchstones as you move through the event.

6 MR. BOWMAN: Was that the type of
7 emergency planning you were trying to address in your
8 question?

9 MEMBER SKILLMAN: I was really on the
10 plant level when you -

11 MR. REED: You were thinking the EOPs.
12 That's why -

13 MEMBER SKILLMAN: You're thinking the EOPs
14 and where do you transition to the SAMGs.

15 MR. REED: Emergency planning impacts too.

16 MEMBER SKILLMAN: Yes, I agree with Jeff.
17 I was going down the same path at some degree that
18 Harold was going down. Where do you - where is the
19 hand-off and how is this - how is this a seamless
20 transition?

21 MR. BOWMAN: With a mitigating strategies
22 order the way that interacts with the EOPs is it's the
23 response not obtained column that calls in the -
24 whenever they've developed the FLEX support
25 guidelines.

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1 In addition, the - in our guidance for the
2 FLEX support guidelines for the order we've specified
3 that they need to monitor for entry conditions into
4 the SAMGs. So there would be no change in the hand-
5 off to the SAMGs.

6 If they have an indication of imminent or
7 actual core damage then that would be when it would
8 appropriate to start going down that path.

9 MEMBER SKILLMAN: Okay. Thank you. Thank
10 you.

11 MR. REED: Okay. Just on this - the
12 bottom line part of this - okay. First of all, the
13 feedback we got on your issues on the top part of this
14 slide, of course, industry, their comment was a follow
15 the implementation of the order, EA-12-049, and those
16 issues will be addressed. In fact, they have been
17 addressed right now. They're still being addressed.

18 And then new plants, new reactor designers
19 - they opted - this could be designed into this
20 situation a little bit more. Some engineering
21 approaches could be also folded in.

22 So you probably saw that in some of our
23 comment responses too and that could be done in a
24 combined license and design certification process.

25 So and that's an issue you'll see coming

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1 back and how much should we allow for engineered
2 approaches too. So that was the feedback on what were
3 your thoughts.

4 It was good feedback and now I'm going to
5 come to the bottom slide and it'll bring us back full
6 circle to where I started off with the SRM here.

7 The - in March of this year, March 12th of
8 2012, of course, we issued this mitigating strategies
9 order and the order was in fact recommendation 4 for
10 the NTTF.

11 It was a performance-based version of
12 recommendation 4. It's not 4.2. It's not go buy
13 another set of your B.5.b equipment and try to use the
14 DDMGs. It wasn't even 4.1, which was the prescriptive
15 872 thing.

16 It was a performance-based version of 4 in
17 the order and such - and in fact I remember I was
18 commenting and said we just put the rule in the order.

19 And so - and I think that was a good thing
20 because we recognized at that time that NTTF had a
21 great idea of using this stuff, the B.5.b equipment.

22 If you think about it, the B.5.b equipment
23 is for a limited emission time, 12 hours.

24 It's not an event to lock the grid
25 forever, for example. It wasn't the entire site -

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1 weren't for the entire site - external vent pits, the
2 entire site B.5.bs per unit, okay.

3 It wasn't for all the functions
4 simultaneously, work for all the functions for the
5 entire site and were for all moats. And so when you
6 think about it first - and then we have to reasonably
7 protect this equipment from external events, not fires
8 and explosions.

9 So at first it seems like a great idea and
10 it is but then when we start to really pull back and
11 think about it, we had to build the strategies all
12 over.

13 And so that's in fact what happened. NEI
14 built the strategies all over in the form of NEI 12-
15 06, okay, and we have an ISG that was put out in
16 August of this year that endorses that and that became
17 the guidance for an order that became, really, the
18 rule making in the order.

19 So as a result of that, this is an unusual
20 situation in rule making. The only one I'm really
21 familiar with that's happened like this the order is
22 very, very much an overlap of the rule making.

23 So learning the lessons from
24 implementation of this order are absolutely key and
25 this one more than most because it's an unbounded

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1 order, as I'll say here in a second.

2 And so implementation becomes key. It
3 kind of set the bounds and then you're going to
4 hopefully get every licensee out there trying to
5 figure out what they can do for their design and
6 finish the licensing in their situation and that
7 becomes what we accept and that goes to the meaning
8 and intent of the rules.

9 So if you're following me here, feedback
10 becomes very important on the implementation of the
11 order for me to do all the rule making. That is, you
12 know, a sound rule making that I could put in the Code
13 of Federal Regulations and not get, you know,
14 crossways with this order.

15 Okay. So that's where - what that last
16 rule says and that comes full circle with the assessed
17 round from the Commission who of course, and I'll -

18 CHAIRMAN SHACK: If you find the
19 implementation of this order fully acceptable.

20 MR. REED: Right. It can - actually it
21 can be either. You know, it's both sides. It can be
22 either impossible to do it or in fact we have actually
23 too much leniency.

24 There may be things we find in the order
25 but oh, boy, we should not allow that - we need to fix

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1 it. It's both sides of that equation, absolutely.
2 That's right.

3 So that's the kind of feedback that helps
4 us do the rule making in a better and much more
5 informed fashion. So that's what that last bullets
6 say, okay.

7 So that's the ACS feedback slide and now
8 I think I have an evolution slide here. Then we'll
9 get to the whole guts of this thing. So we had 45
10 sets of comments from the ANPR. That was good
11 feedback.

12 We had numerous public meetings - I don't
13 even know how many - when we developed the
14 implementation guidance for the mitigating strategies
15 order, and then we had tons and tons of internal
16 discussions almost on a daily basis, certainly on a
17 weekly basis, with the steering committee on these
18 other Fukushima actions that also informed us.

19 So we have a lot of information that
20 affected what we're thinking and we've come over more
21 towards a - much more of a FLEX - in fact, I think
22 you'd find that the whole world has gone much more
23 towards a FLEX flexible type of approach to these
24 situations. That's kind of where we're at today.

25 And so that middle bullet there about the

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1 way we developed this guidance and implemented this
2 idea and the strategies was probably the most
3 influential part that affected where we're at today,
4 if you took a snapshot of where we're at today.

5 So that's how we've evolved from last
6 March where we put this ANPR out which if you looked
7 at it the ANPR is kind of a one leg in one world and
8 another leg in the other world and asked these
9 questions which kind of looked like a deterministic
10 kind of a set of questions, and then they have a set
11 of questions that are a lot more like a B.5.b
12 50.54(hh)2 kind of set of questions, and we tend to go
13 much more towards the more high-level performance-
14 based flexible type of thing and that's where we're at
15 today.

16 I think that's - that sets the table now
17 for really kind of all of the insights I think that
18 are kind of already - we've touched upon these things
19 already and we can - we can do that, you know, as much
20 as we want now for the next - I think it's five slides
21 really are the - really the heart of this whole
22 presentation where I'd like to - like to get your
23 thoughts and feedback.

24 I'll hold up. Do you guys want - you're
25 okay to go to slide 8? Okay.

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1 So starting with the key and what I'm
2 calling the key and early insights, then first of all,
3 the order, as I think I've mentioned already, was
4 unbounded and it's - from a regulatory standpoint
5 that's a real tough thing to deal with - an unbounded
6 order - and it becomes very tough because as mentioned
7 what is success in a situation where I don't even know
8 what these events might be.

9 And so that's - that was the nature of
10 EA-12-049. There's only - as far as I'm aware of the
11 only situation like that and that is 50.54(hh)2 and
12 it's pretty insightful that that was the Commission's
13 direction to follow that.

14 So I thought that was very good SRM
15 direction. They knew that, directed us to follow an
16 approach like that.

17 Now, unfortunately, when you have an
18 unbounded order there's no other way to do this
19 practical standpoint than to set the limits in the
20 guidance because licensees can't go out there and
21 figure out what to do unless they know there's some
22 balance about what this thing is.

23 And so those bounds had to be set in the
24 guidance - the implementation guidance. So that's
25 where they're set and that's where we get into these

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1 assumptions about what should be the initial assumed
2 condition and what should be down the road, what
3 should be assumed and that kind of thing.

4 So that's when you go into NEI 12-06 you
5 see that and you see that in our ISG and that's a
6 pretty big and a tough situation from a regulator to
7 deal with, at least from a rule maker.

8 I should say a rule maker here and -
9 because I think probably most of you, if you go back
10 through - and my 32 years in this thing, you know, I
11 started back in the old design basis and Chapter 15
12 analysis kind of thing where we have a set of very
13 bounding postulated events with assumed conditions and
14 expense and occurrences that create this damaged state
15 and then we have systems, structures and components
16 that we - and people and procedures that are going to
17 mitigate that thing and then we have a set of
18 acceptance criteria that are going to meet typically
19 on fission product barrier integrity, and you see that
20 in Chapter 15.

21 We can't do that here because I can't tell
22 you what the success is. I could have a great
23 mitigating strategy, for example, and the event could
24 be so severe I just - I go - I fail, right off the
25 bat, and that's unfortunately the circumstances that

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1 we're in.

2 So that becomes then so what should be
3 success here. I mean, what should we call regulatory
4 success and that's what that second bullet is trying
5 to get at.

6 What we think regulatory success should be
7 is something like this. In other words, having this
8 equipment, having it reasonably protected, having
9 these strategies in place, having them arranged in
10 such a fashion that it gives the people in the control
11 room and the staff on the site the best probability of
12 being successful, okay.

13 We mentioned how they're built into the
14 EOPs, how they might be built optimally into the
15 SAMGs in such a way that it gives them the best chance
16 of mitigating the wide range of beyond design-based of
17 events they might see.

18 Certainly, if they're familiar with all
19 this stuff that also helps a lot and we're working
20 them through the process of designing these things
21 such that they can actually go out, get the stuff,
22 deploy it, figure out what that time frame is, handle
23 that whole situation with that time period - in other
24 words cope with that blackout situation and do what
25 they have to to cope with it in a phase one, phase

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1 two, phase three kind of situation here.

2 So I'll hold up on that but that's - those
3 first three bullets kind of go together. That's kind
4 of like the heart of this whole thing. It's the heart
5 of the order.

6 It's kind of where we're all - we're
7 really kind of in the same place on this rule making.

8 It's where we're going. I'll just - I'll probably -
9 if you have any feedback there I'll hold up and let
10 you chime in on that.

11 CHAIRMAN SHACK: Yes, one of the things is
12 if you look at the events that 50.63 was meant to
13 address and the way you address it, you address it if
14 you have, for example, emergency diesels operating or
15 an alternating AC that survives. You have a lot more
16 capability than you probably will from the FLEX
17 equipment.

18 And the question is, you know, should the
19 regulation be aimed at providing that extra - you
20 know, FLEX is kind of okay.

21 You know, I'm hanging on, you know,
22 fingernails on the rock. I'm hanging there but I
23 haven't got a whole lot left to go. If I had a robust
24 alternating AC that survived my - beyond designed
25 basis earthquake I would have a lot more capability

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1 and the question is, you know, do you get enough
2 assurance from the FLEX thing or do you need to do
3 things to build on that installed capability, you
4 know, where I push the button rather than, you know,
5 do I have an acrobatic -

6 MEMBER RAY: Yes. No, Bill, I wrote down
7 here because I want to say it sounds like to me the
8 same thing, which is this is the necessary thing to do
9 what you're describing.

10 The problem is does it mask the need to
11 change the design basis for the reasons that Bill said
12 so that you don't have to rely on what - the things
13 that you're - I don't see that you're able to address
14 that in what you're doing but it is a concern.

15 We become so confident in these measures
16 that we don't bother to change the design basis where
17 that's the appropriate step to take.

18 CHAIRMAN SHACK: What is the - I want to
19 see that consideration.

20 MEMBER RAY: Yes, yes, yes.

21 MR. REED: I would chime in that, you
22 know, to go to NTF 2.1 which is, of course, part of
23 all effort by the staff, if you do identify
24 vulnerabilities for external events there I'd like to
25 say, you know, the mitigating strategies can't solve

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1 the problem of 25 feet of extra water coming across
2 the facility.

3 You really have to do that and design the
4 facility such that that doesn't happen. You keep the
5 water off the facility.

6 So if you have those vulnerabilities
7 you've got to definitely - in my personal opinion, you
8 must fix them. Those are real issues and then
9 hopefully if you've got that out of the way, okay,
10 then this can address something that goes more to the
11 uncertainties that you have.

12 MEMBER RAY: Yes. I would say I think the
13 only thing that I could offer in this context would be
14 to bear in mind that, as Bill described it, hanging on
15 at the edge, we just don't want to develop
16 overconfidence in well, we don't need to worry about
17 this because we've got mitigating strategies.

18 And that's the answer to every issue that
19 comes up, and that would be my contribution, I guess,
20 at this juncture to what we're saying here is we
21 always want to be careful not to over - be
22 overconfident in these so that people, like I say, say
23 well, doesn't matter - we can mitigate anything that's
24 beyond the design basis. So we're set.

25 MR. CHEOK: Right. I think that's a good

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1 point.

2 MEMBER CORRADINI: Can I - can I ask a
3 different question that goes along with this? Is
4 there - is there a particular - I'm sure I know the
5 answer to it. I just want to - is there a particular
6 plant with a level one and two PRA that you can test
7 this out to see where you sit relative to these
8 strategies?

9 In other words, I'm looking for some sort
10 of test stand in which I can test out all of these
11 rules and guides such that I've got a plant that's out
12 there.

13 I have a developed PRA to some level of
14 sophistication with seismic, with external events that
15 you would say okay, now I've got the plant as it is
16 with this PRA. Now I'm going to insert these things
17 and see is it - do I need to augment the onsite
18 capabilities or this extra portable stuff is really
19 going to help me?

20 I guess without them I would have a hard
21 time knowing how helpful some of this is.

22 MR. BOWMAN: I think one thing that we
23 need to bear in mind is that, as Tim mentioned,
24 fundamentally the order itself is unbounded so absent
25 a specific circumstance we can't do a good assessment

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1 of how effective this FLEX strategy is going to be.

2 There is an interplay, however, with the
3 NTTF recommendation 2.1 reevaluations of the seismic
4 and flooding design basis and we've been working with
5 the team that's looking at that.

6 Some of the information that they'll be
7 taking into account in determining what to do with the
8 design basis, for example, with the flooding is going
9 to look at a risk-based evaluation of - or risk
10 informed evaluation, rather, of how well the
11 mitigating strategies would be effective including the
12 human performance factors.

13 We just - I believe we've already put out
14 the interim staff guidance for their integrated
15 assessments for the flooding reevaluations and you can
16 see in there where the - because that gives you - if
17 you've got a new maximum flood level it gives you
18 boundaries that you can look at to do the analysis to
19 see that the mitigating strategies are effective.

20 CHAIRMAN SHACK: That is a point. The
21 people doing seismic PRAs and flooding PRAs in
22 response to 2.1 they'll presumably be crediting these
23 mitigating strategies, among other things.

24 MR. CHEOK: They will be doing that.
25 That's correct. I mean, there are certain rules they

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1 can use to credit the mitigating strategies, i.e., you
2 need to have the procedures in place.

3 You have to have some kind of a pedigree
4 to the equipment and to take credit for these
5 equipment you have to have the procedures, the HRA, as
6 you said earlier, and then you can credit them.

7 MEMBER STETKAR: Let me try something
8 here. I was hoping we'd get to the fourth bullet but
9 we may never get there so let me jump in.

10 I hear all of these things about
11 reevaluating the design basis. Fine. We're not
12 talking about the design basis. By definition you
13 survived the design basis.

14 We're talking about things that are much
15 worse than the design basis. So fine. If I have -
16 today is my design basis peak ground acceleration for
17 an earthquake at a ten to the minus four frequency is
18 .15g, maybe now my new design basis will be .2g
19 instead of .15g. Fine. I have to show that I can
20 survive that.

21 We're not talking about that. We're
22 talking about .5g. We're talking about 1g
23 earthquakes. We're talking about 6g earthquakes if
24 they could ever happen.

25 MEMBER CORRADINI: Let's move to flooding.

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1 MEMBER STETKAR: No. I don't want to talk
2 about flooding because I want to talk about things
3 that have a more continuum than indeed have measurable
4 frequencies.

5 The question is that fourth bullet says
6 develop, mitigate these strategies for beyond design
7 basis. So let me take a .5g earthquake or a 1g
8 earthquake or a 1.5g earthquake.

9 Should result in a bounding approach,
10 bounding approach, means it can solve any of those
11 things no matter how bad it could possibly be for loss
12 of -

13 CHAIRMAN SHACK: What are design
14 conditions?

15 MEMBER STETKAR: Hmm?

16 MR. REED: Yes. I probably should have
17 been better with my bullet. That last benign part was
18 just a loop with two multiple failure diesel
19 generators.

20 MEMBER STETKAR: You know, so the - but
21 that's what the question is. In going back to
22 something that Mike asked, you used words in this
23 presentation that the FLEX equipment should be
24 reasonably protected against what? A .5g earthquake?
25 A 1g earthquake? Against something that occurs at

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1 some frequency that the implication is that there are
2 things that occur at frequencies that are small enough
3 that we can't protect the plant - a large meteorite
4 impact, for example.

5 So implicit in all of this is some type of
6 risk informed approach. You say things that it gives
7 the operators the best probability. You look in the
8 transcript about it being successful. It's a risk
9 informed approach - the widest range of events they
10 might see. In March 10th, 2011 - I'm sorry, yes, 20 -

11 MR. REED: March 11th.

12 MEMBER STETKAR: 2011. Well, March 10th
13 the guys didn't believe they would ever see the thing
14 that happened the next day.

15 So I think you need to be very, very
16 careful when you cast this as something that will
17 solve all problems under all possible circumstances
18 that you could ever envision.

19 MR. REED: That's the first event as that.

20 MEMBER STETKAR: Well, the first and the
21 fourth together because it says that these solutions
22 will provide a bounding solution to anything that we
23 could ever explain.

24 MR. REED: Yes, let me try to fix that
25 because I certainly don't think it will solve -

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1 MEMBER STETKAR: Okay. That's -

2 MR. REED: And I want to be clear about
3 that. I think that I need to be explicit now in that
4 last bullet.

5 I think that if you were to - you develop
6 these strategies beyond design basic external event
7 initiated blackout, okay, that if you get the - I'll
8 call it the run of the mill benign thing, you know,
9 this is the grid goes down and then I unfortunately
10 have a bad day and both my diesel generators fail that
11 these are very good for that circumstance.

12 In fact, I think they may actually work
13 and be effective for that situation. I'm not -
14 frankly, I'm not confident they would work for a lot
15 of those beyond design external events which they're
16 intended to.

17 I'm with you on that, and I think we fully
18 recognize that there's, you know, only so much you can
19 get - only so much blood out of these stones that are
20 in place already with, you know, real concrete and
21 steel that we can get. So I definitely have the same
22 mind set. I probably didn't express myself very well
23 here.

24 MEMBER STETKAR: Well, in terms of some of
25 the discussion that went on earlier about the key is

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1 evaluating the effectiveness of the implementation
2 strategies, you know, what expectations will the staff
3 have or the Commission have for demonstration of
4 confidence that they can be implemented effectively
5 with some reliability over the range of events that we
6 deem they should apply.

7 You know, and I'm not going to hazard a -
8 you know, is it a ten to the minus seven event? Is it
9 a ten to the minus six event? Is it - you know, what
10 level do we expect these things to apply?

11 MEMBER SCHULTZ: So that ties into two
12 features. One is the element of definition for
13 communication purposes because one of the things that
14 you just described in this forum is that it's
15 important to choose the words carefully and to paint
16 the picture carefully so that everyone will understand
17 what in fact is being achieved.

18 It also gets back to Harold's point of how
19 the implementation runs forward and what is going to
20 be applied here - is it applicable to something else,
21 to some other event or circumstance that a licensee is
22 going to say well, that's taken care of - I've gotten
23 that.

24 I've done this part so I can apply it
25 here, here and here. Is that in fact true? And I do

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1 want to pull back to Mike's question that we haven't
2 yet answered which is is there an opportunity through
3 some demonstrable process that a level one, two PRA or
4 something like that that handles the sequence and
5 frequency of events that John is talking about to see
6 whether there's an opportunity to use that as part of
7 the example. That would be a good opportunity perhaps
8 to communicate as well as to analyze.

9 MEMBER STETKAR: A bit of the problem on
10 a level one, two PRA is somebody's going to pick up
11 Surry and Peach Bottom because that's the only ones
12 that the staff knows about. And they have -

13 MEMBER CORRADINI: That would be too
14 singular but you've got to do something to at least
15 exercise it.

16 MEMBER STETKAR: Right. Well, but you
17 would be doing PRAs for 2.1.

18 MR. CHEOK: That is true and I think if
19 you -

20 MEMBER STETKAR: But that'll also be
21 specific on specific plans or the staff will have
22 something in house.

23 CHAIRMAN SLACK: The plants would be doing
24 them.

25 MR. CHEOK: Also I think if you look at

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1 the SORCA results, even though we didn't explicitly
2 say that and I see -

3 MEMBER CORRADINI: Right, but the SORCA
4 though - maybe I misunderstand SORCA but SORCA you
5 picked from the tree. I'd rather look at the tree and
6 see that the apple you picked was the reasonable
7 apple. I mean -

8 MR. CHEOK: That is true. SORCA focused
9 on scenarios and basically took credit for some of the
10 FLEX equipment and the delta you saw in the risk from
11 SORCA was - a lot of the delta came from the credit
12 for the FLEX equipment.

13 But you are absolutely correct. We need
14 to somehow weight the sequences with the frequencies
15 and we haven't done that yet and we should probably do
16 that.

17 MR. REED: I'll just - I'll just note that
18 that's going to rely an awful lot on human action and
19 human reliability and so I think that's a very big -
20 that's a tough challenge in PRA space.

21 You guys know that, and I come back - just
22 to come back full circle to where we started, a little
23 bit here on this robust alternating AC source and what
24 are the - what's the difference between that and the
25 mitigating strategies which will really kind of

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1 pinpoint things going right to a pump or whatever.

2 I'm a big fan of firing up the entire 4160
3 distribution, the whole bus and all the equipment on
4 it, and I think you get a lot more for that. But you
5 can't - you know, in these situations you don't know
6 if you can do that.

7 CHAIRMAN SHACK: No. But, again, it
8 becomes - there's a certain set of situations I would
9 expect to handle one way and, you know, less
10 frequently, you know. As we said the other day, I
11 look at this as a three-tier thing. There's a 50.63,
12 which handles one set of events.

13 There's the mitigating order which handles
14 a different set of events and then there's 50.55(h)
15 that sort of gets me to where I've lost lots of stuff
16 and, you know -

17 MEMBER STETKAR: But still under a
18 controlled circumstance. I mean, you know, it has
19 presumptions built into it about level of -

20 CHAIRMAN SHACK: Well, but, I mean, I
21 can't survive everything.

22 MEMBER CORRADINI: That's the whole -

23 CHAIRMAN SHACK: But that's the point. I
24 guess that - but again, I think you have different
25 expectations for surviving, you know, sort of based on

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1 frequency level or, you know, you have - you have
2 different expectations and -

3 MR. REED: I would love to have this PRA
4 tool and try to understand what that is because I
5 think that's the real - if we can measure it. I mean,
6 I do come back to recognize the fact that when the
7 Commission issued the order they said this was largely
8 due to the uncertainties associated - the known,
9 unknowns, and unknowns.

10 You know, we've heard this - the
11 uncertainties associated with these events and so we
12 need more defense in depths to address these
13 uncertainties.

14 And so I'm sure you can deal with that
15 uncertainty, you know, in a PRA space but, you know -
16 I just throw that out there so. Yes, sir.

17 MEMBER STETKAR: Some of the defense in-
18 depth work remember, unless I've misremembered it, the
19 FLEX equipment - I mean, the FLEX equipment isn't
20 designed to repower the 4160 volt bus, right?

21 MR. REED: No.

22 MEMBER STETKAR: The FLEX equipment has -
23 some could be but not across the board.

24 CHAIRMAN SHACK: But I guess after so many
25 hours they really expect to come in with something.

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1 MEMBER STETKAR: Yes. But it's in terms
2 of load. I mean, you don't - you don't restore one
3 full train of high pressure injection, emergency feed
4 water, you know, containment spray - whatever those
5 systems are because it just doesn't have the capacity.

6 MR. BOWMAN: The current way forward that
7 industry is following includes bringing in two
8 megawatt generators for four hours.

9 MEMBER STETKAR: Oh, okay. That - okay.

10 MR. BOWMAN: So their plan is to have the
11 capability and capacity to repower a train at level
12 4160 but that's presuming that the 4160 volt bus is
13 intact.

14 MEMBER STETKAR: Well, that's -

15 MR. BOWMAN: And there's other aspects of
16 the FLEX strategies that are intended to address the
17 nonintact 4160 volt bus.

18 MEMBER STETKAR: And indeed, for some of
19 the real severe events I'd shut Mike down on the
20 flooding in which, you know, we saw the effects at
21 Fukushima.

22 But some of these very large earthquakes,
23 if you look at risk assessments that have been done in
24 many cases the lowest capacity equipment within the
25 plant tends to be the electrical switch gear toppling

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1 over. And so when I start to go into beyond design
2 basis accelerations, depending on their elevation and
3 the building and their anchorage and things like that,
4 but the switch gear itself can be a vulnerability
5 which brings into question the issue your raised that
6 if it's not there as in Fukushima, if there's nothing
7 to plug into you can have a thousand diesel generators
8 available and it's not going to work.

9 MR. BOWMAN: And that's where we have in
10 the guidance the specifications that'll have pumping
11 capacity.

12 MEMBER STETKAR: Electrical - electrically
13 independent pumping capacities, low pressure, small
14 volume. So you have to be able to depressurize and
15 the operators need to know that they need to
16 depressurize in enough time.

17 MR. CHEOK: So I guess let me try to
18 summarize some of what you just said. As you all
19 said, we do have 50.63 in place and we have had
20 efficiency - we have done an efficiency of the rule
21 and we have noted that the frequencies of lost offset
22 power have in general come down. Durations have
23 increased by a little bit. But in general the rule is
24 still an efficient rule.

25 Diesel reliabilities have gone up because

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1 of the maintenance rule and because of the ROP. What
2 we have noticed from Fukushima was that there was the
3 lacking in terms of a large area type external event
4 that could make unavailable diesels or other
5 alternating AC sources.

6 So what we're trying to do is increase the
7 coping capacity and also have the worse alternate
8 sources that is capable of mitigating not just an
9 event at one site but an event that would disable
10 multiple sites, systems at multiple sites and a system
11 that is independent in terms of location so that when
12 you do have a large area event you can bring in
13 equipment from somewhere that's not - hopefully not
14 affected by the same event.

15 So but that's the idea of recommendation
16 4 at this point.

17 CHAIRMAN SHACK: But coming back to John's
18 bigger question, I mean, that's almost yesterday's
19 discussion. You know, how much defense and depth is
20 enough - how low do you have to drive the residual
21 risk - you know, how confident do you have to be that
22 you've got that residual risk that low and I'm not
23 sure you guys can answer that question. That's all.

24 MEMBER CORRADINI: If I might just - Steve
25 said something that I thought was important. Maybe

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1 you caught it, maybe you didn't, which is your words -
2 reading them, if you weren't as highly educated group
3 here would say that you've covered the whole water
4 front and you don't cover the whole water front
5 admittedly.

6 There's a residual risk that prevention -
7 that this prevention - this new prevention envelope or
8 shield is not going to cover and it's got to be clear
9 that that's out there.

10 Otherwise, somebody's going to think
11 you've covered it and the next time something happens
12 you'll -

13 MR. REED: It's clearly impossible.

14 MEMBER CORRADINI: I find it impossible,
15 clearly, but having been in other venues people have
16 swallowed that -

17 MR. REED: I understand. We have to be
18 honest and open and as clear as we can.

19 MEMBER STETKAR: I often use the construct
20 of think of meteorites. People disregard those as
21 irrelevant. They never happen. Quite honestly, if
22 you do risk assessments they happen more frequently
23 than you might expect.

24 But instead of looking at the things that
25 we've seen and thought about, think about when you

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1 write all-encompassing words just keep in mind a big
2 meteorite and will the words address that. If they
3 can't, you need some qualifiers.

4 MR. REED: I hear you.

5 MEMBER STETKAR: Because it's a nonzero
6 event.

7 MR. REED: It's my -

8 MEMBER STETKAR: And you can't - the
9 plants are not designed for it. It will - they will
10 not survive that event. It's one element of the de
11 minimis acceptable risk.

12 MR. REED: Absolutely. Yes, we've - I
13 think made it safer for these as we've put these in
14 place. I wish I knew what that it was that quantified
15 it. I mean, we've talked about trying to use these
16 tools.

17 I would simply note that when we did
18 50.63, as some folks such as John's familiar with, we
19 did a lot of risk studies in that forum when we
20 developed that and we have estimates of core damage
21 frequencies and go from four to one. You know, NUREG-
22 1776 talks about that.

23 At that point in time that's kind of a -
24 that is a snapshot of what they thought the station's
25 blackout risk and there wasn't any of this beyond

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1 design, this external initiators in that data and it
2 was first -

3 MEMBER STETKAR: And it was first - right.
4 That's the - that's the problem.

5 MR. REED: Yes. And so it was so - it
6 hadn't occurred yet and, of course, it has occurred
7 now but so I just put that out there. So I like that
8 idea but at the same time I'm not sure - I wish - I
9 don't know.

10 MEMBER CORRADINI: I didn't - I didn't buy
11 into his example. But I do think - I do think the
12 general - the general principle that I think Steve was
13 bringing up is fair to make sure that - because the
14 audience is looking for an answer and if you give them
15 the opportunity they're going to accept the answer you
16 didn't mean to give them.

17 MR. REED: Yes. That's a good point.

18 MEMBER CORRADINI: That's what I think
19 Steve's point is.

20 MEMBER SCHULTZ: Exactly. That's it.

21 MEMBER ARMIJO: Well, can you answer the
22 question would this - could you make the statement
23 with the modified or upgraded station blackout rule we
24 will be able to handle with high confidence seismic
25 events at least as severe as happened at Fukushima,

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1 flooding events that - at least as severe as what
2 happened at Fukushima, and combined seismic and
3 flooding events at least as severe as what happened at
4 Fukushima?

5 MEMBER STETKAR: Sam, remember the
6 Fukushima seismic event was only marginally -

7 MEMBER ARMIJO: I understand.

8 MEMBER STETKAR: - above its design basis
9 for -

10 MEMBER ARMIJO: I understand that.

11 MEMBER STETKAR: It was a minimal seismic
12 event.

13 MEMBER ARMIJO: Yes, I understand that,
14 John. I Just want to get an answer to that and then
15 we can go beyond those things.

16 But the combined seismic and flooding was
17 - just the flooding alone were super severe and, you
18 know, from the people I talked to, nontechnical
19 people, they say can we handle that.

20 And so yes, we're going to do that. And
21 if this rule can't be at least that then how can we
22 claim anything beyond that?

23 MR. REED: I would put it in the context,
24 first of all, of what the external events are for that
25 site and that location. Okay. First, along the U.S.,

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1 North America, wherever the site is, as opposed to
2 Fukushima.

3 Fortunately, we don't have anybody over in
4 Fukushima. We are in North America and that's - we
5 don't have the tsunamis rolling across anybody. I
6 mean, we do have San Onofre sitting there. I know we
7 have Diablo Canyon -

8 MEMBER ARMIJO: We have dam failures. You
9 got this Oconee issue coming up.

10 MR. REED: Yes, all of -

11 MEMBER ARMIJO: We could have a flooding
12 event of the - of the order of a Fukushima event.

13 MR. REED: Exactly. So we have to look at
14 those situations and what makes sense for those like
15 Oconee, like in Jocassee and Everett, whatever the
16 situation that's at each circumstance when there might
17 ever - there may be, okay.

18 And then within that context and those
19 events and that design and that licensee basis and the
20 features there address the question you're saying and
21 that's actually the way the order and the
22 implementation guide says you -

23 MR. BOWMAN: Okay. But then it has to be
24 combined with the 2.1 reevaluation effort.

25 MR. REED: Absolutely, because in fact

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1 let's say you get to a point where you do realize that
2 you're - unfortunately the way you were licensed under
3 GDC 2 for your flooding, say, 40 years ago that we
4 know - we'll look, you know what, it is 15 feet
5 higher.

6 That's an NTTF 2.1 thing. I can't - I
7 can't have these guys in rowboats trying to go out and
8 get the, you know, equipment deployed and, clearly, I
9 make the - it's an extreme example but I have to
10 resolve that in my personal view by design. I have to
11 protect the facility under GDC2.

12 MEMBER ARMIJO: The reason I go back to
13 Fukushima is that the seismic event created the
14 tsunami. The tsunami flooded the plant. Offsite
15 power was lost because of the seismic event.

16 So getting to John's point is keep
17 cranking up the seismics - the severity of the seismic
18 event. Eventually we get to a condition which may or
19 may not lead to flooding if you have a big dam that
20 might fail and lead to flooding.

21 But crank that thing up to a point and
22 there's some point beyond which you cannot protect
23 even against - forget the meteorite but there will be
24 a seismic event beyond which you can't protect and we
25 ought to be able to state that somehow.

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1 That's our limit and maybe it's extremely
2 low frequency. Maybe it's not so low frequency.

3 MR. REED: Yes. I'm not sure we can
4 define that. But I understand what you're saying,
5 yes.

6 MEMBER STETKAR: I only use the meteorite,
7 by the way, is it forces people to think differently
8 from the construct of the things that we've seen or
9 that we've ostensibly evaluated as very rare, very
10 severe events and certainly we can't protect against
11 that.

12 We might not be able to protect against
13 less rare events that are quite, you know, that are
14 less severe than that.

15 But it's that framework for, I think, you
16 know, Steve and Mike said the same thing that at some
17 frequency there might be a large uncertainty in that.
18 We have to admit that we can't protect against some
19 hazards and that is a some level of de minimis
20 acceptable risk.

21 MR. REED: That would be nice to -

22 MEMBER STETKAR: And we have some
23 confidence - as that frequency increases and the
24 hazard severity decreases we have greater and greater
25 confidence that we have protection.

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1 MR. REED: In some circumstances of some
2 of these events I think we could do a pretty good job
3 and I'm thinking about water, you know, in a case like
4 where a facility whether it simply is dry and I can
5 look at everything and I can't get close to it. So
6 sometimes I can do this.

7 MEMBER STETKAR: Water in some sense is a
8 little bit more deterministic, if you will.

9 MR. REED: That is. And so you can kind
10 of get there a little bit of water. Now, the seismic
11 thing - I'm not - I haven't got confidence in the
12 seismic thing, to be honest with you, and I know it's
13 a continuum.

14 But I also know that these facilities have
15 a lot more ability to withstand that than they even
16 know because the way they were designed and then
17 simply procured for stuff that's put in place that was
18 greater than or equal to what was needed and then you
19 get like - or a dam rides through it. Even Fukushima
20 rode through it.

21 You know, so I think that's an unknown too
22 that's built in. So it's really hard to figure out
23 where in this continuum you are and how much we can
24 withstand.

25 MEMBER STETKAR: It's not necessarily

1 unknown. People in risk assessment do evaluate those
2 fragilities. There are some certainties about them,
3 you know.

4 So indeed, it's not the notion of the
5 unknown unknowns, if you will. Structural engineers
6 have - you know, they know how to do that.

7 There's uncertainty associated with it but
8 they've evaluated fragilities, the structured systems
9 and components as a function of applied acceleration.

10 MR. REED: I would hope it was - it would
11 be applied out of the 2.1 thing though. You know, the
12 kind of things you're talking about I hope it falls
13 out of that and we would have our effort and getting
14 us a little bit more than what they have to. So -

15 MEMBER STETKAR: I mean, in some sense the
16 limit for a particular plant would be determined by
17 the upper ends of the fragility curves for the basic
18 structures and the plant.

19 I mean, if the auxiliary building falls
20 down or suffers a major - I don't want to say falls
21 down - suffers a major structural failure such that
22 the equipment and piping systems are disabled, at that
23 point it's really difficult to say that providing
24 electrical power to things or we're trying to shoot
25 the gaps in the piping system with water. So in some

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1 sense, that type of analysis at least from the seismic
2 perspective defines for that particular design our
3 acceptable level of risk or at least a level of risk.

4 MR. REED: In my mind, I kind of see the -
5 and I'll just make a point of the cliff edge on
6 seismic is when the seismic category one structures
7 start to collapse and that, in my view, I don't think
8 that we can really be successful under the
9 circumstances.

10 MEMBER STETKAR: That's well beyond the
11 design basis - well, well beyond the design basis.

12 MR. REED: You might - you might be able
13 to do some of these things but really the chances are
14 really diving now for success. You know, so -

15 MEMBER STETKAR: But, I mean, in some
16 sense of trying to get your hands around what - you
17 know, in what range from, as you characterize it,
18 benign losses of all AC power and really severe events
19 are we trying to provide protection.

20 MR. REED: Yes, I was really glad that -

21 MEMBER STETKAR: Your strategy is you're
22 operating kind of in that range.

23 MR. REED: I'm just thinking of the old
24 50.63 benign. I wasn't thinking of anything more than
25 that so I should probably put that explicitly in there

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1 and I'll get to that here in a little bit too again
2 some more but -

3 MEMBER STETKAR: Those of us who've looked
4 ahead knew what you meant.

5 MR. REED: Okay. Also, on the same - we
6 kind of skipped over but I'll just string to it. The
7 third bullet there, applying what I call special
8 treatment assurance requirements, and by the way when
9 I say special treatment I mean it in 50.69 terms.

10 As some of you know I worked on that for
11 five years and so that's how I mean it. Of course,
12 the portable equipment would have to be designed with
13 a capacity and capability to function and have
14 function performance requirements that it needs to
15 have and designed to hopefully tolerate the conditions
16 under which you're going to ask it to function.

17 I'm talking about not shaking it, not
18 baking it and not an Appendix B kind of thing. In
19 other words, an augmented treatment like station
20 blackouts in this - in this same world it can be
21 purchased commercial but we're going to have more of
22 the commercial on it.

23 So that's - this is the way we've been
24 going with it here. I think that's a sound approach.
25 We'll continue with that in the rule at this point in

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1 time. It helps keep the costs down somewhat.

2 The costs are pretty large, if you don't
3 know. I'll agree with this mitigating strategy it's
4 a factor really large. But nonetheless, that's kind
5 of where we are right now on augmented treatment,
6 okay.

7 So I'd love to have it kind of - you know,
8 going back to this risk idea I'd love to treat it like
9 a box two thing, you know, risk two - if you're
10 familiar with 50.69 where you kind of look at the
11 thing and see what its performance needs to be in a
12 PRA and then give them that performance.

13 That's how I have to treat it accordingly
14 but I don't have that PRA so I'm going to have
15 augmented treatment.

16 For example, if I procure and to have
17 these little like fire type pumps I'm going to run
18 that thing, make sure it actually runs and then
19 periodically, maybe every so often other every - yes,
20 exactly.

21 Every other refueling or whatever I'm
22 going to run that thing and make sure it's functional.

23 In other words, it's not going to sit
24 there and rot for ten years. And so there's going to
25 be treatment. It has to be functional.

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1 I have to have some assurance level the
2 thing is functional, available and will actually work
3 when called upon. So that's what I'm trying to say
4 there and that's kind of where we're at.

5 So there's a lot in that bullet, a lot
6 that we're - I think we're going to have to sort out
7 when we get the responses to the order and see what
8 people are actually doing and see - and see what we
9 will accept, okay. That's what that bullet means.

10 MEMBER STETKAR: When you say equipment
11 qualification I recognize some of the FLEX strategies.
12 So -

13 MR. REED: 50.49 time of qualification,
14 for example - EQ, in other words. That's what -

15 MEMBER STETKAR: Seismic.

16 MR. REED: Seismic qualification, shaking
17 it.

18 MEMBER ARMIJO: Okay. You said 69 or you
19 meant 49, right?

20 MR. REED: 10 CFR 50.69 special treatment
21 requirement.

22 MEMBER STETKAR: This notion if it's
23 reasonably protected, now, I understand if I have a
24 plant in New York State and my FLEX equipment is out
25 in Ohio someplace, someplace that I can get to it

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1 within 24 hours by airlift or something like that, I
2 probably don't need to worry about a seismic event, a
3 lg seismic event that affects my plant and my FLEX
4 equipment simultaneously.

5 If my FLEX equipment is a half a mile down
6 the road from my site I probably need to worry about
7 that lg event that affects both my FLEX equipment and
8 my plant.

9 So in that kind of context or equipment
10 qualification or seismic reasonably protected against
11 these events, how do I demonstrate that? I mean, you
12 know, I can't buy a - construct a lg shelter for my
13 FLEX equipment.

14 MEMBER CORRADINI: But what you're getting
15 at is, I guess, I was waiting later in your slides to
16 say if the FLEX is in position A they - that position
17 has got to be qualified in some -

18 CHAIRMAN SHACK: But most of the time 12-
19 06 says you're going to store it in a building up to
20 the SSE. They're certainly ain't going to get to lg.

21 MEMBER STETKAR: Well, I mean, by
22 definition I don't need it, the SSE, right, in the
23 licensing space.

24 CHAIRMAN SHACK: No, I think Tim is sort
25 of going on the notion that if the building is

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1 designed to survive an SSE it's going to survive a
2 good deal more. But you are beyond design basis at
3 that point.

4 MR. REED: I don't know how much more.

5 MR. BOWMAN: Well, the other thing is that
6 the guidance doesn't require them to store it in
7 buildings or in particular in-house type of building
8 outside and it's not coupled with the ground.

9 That might be a better place to store it
10 for a seismic and just for some background
11 information, the offsite resource centers are going to
12 wind up being one of them down in Memphis and one out
13 in Phoenix.

14 CHAIRMAN SHACK: But, I mean, be that as
15 it may, the 12-06 guidance is aimed towards an SSE as
16 reasonably protected.

17 MR. REED: That's what we're calling
18 reasonably protected and that's design basis. So -

19 CHAIRMAN SHACK: That's design basis.

20 MR. REED: - I know where you're pointing
21 to.

22 MEMBER POWERS: Can I ask a question? As
23 a good risk person you know all these things, right?

24 CHAIRMAN SHACK: I know everything. I do
25 have - I do have uncertainty and I can quantify it.

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1 MEMBER POWERS: Still, as I put my FLEX
2 equipment in Ohio and my earthquake is in New York
3 it's a big enough earthquake to damage my nuclear
4 power plant. Consequently, it's big enough to disrupt
5 the entire societal structure surrounding my nuclear
6 power plant.

7 The civil authorities will respond to the
8 impact that has on the population. They may well
9 commandeer every airlift capacity that you have.

10 How are you going to get your equipment
11 from Ohio to the nuclear power plant if they have
12 commandeered all your airlift capabilities?

13 MEMBER STETKAR: That's an excellent
14 question and that's something that I hope that - I
15 hope that NEI and the industry have accounted for
16 that, that they have their own transport vehicles and
17 they have the authority to say you can't have -

18 MEMBER POWERS: They can't have them. The
19 -

20 MEMBER STETKAR: Well, that's -

21 MEMBER POWERS: The civil authorities can
22 commandeer anything in an emergency, unfortunately.
23 Well, even the road structure at that point -

24 MEMBER STETKAR: No, no. You're going to
25 have to airlift it in in these kind of events. You

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1 aren't going to get there over land.

2 MEMBER POWERS: It seems to me that that
3 is a conundrum, that I don't know how you - how you
4 address it in these relatively unbounded things.

5 MEMBER STETKAR: That's one of the reasons
6 in the level three PRA exercise that we're going
7 through is trying to make the staff pay attention to
8 that regional infrastructure issue when they evaluate
9 the long-term responses both from getting resources to
10 the plant and in terms of evaluating evacuation, you
11 know, times and facilities. You know, I don't have an
12 answer.

13 MEMBER CORRADINI: I guess, Dana, my only
14 impression is FEMA must have some sort of protocols
15 about all this - the industrial structures that are in
16 a region that there would be a protocol to -

17 MEMBER POWERS: FEMA can have any - FEMA
18 can have anything it wants to. It's what the governor
19 of the state has. He is the one that can initiate to
20 commandeer it.

21 MEMBER STETKAR: This would have to be in
22 some sort of formal agreement I think between Homeland
23 Security and the each state saying you can't touch
24 this stuff.

25 CHAIRMAN SHACK: Well, I'm sure they're

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1 discussing that. I mean -

2 MR. BOWMAN: There are discussions and in
3 particular between the licensees in the industry and
4 their own civil authorities.

5 They exchange information and in such an
6 event - it's come up in public meetings we've had with
7 the industry. They would be providing the information
8 to the civil authorities on what the impact would be
9 if their contracted air resources for moving stuff are
10 commandeered on the potential for resulting in a
11 severe accident and release of radiation.

12 So it's a balancing that the civil
13 authorities have to make, of course. But that's kind
14 of outside of the scope of what we can do.

15 MEMBER POWERS: That's why I asked John
16 and not you.

17 MEMBER BROWN: Well, doesn't that really
18 require though if you're looking at the FLEX stuff to
19 look at even the heavy lift like helos, military heft
20 capability of heavy lifting some fairly substantial
21 things into locations?

22 But if you don't have preexisting
23 agreements and have designed the equipment such that
24 it can be done, I mean, you can say, well, I need, you
25 know, a five megawatt generator with auxiliary

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1 associated equipment. It may exceed the capacity of
2 the - so you have to have multiple smaller units that
3 you can put together and there has been no mention of
4 that type of thought process.

5 MR. BOWMAN: That's being considered. The
6 industry is setting up regional research centers, the
7 regional response centers, and they're setting up what
8 they're calling playbooks for how they're going to get
9 the equipment and what the equipment will be and what
10 the means of transportation will be.

11 So we'll be looking at that. It will be
12 very likely open items in the integrated plans that we
13 get in end of February, beginning of March, because
14 they aren't on schedule to have the play books
15 developed until sometime next May or June, I think, is
16 when that schedule is. So we are looking at that and
17 they do have contracting in place.

18 But, of course, nothing's on the docket
19 yet for to deal with delivery of equipment.

20 MR. REED: Should we move on to slide 9?

21 CHAIRMAN SHACK: Why not give it a try?

22 MR. REED: All right. Let's go then.

23 I'll beat this last bullet and last slide again and
24 we'll be on the first one on this slide.

25 So what I was trying to get to was that,

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1 you know, regardless of the - how you get to this
2 symptom - the station blackout symptom in the EOP
3 whether - whatever sequence of events got to you - got
4 to there, these FLEX support guidelines and those FLEX
5 approaches mitigating strategies is a very useful
6 thing for addressing that symptom regardless.

7 And of course, you know, if you've done it
8 for these extreme events when I meant bounding I said
9 they're going to be very good for things that are well
10 within that bound. That's what I was really trying to
11 say.

12 And so this actually starts to fold in
13 what we need to do with what's already in there in
14 50.63 because as you're going to see this is going to
15 kind of be a backstop to the 50.63 stuff and it's
16 going to make these guys a lot longer coping than they
17 are right now as a net result, in my view.

18 So but going back to 50.63 and that second
19 bullet there, and this needs to be stated, it was to
20 withstand and recover from a blackout, you know, as
21 defined there.

22 And that now that was - for those of you
23 who all know, that was actually a cost justified
24 substantial safety enhancement rule.

25 Now we have in place this mitigating

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1 strategies adequate protection order. Those are two
2 different levels of pedigree and so the pedigree that,
3 of course, is the rules is an adequate protection
4 requirement.

5 So one of the things, I think, that you'll
6 see is what we need to make sure the licensees are
7 aware of is that if you're going to get into a
8 situation like this with whatever scenario you can
9 come up with and you look like you're going to exceed
10 the coping of your - you know, your old 50.63 coping,
11 let's say, that you're going to be able - you're going
12 to deploy and having serviced these FLEX support
13 guidelines for those situations also because that's
14 really adequate protection and that's the order.

15 And this is a - this is a subtle thing
16 here. If you're into a licensing space you'd say
17 whoa, whoa, whoa as an ex-licensing guy. They'd say,
18 wait a second, the order was for external events - you
19 know, external event-driven SBOs.

20 This thing over here was not for that. It
21 was for these, you know, grid-centered, switch yard-
22 centered and severe weather type situations loops with
23 multiple failures. How can you apply this, and the
24 answer is well, if you've got beyond those things,
25 those 50.63 things and you didn't deploy this you

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1 would no longer have a license after that event.

2 So you, you know, I don't think any sane
3 licensee would ever do that but one of the things
4 you'll see, I think, for certain is that there will be
5 a connector between the current 50.63 and these new
6 strategies to make sure that's well understood - that
7 that has to be a - hopefully it turns out to be a
8 smooth continuous process on how this works and I
9 think it will.

10 Again, this is really a function of the
11 feedback on the order and seeing how this is actually
12 implemented down at a - almost a nuts and bolts level
13 on how they filled in the FLEX support guidelines into
14 the EOPs and how that happens and make sure that's a -
15 that works well.

16 So that's what that's kind of saying. So
17 the old coping determinations that you go back to
18 50.63 that were one-time things for the current 104
19 guides, okay, under Reg. Guide 1.155 those were the
20 two, four, eight and 16th hour bins and they were
21 frequency kind of ideas - offsite frequency, onsite
22 response -

23 MEMBER STETKAR: Liability.

24 MR. REED: Exactly. Those kinds of - that
25 coping determination really - is really not the driver

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1 anymore, I think. I think this order is going to
2 become the driver and in fact if you think about it I
3 think the order is going to - is going to completely
4 I think kind of stomp all over the top of it.

5 And by that I mean if you look at what you
6 need to do in terms of this mitigating strategies
7 order, okay, and you have - you have this event, let's
8 just say, and you've got, say, three different teams
9 and the SRO with these teams they're going to team out
10 and go and get the equipment that's reasonably
11 protected. You have N plus one sets of this equipment
12 around and you've got to go get the equipment.

13 Then you got to move from point A to point
14 B where it's going to be deployed and then actually
15 deploy it, I mean, it's hoses and cabling and
16 everything else, that's going to take a substantial
17 amount of time. There's no doubt in my mind that's
18 going to take a substantial amount of time.

19 It's going to take a significant amount of
20 time just to figure out what happened, okay, to
21 diagnose the situation to assemble a staff and work
22 you down to the point where you're actually deploying
23 these people.

24 So this is going to be really the key
25 feedback in my mind from this next February as to how

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1 much time you estimate you're going to be in this
2 first situation here that you have to cope with no
3 power and that will be, in my view, the new coping
4 duration for everybody.

5 In other words, if you have to add more
6 batteries or more capacity there that will become the
7 more - the new, if you will, coping duration for these
8 facilities. That's what I'm trying to say there.

9 MEMBER STETKAR: Tim, one thing that we
10 talk about a lot is, and I want to make sure I
11 understand because I was going to ask you about that
12 little sub bullet there, we talk about typically in
13 risk assessment now an available time window within
14 which you must accomplish something and balancing
15 against that the amount of time that's required to
16 perform that action.

17 So, for example, if I have five hours
18 before I drain a tank of water and I need to get water
19 into that tank within five hours that's my available
20 time window.

21 If it - if it takes me - you know, I have
22 high confidence that I can apply some pumping capacity
23 to refill that tank within an hour I've got a four-
24 hour margin.

25 If I do an analysis and, say, I have a 50

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1 percent probability that it's going to take me five
2 hours and a 50 percent probability it'll take me
3 longer, I don't have very much margin.

4 I don't have a lot of confidence that I
5 can actually accomplish that function within the
6 available time window. I tend to think of coping time
7 determinations as things in the plant that define my
8 available time windows.

9 So for a pressurized water reactor I have
10 several different competing concerns. I might have
11 boiling off steam generators. I might have
12 development of reactor coolant pump seal LOCA.

13 I might have loss of DC power to control
14 the turbine-driven emergency feed water. You know, I
15 have several different things that determine time
16 windows within which I can restore a particular
17 function.

18 And then in terms of evaluating my
19 confidence in successfully restoring that function, I
20 need to look at the feasibility of restoring that
21 function within each of these time windows and the
22 implications of whether I don't.

23 I thought that what I heard you saying is
24 that you're looking at this timing issue in terms of
25 the implementation time - how long does it take to

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1 actually move the equipment from point A to point B,
2 plug it in, crank it up, get the pump running.

3 MR. REED: Right. And then look at what
4 you can actually do today. Let's say that's 16 hours,
5 and right now I can only hang in there for three
6 hours. I got a big problem.

7 MEMBER STETKAR: That's right. Okay. So
8 we're kind of saying the same - in my mind, that
9 coping time - in principle the coping times under the
10 50.63 requirements took into consideration all of
11 those things that I'm calling an available time
12 window.

13 For my particular plant as long as I
14 restored power within two hours, AC power two hours,
15 I wouldn't trip over any undesired situation.

16 MR. REED: Right.

17 MEMBER STETKAR: Okay. So those - in that
18 sense they're still relevant because -

19 CHAIRMAN SHACK: But the coping time the
20 way it's calculated in the Reg. Guide is why I think
21 what he's saying is sort of not meaningful anymore.

22 MEMBER STETKAR: That's correct. It's
23 going to - it's going to set the coping time as -

24 MR. REED: Because now it's a real
25 analysis of the situation now.

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1 MEMBER STETKAR: Right. And they would be
2 able to deploy this equipment and get it going.

3 MR. REED: It's a whole different thing
4 now.

5 MEMBER STETKAR: It's a different - it's
6 a -

7 MR. REED: And I kind of view it as like
8 a time line, you know. The thing happens and maybe
9 the first thing I'm doing is stripping batteries.

10 Maybe the next thing I'm doing is
11 ventilation for turbine driven aux feed water pump,
12 for example, and maybe the next thing is filling CST,
13 you know, and it goes down to these things and these
14 are the critical things I need to do and this is where
15 I need to have portable equipment. Can I do those
16 things?

17 How long is it going to take? How much -
18 how can I withstand those conditions with no AC power
19 and do I need now to beef up my batteries, whatever,
20 and that's - this is really, I think, the core of
21 getting the feedback from the order.

22 And I think the net result will be that
23 these guys are going to have to withstand for a much
24 longer period of time this blackout condition.

25 And so it will become - to deal with the

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1 fact of coping. Now, unfortunately, I think they may
2 take actions that are more extreme than they would
3 have taken in the past in terms of, like, battery
4 stripping, for example.

5 They may go down to one channel and that's
6 it. You know, whatever they have to do because
7 they're trying to hang in there as long as possible
8 and that's - that could be an issue too, okay, versus
9 the - what they -

10 CHAIRMAN SHACK: And that's what you'll
11 have to see when these - when these implementation
12 things come back is if they're really going to do
13 that.

14 MR. REED: Yes. Exactly.

15 CHAIRMAN SHACK: I want to take a break
16 now for 15 minutes and come back. So we'll be back at
17 10:20.

18 (Whereupon, the above-entitled meeting
19 went off the record at 10:04 a.m. and resumed at 10:21
20 a.m.)

21 CHAIRMAN SHACK: Sort of where we were,
22 you know, I think part of the concern that I had and
23 that Harold had, you know, you sort of mentioned that
24 in order to make some of these current coping times -
25 now, these guys are going to be stripping everything

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1 off and that's where one might see a modification of
2 the current 50.63.

3 I mean, you know, do you need more
4 installed capacity in the terms of more batteries, you
5 know, a diesel battery charger or a steam-powered
6 battery charger that doesn't make you, you know, go
7 down to the last volt off of that battery before you
8 can get this equipment in there.

9 And that's somewhere where I would sort of
10 see a potential for, you know, changing the current
11 regulation to match up better with your capability
12 here to stretch that time out. And again, a robust
13 alternating AC would give you that plus more.

14 MR. REED: Yes. Exactly. That's what I
15 was trying to say. I think once they figure out a way
16 on the phase one portion of this - of the order to
17 tolerate that condition for as long as they have to I
18 think - I foresee that they would do - it might take
19 pretty extreme stripping, you know, actions and this
20 is the battery guy here and that's one of our
21 concerns.

22 But, additionally, hopefully they'd beef
23 it up, you know, and they actually have better
24 charging of, you know, portable sources or whatever
25 they need to do or had more batteries or whatever and

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1 that would be true physical modifications that really
2 enhance the 50.63 situation.

3 You know, what - you know, we've mentioned
4 earlier about how it's that's 1E to the minus 5 is an
5 estimate of the core damage. So it would drive that
6 down, in my view, down well below that if in fact
7 those changes happen and I think they will happen.

8 But I don't know that for certain right
9 now. I see that down the road but, yes -

10 CHAIRMAN SHACK: But just, again, talking
11 about what you might be doing in terms of the rule.
12 I mean, I think - you know, it's hard to see, you
13 know, beyond design basis conditions, you know, the
14 FLEX - the performance base sort of gets there.

15 But it is that initial installed capacity
16 that I think, you know, we need perhaps to consider.

17 MR. MCCONNELL: And this is Matt
18 McConnell. But one of the concerns or challenges that
19 we have is just trying to understand what the industry
20 is going to present when they come in with their
21 implementation plans and we're hearing a lot of these
22 things they might be trying to do.

23 And they might be acceptable solutions or
24 alternatives but until we actually see what they're
25 going to do and if they're feasible we'll have to wait

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1 until that time.

2 I mean, I have some concerns of whether or
3 not the operator is going to say okay, take away my
4 indication on half of this equipment or my control on
5 half of this equipment just to save my battery and now
6 I'm down to one set of indications. I don't know. I
7 mean, I guess we'll find out come February or March
8 time frame this year.

9 MR. CHECK: And so the staff will have to
10 say and do what the industry can or should do.

11 MR. REED: So on slide 9 now - I'm on the
12 third bullet - and this is the design flexibility.
13 This was - we got plenty of interactions on the ANPR
14 and we've had new designers. I think it was very
15 valid. I want to try to build in some design
16 capacity.

17 You just mentioned, in fact, robust
18 alternating AC as one idea and I think that would be -
19 it would be - it would be very good for us to have
20 that flexibility built into this rule.

21 I mean, as - you know, I'll come to this
22 probably more than once but around the schedule right
23 now we're having a hard time doing that. But you can
24 always have alternatives and exemptions to rules and
25 to the word too and we can get that.

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1 It's not the best situation but right now
2 I think that we would probably view these things more
3 as built-in engineering capacity for that first phase,
4 you know, and that's kind of where we've heard these
5 discussions and I think they're really good ideas that
6 I -

7 CHAIRMAN SHACK: Oh, yes. You need a
8 robust alternating AC. I don't think you'd get away
9 from this.

10 MR. REED: You don't get away from this
11 but when you put in a robust alternating AC for the
12 other, let's say the other 50 percent that don't have
13 an AAC, I just took that station blackout residual
14 risk and eliminated it. You know what I'm saying?

15 You know, so I see that as - it's, yes, I
16 hear, for instance, it's got a mixed ability that
17 really addresses the situation. It does a great thing
18 for that other set and it may do great things other
19 places where people don't even realize it.

20 You know, if you're an old facility and
21 you really don't have very good source - a decay heat
22 removal sources of water or, you know, I'm going to go
23 to, like, say an old two loop plant, you know, and
24 you've got basically high-end G line break issues or
25 missile issues or seismic category one issues with

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1 your suction sources and you go and you build in
2 something pretty hard and you'll see this coming up
3 here like a seismic category one source of water for
4 24 hours, a motor-driven aux feed water pump with its
5 own power supply bunkered, well, you've not only done
6 good things for this because you have a, I'll say a
7 hardened core decay heat removal pump, but for that
8 facility it addressed probably missiles, high-end G
9 line breaks, block walls, seismic - you did a lot of
10 things for that pre-GDC plant, okay, in this
11 particular case.

12 And so sometimes these things have a lot
13 of benefits depending on your vintage of your facility
14 that weren't intended by this order and robust
15 alternating ACs is one. It goes directly to the 50.63
16 residual risk.

17 So anyway I'd like to - I think we should
18 all, going back to this bullet here, the engineered
19 ideas, I think they would help us and I think we'll
20 see some of this.

21 I mean, we're seeing a little bit of it
22 right now and I think we'll see some more of it. I
23 think when it gets to the actual actions that people
24 must take I think they're going to have to have some
25 help.

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1 Now, we went out to Diablo Canyon and
2 talked to those folks. They're really doing a lot of
3 good work, and you look at what they have to do and
4 where they have to move the equipment to and how heavy
5 that equipment is and how far off it's got to go,
6 they're going to need winches and those kinds of
7 things, I think, to be successful.

8 And so there's some small engineered
9 features I think you'll have to get into at least and
10 then I think we'll have a variation of those kinds of
11 engineered approaches for the phase one part.

12 But, again, coming back I think the
13 flexible stuff makes sense. You'll still have some of
14 that no matter what, I think, you know, because that's
15 a good diverse approach to try to address these
16 issues.

17 So going to the last part of this slide
18 then, talking about the mitigating strategies too,
19 this is another concept that I want to try to get
20 across and in fact this was actually built into the
21 NEI guidance in 12-06.

22 They went back and they looked at the Reg.
23 Guide 1.155 guidance and that referenced NUMARC 8700
24 and in there you go in there and you'll see some of
25 the coping strategies built into NUMARC 8700, for

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1 example, ventilation, and going and opening doors and
2 trying to deal with no AC - AC power and what that
3 means, really, in steam rooms, for example. So they
4 went back and they built that in. They linked it in
5 right into the guidance because that makes perfect
6 sense.

7 If you want to think about it, in NUMARC
8 8700 it was kind of built around a four-hour coping
9 duration and trying to handle that situation and it
10 looked like people kind of like if I'm going beyond
11 four hours I'm just going to go and get an alternating
12 AC source and fire up that whole 4160 bus and not
13 worry about it anymore.

14 Now, what we're doing is saying, now you
15 can't get the power back. It's going to be going on
16 and on and on. So now you got to worry about, say,
17 ventilation.

18 I got to worry about when my safe storage
19 tank gets empty and getting water sources and the best
20 water sources I can to build that thing again.

21 So that's a major, major part of this
22 effort, knowing what my water sources are, where they
23 are, where I need to have the portable pumping
24 capacity and moving it, okay.

25 So the strategies become much tougher

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1 eventually because I'm in this thing for a while. I
2 have RCP seal leakage, okay, for PWRs. That becomes
3 a real issue.

4 I'm going to have to put inventory back
5 into the RCS. I may even be getting into criticality
6 issues, okay.

7 So this is for this - this is a much
8 tougher situation to deal with but it kind of goes on
9 a continuum starting with the blackout for four hours
10 in the 50.63 and now we're just going to get - it's
11 getting a lot nastier due to duration and severity and
12 the conditions that could exist there.

13 So the guidance that was built into 12-06
14 started with that and extended it and that makes
15 perfect sense, and I'm just - I'm noting that here
16 that that's also underlying this regulatory framework
17 that will be - we'll put in place here so -

18 MEMBER SIEBER: Have you gotten any
19 feedback from industry about the duration of RCP pump
20 seals?

21 MR. REED: I'm trying to think. Did you -
22 I think this is the PWRs and how long - this is how
23 long they'll last and yes, I remember hearing numbers
24 - 55 hours and - I can't remember.

25 MR. BOWMAN: Fifty-five hours before it

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1 transitioned into phase so natural circulation can
2 occur but I haven't seen the actual -

3 MEMBER SIEBER: The old seals would leak
4 up to 200 GPM after four hours.

5 MR. REED: Yes. Even the low leakage ones
6 aren't that great, as I remember. Somebody -

7 MEMBER SIEBER: That's right.

8 MR. REED: Yes, and that issue came up
9 already. I think they put them in one plant and
10 tested them and it didn't work and so there's some
11 issues there. That's actually part of that analysis
12 right now is what is that leakage, right, and when do
13 you really need to be concerned.

14 For example, and this is a real challenge,
15 by the way, for you guys. I'm sure you know this but
16 trying to get water into the reactant coolant system
17 on a PWR and this circumstance is difficult.

18 And, for example, you may have to go into
19 vetting drain lines and a bunch of them with something
20 like - and if you're getting this big - this is going
21 to be a high energy pump probably from offsite -
22 that's going to take a while, for example, or you're
23 going to have to power up a motor control center for
24 the charging pump, for example.

25 MEMBER SIEBER: Yes. An offsite pump, as

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1 I pictured, is not a practical solution to this.

2 MR. REED: I think - I think you might be
3 right. I don't - again, I'm not confident with the
4 situation what it's going to turn out to be. This -
5 again, more feedback. But I see this as the really
6 toughest strategy there is, I think.

7 MEMBER SIEBER: Yes, I think so too
8 because it's going to take a whole new design effort
9 and it's just not going to happen quickly.

10 MR. REED: I mean, I've heard one idea
11 about, you know, trying to bring in - I forget the
12 size - it was a couple megawatt, you know, source, to
13 power the motor control center to use - I think in
14 this case it was a positive displacement. But they
15 had a positive displacement pump as opposed to a
16 centrifugal charging pump.

17 But, you know, using infrastructure there
18 to power up that pump and then with that get the water
19 to that thing and then restore the inventories of the
20 RCS because you're going to lose inventory. There's
21 no doubt about it.

22 In addition to that, we've heard - I asked
23 this question too is what do you think the deal is
24 with the criticality and, you know, in terms of how
25 much boration do you need.

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1 Do you need to add borate to water and so
2 far it looks like in those analyses that if you get a
3 cumulating injection that's got a PPM in there, you
4 know, a boration that that looks like that would be
5 okay, good enough, you know, but -

6 MEMBER SIEBER: If you could depressurize
7 -

8 MR. REED: - for some - for some design.
9 So it's both inventory and boration and criticality
10 issues that we'll be concerned about.

11 MEMBER SIEBER: Technical problems -
12 technical problems here, to me, are severe and -

13 MR. REED: Yes.

14 MEMBER RAY: Well, just worry about
15 maintaining natural circulation with no level control
16 and no pressurizer either, for example.

17 MR. REED: Yes.

18 MEMBER RAY: Bubble on the head. It's a
19 mess.

20 MR. REED: And if you get, for example,
21 until I get the nitrogen over from the accumulators in
22 there and any condensables and the heat transfer it
23 really gets to be nasty too. So that's another issue
24 -

25 MEMBER RAY: That's if you depressurize.

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1 MR. REED: Yes.

2 MEMBER RAY: But you're likely to go the
3 other way.

4 MR. REED: You could go the other way.
5 And then you've got issues with safety valves and yes,
6 I've - that's the ongoing analysis that's underlying
7 this stuff - that it's not trivial at all.

8 MEMBER RAY: No, it's not. But just be
9 realistic about it.

10 MR. REED: But we're trying to - we're
11 trying to do something in terms of having an
12 engineering analysis for these things that at least
13 there's something that makes sense, try to understand
14 whether these actions have to be taken, okay, first of
15 all, and what kind of filler rates that we need so we,
16 you know, have more than sufficient there.

17 So that's the idea, you know, to have a,
18 again, some assurance that these things would be
19 workable and actually achieve what they're trying to
20 do - maintain or restore this function so -

21 MEMBER RAY: Great. Thank you.

22 MR. REED: Sure. So getting to the kind
23 of where we're at now on the draft rule and trying a -
24 from a regulatory rule maker centric standpoint,
25 whether I think that we can do or what we need to do

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1 and how we're going to do that in terms of changing
2 the regulations.

3 We have the order, of course, and I've
4 mentioned in the beginning the order and the rule
5 making are almost right on top of each other, kind of
6 the same thing.

7 And so the order is my - if you want to
8 know, my driver for my entire rule making and so those
9 provisions were, of course, imposed on the current
10 licensees, the data protection provisions and in the
11 EA-12-049.

12 So I would put those into the federal
13 regulations, you know, in part 50, part 52 and do that
14 with the full recognition that I have at least two
15 other sets of regulations in place right now.

16 Of course, 56.03 but also I had
17 50.54(hh)2. They both are related to what I'm trying
18 to do. So I need to do that within that context and
19 recognize that those are there.

20 So right now I feel as though everything
21 we need to do can be done through making those orders
22 or requirements, I'll say, generically applicable,
23 okay, and that I'm not - I'm not intentionally
24 intending to go and, for example, go beyond the orders
25 and try to backfit something in addition to the

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1 orders.

2 To be quite honest with you, I'm not sure
3 how you can do more than what was asked in the order.
4 The order asked for maintaining and restoring core
5 cooling - spent fuel pool cooling and containment for
6 beyond, as I mentioned, external events.

7 I don't know if you can - as we mentioned
8 earlier, you can even achieve that for some of these.
9 Certainly, you can't ask for more than that. So that
10 - it's hard to go beyond that. But that's - so that's
11 what we're starting with. So what we're talking about
12 then is that -

13 CHAIRMAN SHACK: Just as rule making kind
14 of thing, we actually got some grief once upon a time
15 when we went to 50.46b and we tried to put in a
16 performance-driven cladding requirement and they told
17 us, you know, in an adequate protection rule that you
18 really had to have something enforceable.

19 Now, you're going to write an adequate
20 protection rule that says for all beyond design basis
21 events. You think you're get away with that?

22 MR. REED: Only way I'm getting away with
23 it is because it was already done in the order.
24 That's the answer. And I -

25 CHAIRMAN SHACK: I'm sticking with it.

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1 MR. REED: Yes, it is my answer and I
2 don't like - that's why I started off I don't like
3 unbounded requirements and, yes, and it goes directly
4 to - you called these adequate protection.

5 What do they really mean? How do we
6 inspect a force against and decide what's success and
7 that's a very - that's pretty prechallenging, let's
8 just say - I'll say it that way - to do that in the
9 circumstance.

10 MEMBER CORRADINI: But you started all
11 this off at the beginning saying that it'll be in the
12 guide and therefore for this one it's exempted from -

13 CHAIRMAN SHACK: Well, that's what we
14 tried to do with 50.46(b). We told them -

15 MEMBER CORRADINI: His memory is actually
16 what I remember is we tried that and staff beat us
17 down saying that's just not -

18 CHAIRMAN SHACK: Well, no, no. They
19 finally bent. I mean, that was such a tiny little
20 performance-driven requirement. This one is a whole
21 lot bigger.

22 You know, we were dealing with a very,
23 very defined event where you could go off and measure
24 that performance in a very explicit way with, you
25 know, tests and stuff. This one, boy, beyond designs

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1 -

2 MR. REED: I think it's changed. I think
3 the paradigm has changed and I'm not sure I like the -

4 CHAIRMAN SHACK: Okay. You're going to
5 drive the truck through the gap, right? So that's -

6 MR. CHEOK: Advice of counsel from OGC.

7 MR. WEISMAN: Well, you're correct that
8 there are some issues with enforceability of the rule.
9 We are - we are working - we are trying to resolve
10 that to make the rule more enforceable.

11 We are proposing requirements that will
12 apply to the equipment that's going to be relied on,
13 you know, certain things like independence, and maybe
14 I'm stealing the staff's thunder here.

15 Matt, I don't know if you want to talk
16 about that. But independence and - what else is
17 there? There's that -

18 MR. MCCONNELL: You'll have separation -

19 MR. WEISMAN: Yes, separation.

20 MR. MCCONNELL: - redundancy and all that.

21 MR. WEISMAN: Right. Independence.

22 Right. Redundancy. So there's going to be
23 requirements on the equipment. That's certainly
24 enforceable.

25 To the extent that a licensee has to write

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1 procedures and have plans in place as to how we're
2 going to deal with these emergencies whether those
3 things are adequate and whether they exist, that will
4 be enforceable.

5 That may be as far as we can go.
6 Certainly, if the emergency happens and it doesn't
7 work and maybe there's not really any point in
8 enforcing - taking enforcement actions. But -

9 MR. REED: This gets back to that success
10 criteria in the beginning and what do we call success,
11 writing toward success and that goes right to
12 enforceability and inspection.

13 And because, you know, I think I said back
14 then is that you could have a perfect mitigating
15 strategy, if you want to think of it perfect, and then
16 the event was just simply too extreme and the
17 meteorite hits, you know, and you're not going to
18 mitigate it.

19 You know, so when you have unbounded
20 events it's really tough to deal with the situation.
21 So that's a very good point. That's something I
22 certainly understand. It makes the rule making and
23 made the order - it makes all of this very challenging
24 to do. We did it - the only other place I know we did
25 it was in 50.54(hh)2 and that's -

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1 CHAIRMAN SHACK: But at least that was an
2 adequate protection question.

3 MR. REED: It was actually justified as
4 adequate protection under the power regs security rule
5 making.

6 CHAIRMAN SHACK: Okay.

7 MR. REED: I didn't like that either
8 personally. It was adequate protection according to
9 the ICM order of 2002. So that's - might be a bad
10 section so -

11 MR. WEISMAN: I forgot to introduce
12 myself. I'm Bob Weisman from the Office of the
13 General Counsel. I am on detail to the operating
14 reactors but I'm working on this rule making.

15 MR. REED: Yes. Bob's my - the lawyer so
16 -

17 CHAIRMAN SHACK: Okay. So if you didn't
18 fulfill that - drive through the same gap, yes.

19 MR. REED: Yes. So that's where we're -
20 so in terms of the rule maker space I'm not going to
21 activate anything more. That's already now been
22 imposed. So that's a - at least it makes it a little
23 bit easier from a process standpoint for me.

24 It's not - it's not a good situation but
25 that's from a process standpoint where I'm - I think

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1 I'm going to be. In terms of what they're going to do
2 with taking these orders requirements and what they
3 mean in terms of touching on 50.63 is what this slide
4 kind of goes to.

5 What we're really saying here is that, you
6 know, if you get to a loss of all AC power condition
7 the bounding, thus limiting the situation and
8 requirements, really stem from the order and if you're
9 going to exceed those for that SBO duration because
10 you had them 50.63 these apply and I think you're
11 going to see that right now we would have a connector
12 right in there to make sure that licensees understand
13 that and in fact they are doing it that way.

14 So I think this is a - this is a good
15 thing. They're building the EOPs and FLEX support
16 guidelines in this fashion so this should work.

17 And as I mentioned also previously, the
18 old coping durations under Reg. Guide 1.155 are really
19 going to be, I think, outmoded.

20 I think we're going to be in a whole
21 different world and once they have this phase one
22 duration figured out and how they're going to tolerate
23 that and that'll be kind of their new coping, if I did
24 - now, I'm pulling this out in the last bullet here
25 because this was a consistent comment on the ANPR

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1 across all of the industry and the industry was don't
2 touch 50.63. Leave it alone. It's been great,
3 successful.

4 And I feel like I have to touch 50.63
5 because from a clarity standpoint if I don't do
6 anything to let licensees know that hey, this is not
7 your only requirement in terms of blackout, I'm not
8 saying anybody would do this but you could foresee a
9 situation where a licensee says, I got a grid - a loop
10 on my grid.

11 It's going on for, you know, a long period
12 of time. It's a bad day. Both my digitals fail.
13 Hey, I'm just a four-hour plant. I'm not going to do
14 anything, right. It was a 10 percent chance under the
15 old 50.63 rule that we get the core damage. I'm just
16 meaning 50.63.

17 Obviously, that's not the circumstance and
18 you've got to go to FLEX support, FLEX guidelines and
19 the mitigating strategies and that's what this is
20 making clear, and that's in fact I'm sure what
21 everybody's going to do.

22 MEMBER SKILLMAN: Tim, as you explain
23 this, seems to me that you've got some fairly well
24 defined outcomes at least conceptually in your mind.
25 Where do you think we're going to end up in bullet two

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1 here?

2 When you say we're going to have durations
3 different than what are presently considered
4 appropriate in 50.63 where do you think this is really
5 heading?

6 MR. REED: I'd say that's a really - you
7 mean in terms of what they'll actually end up being,
8 how long they'll be?

9 MEMBER SKILLMAN: Talking 72 hours, 240
10 hours, ten days?

11 MR. REED: I think more like 16 and plus.
12 I don't know. What do you guys think of 16 and -

13 MR. BOWMAN: What I have heard industry
14 talking about is some plants think they can get to 72
15 hours, some plants about 16 hours, using a lot more
16 aggressive load stripping and considering things like
17 using nonsafety related batteries and so forth as a
18 means of extending the battery life.

19 There is a study going on battery life -
20 Matt can probably speak further to it - for longer
21 durations with longer established load profiles. We
22 haven't seen the outcome of that yet, have you?

23 MR. MCCONNELL: No, we have not. The
24 Office of Research is actually performing a battery
25 study as we speak with Brookhaven National Labs.

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1 They are taking existing known used Class
2 1E batteries from three different vendors and they're
3 working with industry, with EPRI and with NEI, to
4 develop profiles that would be a reasonable approach
5 to see how long these batteries can actually survive
6 if you put them under a different extreme
7 circumstance.

8 Because a lot of the testing and a lot of
9 the initial thought process with the lead acid
10 batteries that the plants use was that they generally
11 were not going to last beyond eight hours at worst
12 case scenario.

13 So what they're trying to see is if these
14 batteries, if they're drawn at a lower current using
15 a lead calcium design, if they could actually make it
16 out to 72 hours and potentially be able to be
17 recovered after that point as well, and that study is
18 really in the initial phases.

19 But I believe they've actually started the
20 testing. I just don't know the results of that
21 testing.

22 MEMBER SKILLMAN: Do you have any inputs
23 from the practitioners, people at the plants who've
24 made an error and said gee whiz, we should have - we
25 should have done something and we let those discharge

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1 longer than we had anticipated and gee whiz, they're
2 not as bad as we thought they were. Do you have any
3 input like that?

4 MR. MCCONNELL: No, but - no, I have not.
5 But I know that there are a lot of the IEEE members in
6 the stationary battery committee that are
7 participating in this study who are - happen to be,
8 you know, the workers at the plant that actually do
9 the discharge testing and such.

10 So there's a lot of knowledge base that's
11 going into this effort and I think a lot of the
12 lessons learned are also going to be pulled into it.
13 So I'm kind of encouraged on what, you know, to see
14 what we - what comes out of this.

15 It just a matter of time, I guess, and it
16 may - it may be and I don't want to speculate too much
17 but they may be complete by the end of, say, in the
18 summer of next year with their - with their testing.

19 MEMBER SKILLMAN: Thank you.

20 MEMBER SIEBER: That still only takes you
21 to what, 16 hours, right?

22 MR. MCCONNELL: No. Actually they're
23 doing - they're doing testing for various stages.
24 They're going with various assumptions and various
25 profiles from everything from 16 hours to 72 hours.

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1 MEMBER SIEBER: But they're extending the
2 life by changing the load profile.

3 MR. MCCONNELL: Correct, and there are
4 different assumptions on the amount of equipment or
5 the shedding that may be required. Basically, they're
6 trying to narrow it down to the absolute bare
7 essentials - what does the operator need in order to
8 ensure the safety of the plant.

9 MEMBER SIEBER: And so will all the
10 stripping of the battery to extend the life be done by
11 manual operation?

12 MR. MCCONNELL: Yes. And there - I think
13 there are different profiles that I have seen. I
14 think the majority of them don't credit shedding until
15 - load shedding until after two hours or so.

16 So it actually gives you time to do that
17 because it does take time to do the load shedding.

18 MEMBER SIEBER: I'm glad I'm no longer an
19 operator.

20 MR. REED: Yes, there's a lot of
21 substantial stripping. That's a lot. So that's what
22 I was -

23 CHAIRMAN SHACK: Just an NRO but can we
24 get a copy of that report - the battery report?

25 MR. MCCONNELL: The final report or -

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1 CHAIRMAN SHACK: The final is not -

2 MR. MCCONNELL: The final is not going to
3 be complete probably for another year. I would say
4 that the plan may be available but I'd have to talk
5 with my research counterpart whom I actually have a
6 meeting with this afternoon.

7 So I will see if I - if that is available
8 and if it is I will try to get it over to you as soon
9 as possible.

10 MR. MCCONNELL: Thank you.

11 MEMBER SIEBER: And if the testing fails
12 that means installing another set of batteries?

13 MR. MCCONNELL: That may be the strategy
14 is if the testing is not able to demonstrate that
15 these batteries can survive that long then they may
16 have to go to another measure which may include
17 installing additional capacity.

18 MEMBER SIEBER: Okay.

19 MEMBER SKILLMAN: It could be just as a
20 matter of adding 20 percent more cells.

21 MR. MCCONNELL: Well, the problem with
22 that is that the rooms are very restrictive in size
23 and if they already purchased the largest batteries
24 they possibly can they take up design margins that
25 were chewed up with the fire protection aspect, in

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1 other words so -

2 MEMBER SKILLMAN: Thank you.

3 MR. REED: So anyway so this - slide 10
4 was just me trying to tell you all that I will touch
5 upon 50.63. I think I'll - we'll have something there
6 and we'll have the link over to the new strategies for
7 certain.

8 At one point, going on to slide 11, you
9 know, we were - we were actually thinking about trying
10 to do something more elegant and try to maybe combine
11 this thing into one.

12 You know, it'd be nice if you had one
13 loss of all AC power rule and then sort of design
14 basis then - beyond design basis with one set of
15 guidance but I think on this, frankly, I know on the
16 current schedule we simply can't even come close to
17 doing that.

18 So right now it's going to be something
19 less elegant with a connector between the current
20 50.63 to the new mitigating strategies and then the
21 same would go with the Reg. Guide, you know, where the
22 Reg. Guide 1.155. If you're a new reactor and you're
23 doing this coping it would say hey, fine, do the
24 coping but also, you know, you have to do the
25 mitigating strategies and that may in fact be a whole

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1 different situation in terms of what your coping
2 really will be.

3 So that's not a - that's not a great
4 situation but one of the problems that we were
5 concerned about and I think everybody should be
6 concerned about is there was, you know,
7 extraordinarily good things that happened out of 50.63
8 in terms of safety enhancements.

9 That was demonstrated in NUREG-1776 and
10 the alternating power sources, you know, 50 percent -
11 roughly 50 percent of the guys out there have it -
12 that was probably the best thing that happened and we
13 didn't want to lose that.

14 Going back to the mitigating strategies,
15 remember in the mitigating strategies is always
16 assuming hey, all your AC power sources, poof, went
17 away and now you've got to do it with just the
18 portable equipment and you install capacity and
19 portable equipment and everything, and you could - you
20 could foresee a situation where somebody then builds
21 out that capacity to do that, builds all this thing in
22 and says I don't need the alternating AC anymore.

23 And the fact is is that's the
24 preferential, much better source of power that fires
25 up the entire train. It's better by every, you know,

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1 measure, okay, and you'll want to keep that.

2 So we wanted to keep the alternating ACs
3 power sources in and the easy way to do that is leave
4 50.63 in place. And, of course, another great thing
5 about 50.63 was, indeed, as Mike mentioned in the
6 beginning, was the emergency diesel generator
7 liabilities were enhanced and it's now in the
8 maintenance rule and ROP but -

9 CHAIRMAN SHACK: Well, that was sort of my
10 thought is you didn't need 50.63 any more for EDDG
11 because you had the maintenance -

12 MR. REED: We've had those other - yes,
13 there's other - another framework they can capture
14 that. So you could probably do that.

15 But there would be - I'd have to sort
16 through that and make sure of that because that's such
17 a good thing and we actually have - correct me if I'm
18 wrong but we have reliabilities on the alternating AC
19 power source also.

20 So that's - those are good things to have
21 those things being reliable machines and, of course,
22 you know, make sure that it drives down the frequency
23 of getting this blackout condition. And so, again,
24 very -

25 CHAIRMAN SHACK: The preferable power

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1 source and, you know -

2 MR. REED: Absolutely. Absolutely. And
3 most of these events, of course, won't go - won't be
4 beyond design basis. They'll be the much more- the
5 much more probable normal sequences, if you will.
6 These are not normal.

7 They're all pretty remote. But those -
8 these kinds of devices will in fact solve the - solve
9 the problem while there's still power and you won't
10 get the blackout.

11 So we wanted to keep that in place and
12 this is the way we're doing it and it's kind of a -
13 right now the snapshot is it's kind of a band-aid
14 approach if you want to look at it that way in terms
15 of rule making.

16 And this is going back to the last one of
17 the slides.

18 CHAIRMAN SHACK: But how are you going to
19 keep the alternating AC in? You're not going to
20 really give them any credit for it anymore, right?

21 MR. MCCONNELL: For meeting the station
22 blackout rule.

23 MR. REED: Yes, for meeting the station
24 blackout rule -

25 CHAIRMAN SHACK: So you're going to

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1 compute a coping time for that but there's another
2 real coping time over -

3 MR. REED: That's right.

4 CHAIRMAN SHACK: Okay.

5 MR. MCCONNELL: Unless they're able to
6 demonstrate that they were able to make that
7 alternating AC source robust. And even so, they'll
8 most likely have to have some sort of coping specified
9 duration that they have to survive until they get that
10 up and running.

11 One of the - I know the question was asked
12 earlier about what we perceive to be deficiencies with
13 the existing station blackout rule and I think one of
14 the aspects was the fact that an alternating AC source
15 could be the other unit's diesel generated because it
16 was considered that based on the reliability factor
17 that you only had one unit that was affected at a time
18 and I think that's where the mitigating strategies
19 aspect comes into play because that assumes a site
20 wide event and it does not assume a credit for the
21 alternating AC source. So you would not be able to
22 credit the other unit's diesel generator.

23 So in that type of situation those plants,
24 unless they have some sort of alternate - robust
25 alternating AC sources demonstrated to us or

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1 additional, I guess, measures in place that they would
2 have to have a coping strategy at that point to
3 satisfy that part of the rule.

4 So I think that covers one of the - I
5 guess I don't want to call it a staff concern but it
6 was one of the issues that I think that was raised in
7 the comments that came in to us in response to the
8 ANPR.

9 MEMBER BROWN: Isn't that different then
10 from - I was just reading 10 CFR 50.2 where that gives
11 full credit to - at least it says that definition of
12 SBO gives full credit to the alternating AC source.
13 Are you going to have to do something else with that
14 rule?

15 MR. MCCONNELL: We may - we may have to
16 revise the definition and that's something that's
17 under consideration at this time.

18 MEMBER BROWN: Okay. So it's very
19 convoluted relative to some of these - integrating
20 those with some of these other rules that are - that
21 are around.

22 MR. MCCONNELL: Yes.

23 MEMBER SKILLMAN: At the risk of being a -
24 just a nasty antagonist, here is a facility that has
25 four large emergency diesel generators and these are

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1 tested. These are on their maintenance role.

2 The staff at the sites understands how
3 important each one of these machines is. And if you
4 say, you know what, we gave you credit before but
5 we're not going to give you credit now because the
6 rules changed, I, for one, would say, what are you
7 guys smoking.

8 I have - we have on this site an enormous
9 amount of capability to power, to cross power, to
10 support each unit with the other unit's diesel engines
11 - why would you discredit that which you have
12 previously credited.

13 MR. MCCONNELL: I would say that for
14 design basis events you're absolutely correct. But
15 when you consider the potential beyond designed based
16 events and large area concerns or site wide events,
17 maybe the thought process is, you know, as part of
18 looking back at the Fukushima event saying that
19 there's a possibility even if you have something
20 protected to the design that there is a potential that
21 you could lose all of that.

22 MEMBER SKILLMAN: Well, until you can
23 produce the threat that wipes out all of them I would
24 say hey, I want to continue to be given credit for
25 them.

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1 MR. REED: Yes. I understand what you're
2 saying. I think what I would like to see is that you
3 have a regulatory structure in place that always has
4 you go to the preferential source of power first while
5 Working down. So I'll say power restored. Then
6 onsite power.

7 If you're a multi-unit site, okay, if you
8 can get a diesel I'd say you're two - you're blacked
9 out but your sister unit is not blacked out and they
10 got two diesels. I'd want that diesel.

11 MEMBER SKILLMAN: Go for it.

12 MR. REED: Yes. So I'd work down - I
13 think that's the way the EOPs would work and you'd use
14 the preferential source and then the last thing and
15 it's where we're trying to get to - this is why it's
16 so convoluted and tough to - tough to explain these
17 things - if you assume the extreme event unfortunately
18 all this stuff is gone, you know, and that's where you
19 get the response not obtained and go to FLEX.

20 So there's one thing about compliance with
21 a regulation and then what we'd actually want people
22 to do at the facility and they're not necessarily
23 lined up here.

24 MEMBER SKILLMAN: I think all I'm trying
25 to communicate is there needs to be some common sense

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1 -

2 MR. REED: Absolutely.

3 MEMBER SKILLMAN: - woven into a very
4 highly prescribed method of compliance - that you get
5 some of these larger units that have four and maybe
6 five diesels and maybe a combustion turbine -

7 MR. REED: And some six.

8 MEMBER SKILLMAN: And some six.

9 MR. REED: And two SBOs.

10 MEMBER SKILLMAN: Then there needs to be
11 some recognition this owner has attempted to provide
12 not just defense in depth but above and beyond defense
13 in depth, and that needs to be credited.

14 MR. REED: I think that's another - it's
15 another element in this. See what these guys are
16 doing in the order and that - how do we -

17 MEMBER STETKAR: I think that the
18 Susquehanna had an event where they had a common cause
19 failure with all four of their AC generators. That
20 was not a - that was not a seismic event.

21 It wasn't a flooding event. It was loss
22 of offsite power and I don't even know if they had -
23 I think they did have loss of offsite power. But they
24 did have a common cause failure of all four of their
25 diesel generators.

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1 So in some cases, you know, we're talking
2 about beyond design basis events. It was not
3 presumed. You know, the design basis forces you to
4 assume that one fails.

5 It also forces you to assume that
6 everything else does not fail, and we have had
7 experience where multiple diesels have failed due to
8 common cause failures that, you know, in some sense
9 benign are not driven by extreme environmental effects
10 or things like that.

11 So and this - you know, the alternating AC
12 power source if provided that it's sufficiently
13 diverse - not redundant but diverse - protects you
14 against some of that.

15 It doesn't - just having four diesels at
16 a two-unit site that are otherwise identical doesn't
17 protect you against those types of things either.

18 And we've seen those. I mean, that's -
19 you know, it's a countable event. It happened once in
20 my lifetime and it's happened, you know, in other
21 places.

22 So just because I've got a lot of stuff
23 doesn't necessarily mean that I'm guaranteed to be
24 protected against it.

25 MR. REED: Either humans or parts or

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1 whatever, yes.

2 MEMBER STETKAR: Humans or parts and I
3 don't even remember what the cause was there - the
4 real cause. Was it fuel?

5 CHAIRMAN SHACK: Tim, from what you're
6 saying you're back to the industry position where
7 you're going to have 50.63. You know, when I first
8 read your review graphs I had the feeling that 50.63
9 was going away.

10 MR. REED: If you asked me back when we
11 were going to do this on October 31st I might - I
12 might have almost said that. We're changing in real
13 time here. Now I don't think we could possibly do
14 that.

15 MR. MCCONNELL: And a lot of that has to
16 do with us not being able to craft some sort of
17 language to motivate licensees to maintain an
18 alternating AC source, given what the verbiage of the
19 orders are.

20 MR. REED: I would probably - if I wasn't
21 quote, the lead 50.63 I would actually put in
22 something that says and you will not take out your
23 alternating AC. I mean, that's terrible regulation,
24 frankly. Doesn't look very nice. But you know what
25 I'm saying?

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1 CHAIRMAN SHACK: Okay. So your thinking
2 has changed, I mean, from those few graphs that I'm
3 sitting at here look here from -

4 MR. REED: Yes. It's still changing, yes.
5 It's changing right here.

6 MR. MCCONNELL: The one thing to keep in
7 mind too is the fact, you know, that the existing
8 50.63 rule was considered a dead rule where licensees
9 are not required to go back and reanalyze or
10 recalculate their coping durations.

11 So having it there at least we have some
12 baseline that was - that was calculated at a baseline
13 methodology back in the 80s and to establish at least
14 some duration that which these plants are required to
15 cope for certain type of events and then have the
16 mitigating strategies which provide an additional tool
17 set that licensees can use going forward or if it's
18 outside the scope of 10 CFR 50.63.

19 MR. REED: Which gets right to the bottom,
20 my last bullet here. I think what dawned on -

21 MEMBER SCHULTZ: Before you go there, Tim,
22 just, again, on definition and communication, when we
23 saw on slide 9 coping time and you indicated that from
24 a licensing basis that was - that was the expectation
25 or the definition and that might go away in some form,

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1 what we're hearing here is that that's not going to be
2 the case - that -

3 MR. REED: Yes. Right now I'll call it
4 the specified duration and determine -

5 MEMBER SCHULTZ: - and therefore just, you
6 know, the word selection and communication associated
7 with what we're talking about on Page 9 and this page
8 is going to be critical for communicating all of the
9 different pieces that will be in place.

10 MR. REED: I hear you. I probably should
11 say the Reg. Guide 1.155 specified duration for 50.63
12 will remain because I'm leaving that structure in
13 place.

14 MEMBER SCHULTZ: Right.

15 MR. REED: And I'll probably be trumped by
16 - trumped by this phase one time - a real-time
17 situation and what it takes to really deploy
18 equipment.

19 That might be the new thing that's,
20 frankly, much, much longer and that really kind of
21 steps all over it. But until we get that feedback and
22 know what the circumstance is from the order, I don't
23 know where we're at and we may be in a place where I
24 keep saying if everybody's at 16-plus hours and we
25 have no problems with the actions they're taking and

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1 it seems pretty good, we're going to say you guys are
2 all 16-plus hour clients now.

3 If you've got this condition you can sit
4 there for at least 16 hours and that's a good thing.
5 We don't know that now and that's what I'm getting to
6 in this.

7 MEMBER SCHULTZ: Okay.

8 MR. REED: And it's real hard to do this
9 rule making without that feedback so -

10 MEMBER SCHULTZ: Understood.

11 MR. MCCONNELL: It's interesting to note
12 too that 16 hours, you know, obviously that's the max
13 end of the SBO rule for a coping specified duration.
14 But, you know, we have - went back, the staff has, and
15 reviewed some of the plants and looked at what their
16 coping analysis and I said previously that they're not
17 required to go back and redo analysis to determine if
18 their - if they did it today what the specified
19 duration would be.

20 But we know for a fact that there are
21 several plants that would be bumped from a four-hour
22 plant to a 16-hour plant.

23 But the problem is there's no requirement
24 right now to force them to do that. I think the only
25 plant that recently did that and actually came in

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1 under a license amendment and changed that was Palo
2 Verde.

3 They went from a four-hour plant to a 16-
4 hour plant. You know, they rely on it differently.
5 They use a combination of batteries and diesel
6 generators so they don't have an alternating AC by the
7 definition but that's how they achieve 16 hours.

8 So that might be something that comes out
9 of this if we get the feedback and everybody says
10 that, you know, they need to survive 16 hours. Then
11 maybe a number might be a appropriate to put in the -
12 in the new rule.

13 CHAIRMAN SHACK: Dennis, are you online?

14 MEMBER CORRADINI: He can't talk.

15 CHAIRMAN SHACK: Well, he's supposed to be
16 able to talk now but apparently he can't. Dennis, can
17 you - can you say something?

18 MEMBER BLEY: Hello?

19 CHAIRMAN SHACK: Yes, now we can hear you.

20 MEMBER BLEY: Oh, okay. I tried earlier
21 and I couldn't get in.

22 CHAIRMAN SHACK: We let you in. Are you
23 going to say more than that?

24 MEMBER BLEY: I apologize. Murphy had
25 just called me the second before you did that and I

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1 didn't hear the question -

2 CHAIRMAN SHACK: I was wondering whether
3 you had a question.

4 MEMBER BLEY: Over the day I had a couple
5 things that went - were very early on in this
6 discussion about the FLEX approach and there was
7 discussion about our having overconfidence in FLEX.

8 And from one point of view I think that's,
9 you know, it's a comment I agree with for any
10 identifiable specific scenario can certainly be
11 better than FLEX as far as the reliability and
12 effectiveness.

13 For the things that aren't identified
14 either by PRA or -

15 MEMBER STETKAR: Dennis?

16 MEMBER BLEY: - you're going to lose -

17 MEMBER STETKAR: Dennis? Dennis? You're
18 breaking up so I don't know what phone you're on but
19 we're getting about maybe two-thirds of what you say.

20 MEMBER BLEY: Let me try one other thing
21 and then I'll give up.

22 MEMBER STETKAR: You sound better at the
23 moment.

24 MEMBER BLEY: Is that better?

25 CHAIRMAN SHACK: Well, keep - put together

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1 three consecutive sentences.

2 MEMBER BLEY: Okay.

3 CHAIRMAN SHACK: I didn't say coherent.

4 I said consecutive.

5 MEMBER BLEY: The scenarios that haven't
6 been identified either by PRA or by the real world,
7 you know, FLEX offers advantages. It's certainly not
8 anywhere near close to the optimal solution.

9 There was a discussion about the
10 difficulty of designing FLEX. Maybe 25, 30 years ago
11 there was a precursor to the whole idea, developed and
12 the folks who were involved with it developed the
13 ability to take cables directly to the - to the pump
14 connection box and hook them up there was pretty
15 interesting - little connectors commercially
16 available.

17 So I think it was around that although I'm
18 not sure they really delved into this area as yet. So
19 that was the only thing I wanted to put in that I -
20 the thought. I quit.

21 CHAIRMAN SHACK: Okay. And you're still
22 breaking up a bit so I'm not -

23 MEMBER STETKAR: Yes. It's not an optimal
24 solution.

25 MEMBER BLEY: Yes. Okay.

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1 MEMBER STETKAR: You may - you may want to
2 try calling back.

3 MEMBER BLEY: That's the noise - it's the
4 best I can do.

5 CHAIRMAN SHACK: Okay. Or call in on a
6 different phone.

7 MEMBER BLEY: I can try that.

8 CHAIRMAN SHACK: Go to a Western Electric
9 land line if one's available.

10 MEMBER BLEY: I'll try.

11 MR. REED: Okay. Then that's - why don't
12 we move then to slide 12? I think this brings us -
13 and we actually touched upon this stuff already - not
14 too surprising, given the interaction here.

15 But so we'd like - we believe there needs
16 to be a little bit more flexibility in the rule making
17 that would be - in the order. I think that'll allow
18 more engineered approaches and we give an example here
19 - in fact it was already mentioned a little bit about
20 a robust alternating AC source that if I was to do
21 something to allow something like this would be, first
22 of all, independent, diverse and separate from the
23 emergency, the 1E diesel generators, and physically
24 move away from them maybe with the least multiple ways
25 of providing that electricity to all the 4160 buses.

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1 Of course, that would have to be through
2 a manual action but, in other words, give you a lot of
3 flexibility with this thing and then it would be
4 designed, of course, and then probably in some sort of
5 structure that would be robust for external events.

6 And I have an idea there. You see that
7 there would be at least, of course, your GDC2
8 protection but it would be, like I said, greater than
9 or equal to your available physical margin and the
10 idea there would be to see how this hit you, would be
11 - that that should be the strongest link in the chain
12 and so if you had a severe event that this thing would
13 withstand it and it makes no sense to make it
14 extremely robust when the distribution system that
15 it's providing power to and everything else gets
16 destroyed.

17 So but I do want this thing to be kind of
18 the last man standing, if you will, and that that's
19 what I would call a robust alternating AC source and
20 it would be great enhancement, of course, for
21 blackout.

22 It would be good for a lot of these
23 sequences too and it's a good thing for that phase
24 one, that initial capacity when we're getting to some
25 crazy battery situations here - you know, we could

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1 get. So, anyway, that's that idea so -

2 MEMBER STETKAR: Tim, that third sub
3 bullet there that says multiple and separate supply
4 paths to all emergency AC buses, I think, is important
5 in this concept so that we don't fall into the
6 deterministic type of fire protection. Well, I will
7 protect, you know, train A -

8 MR. REED: Yes.

9 MEMBER STETKAR: - with the presumption
10 that train A shall never fail due to any other - any
11 other cause. So I think that that - that that need to
12 provide the capability to connect to any or - any not
13 all but -

14 MR. REED: Yes, any of -

15 MEMBER STETKAR: - but any one of the
16 divisions is very important.

17 MR. REED: That's right. And it would be
18 a function of your hazards, you know, as to what that
19 would mean. You know, if you've got hazards - certain
20 hazards you might want underground, one above ground,
21 whatever, separate, you know -

22 MEMBER STETKAR: This is all operating
23 mode so there's some chance it happens during an
24 outage when your division A is, you know, disassembled
25 for planned maintenance and all you have is division

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1 B or something like that.

2 You know, so it's - I think that's
3 important because otherwise you get the gamesmanship
4 of we will have train A and only train A as our
5 protected designated beyond design-basis event train
6 or something.

7 MR. REED: I mean, that's a robust
8 alternating AC source. Now, that's a - I think it's
9 a good idea but unfortunately I've got - the reality,
10 of course, is I have licensees out there right now
11 implementing the order and this is not, you know,
12 flexibility in the order and spending about \$20
13 million per plant, you know, a dual site, \$40 million
14 plus doing strategies order, and so this is really
15 hard now. What incentive can I give a licensee when
16 they're already spending that kind of money?

17 They're not going to want to go and build
18 what would be a pretty expensive thing, you know, put
19 in place something like this and so I think this is
20 most likely - more for a new design situation that
21 would be useful.

22 Another - an idea I'll throw out here to,
23 you know, you all consider is if you were - I'm trying
24 to find a way to give these guys incentives to do this
25 and if I were to allow somebody to do what I'll call

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1 a short and sweet version of 2.1 - I'll call it the
2 hardened core version of 2.1.

3 In other words, they'll do - reset the
4 seismic design basis for every system structure
5 across the facility, reset it for the things that
6 actually directly pertain to these functions only, you
7 know, core cooling, spent fuel cooling and
8 containment, okay, and then allow this thing to be the
9 power supply as your - in other words, this is the
10 benefit.

11 Again, I'll let you do this and this is
12 how you - this is your advantage. I'll get you out of
13 the rest of that 2.1 which could be very expensive.

14 I'm trying to find ways of giving an
15 incentive because I really think this thing has a lot
16 of enhancements and safety for all the - for a
17 blackout in other areas.

18 And so it gets you, I think, more safety
19 than you would lose otherwise. You know what I'm
20 saying? I don't know if that makes sense. There's,
21 you know, I think you could only do -

22 CHAIRMAN SHACK: You don't know what
23 you're going to do with 2.1 yet -

24 MR. REED: Right.

25 CHAIRMAN SHACK: - is one of the -

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1 MR. REED: Yes. I mean, that's part of
2 the challenge. Two point one, I think there was some
3 discussion about doing something. I haven't heard if
4 that's still going on with seismic and try to do a
5 more quicker, faster -

6 CHAIRMAN SHACK: Yes. I mean, there are
7 many things going on here.

8 MR. REED: There are, and I've heard some
9 of that myself and I think there's another meeting
10 coming up on it. I haven't heard that for flooding or
11 anything but I've heard it for seismic. But -

12 MR. CHEOK: And the schedule for 2.1 is a
13 little bit more for the fact that then it would be for
14 this one also.

15 MR. REED: So realistically I think this
16 is probably something more for new designers and I
17 think it's a good thing. We wouldn't want to have any
18 place where this thing would be susceptible, like a
19 common mode issue or a single plate failure kind of
20 thing.

21 So this would be - that would also be
22 built into this thing and we probably - like we said
23 before, we'd really only be giving credit for the
24 phase one. Maybe a little bit more. I don't know.
25 We'll have to see.

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1 But no matter what, you have phase three
2 for sure, you know, because, you know, even if you had
3 this thing this thing would run out. If we need to
4 replenish the fuel, what have you, you have that no
5 matter what and I think you need to have some FLEX to
6 some level also no matter what, you know.

7 So, again, this is a concept right now.
8 We're trying to figure out how to build it in. We
9 have some design criteria right now, a draft rule that
10 would perhaps allow this kind of thing to be pursued.
11 We may see some alternatives under the order.

12 Again, this one's really a strong function
13 feedback on the order to what we could be, you know,
14 accept and allow come into the rule making. So that's
15 one idea and that's a robust alternating AC idea that
16 I throw out there.

17 Another one, and I mentioned this before,
18 this is - this is what I call the really good decay
19 heat removal pump thing and this is, I think, a
20 really, really good - I love this idea because some of
21 these old guys - this is an old two loop plant, Ginna.

22 They're designed pre-GDC - 71 GDCs.
23 They're probably somewhere in the draft 67 GDCs and
24 they're an SEP plant and I was somewhat familiar with
25 this facility. I was a consultant, but these guys

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1 have a lot of issues and this is a really good idea to
2 have like a seismic category one source of water for
3 24 hours -

4 MEMBER STETKAR: As long as they don't
5 have reactor coolant pump seal LOCA or while they're
6 hooking the thing up you don't get up to a pressure
7 that opens a PRV and it sticks open.

8 MR. REED: That's right.

9 MEMBER STETKAR: This just makes a lot of
10 sense for the specific set of events that they thought
11 about for this thing.

12 MR. REED: Right. You still -

13 MEMBER STETKAR: It doesn't make sense for
14 a lot of other things.

15 MR. REED: It doesn't get to the RCS
16 issue. Absolutely. If we did here - for example, an
17 idea on that too from Oconee, trying to use the safe
18 shut down facility which, by the way, does both sides
19 of it but there's all these - there's issues with that
20 too, you know, but -

21 MEMBER STETKAR: Plants in Europe have
22 installed bunkered - single train bunkered systems
23 that have an injection pump, a cooling water pump and
24 an auxiliary feedwater pump.

25 MR. REED: Okay.

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1 MEMBER STETKAR: And a diesel generator,
2 you know, so they solve all of those functions, and
3 they're not cheap.

4 MR. REED: Yes. And in some there's both
5 the primary side and the secondary side so it's
6 running both.

7 MEMBER STETKAR: Yes. I mean, they have
8 an injection pump. They have a -

9 MR. REED: That's the ideal -

10 MEMBER STETKAR: - you know, a - if the
11 stuff needs cooling water they can provide makeup.
12 They can't survive, you know, a large load because
13 they're not for - they didn't provide seal LOCA type
14 things. They have cooling water for seals.

15 MR. REED: Now, what I'd love to
16 understand is that - of course, that's drawing the
17 line in the sand somewhere else now because that's -

18 MEMBER STETKAR: But that's - as I said,
19 it's more expensive than that second bullet.

20 MR. REED: And if the event exceeds that
21 design, of course, that's gone too. You know, me, I
22 think of it as the Maginot Line. You want to move it
23 to another place I'd say it's two times your SSE or 15
24 feet higher and your - for a flood - whatever it is.

25 You know, what I'm saying you put that in

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1 place it's really good. I think it's going to get
2 more - obviously it's going to get more stuff. It's
3 an enhancement. But the event - remember, this is
4 unbounded again. They've had an excuse and that's
5 gone too.

6 So that's why we keep coming back to say
7 probably need a FLEX option in there - a diverse FLEX
8 thing. So those are two ideas that, you know, I just
9 want to put out so you can see the - some of the
10 things we're considering and there's more ongoing
11 right now as we try to - we're trying to find ways -
12 this gets to my last stuff - I'm trying to get
13 feedback any way we can with the licensees because
14 we're on, as Mike began the conversation, on a very
15 expedited schedule and one that it really - it kind of
16 makes it virtually impossible for us to do a
17 meaningful feedback and lessons learned from the order
18 and fold that into the proposed rule.

19 And as you see there, the order
20 implementation and as I mentioned, again, remember the
21 order and the rule are virtually overlapping here, the
22 order implementation is really pegged to the guidance
23 which is issued at the very end of August of this
24 year.

25 It was - and the plans are to me - the

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1 implementation plans are to come in on February 28th
2 of 2013 was to have the two refueling outages or - and
3 no terms later than the end of 12/31/2016. So that's
4 the order of implementation.

5 We are right now - we were pushed by that
6 SRM. Again, I think that's a mind set from the
7 Commission that didn't know what we were going to do
8 five months later.

9 But that SRM was directing us to provide
10 them a proposed rule in April of next year and a final
11 rule in April of the following year, a full year and
12 eight months before the end of the order
13 implementation. So that makes this a very challenging
14 issue.

15 So currently, you know, my druthers would
16 be, of course, to have that - have this rule making
17 displaced in time to allow us to get first level of
18 feedback from this order and the lessons learned from
19 that, to fold that into the rule making, really mostly
20 in the section by section in terms of the meaning and
21 intent of the language as well as into the guidance,
22 have that fold in. Maybe move us back to line us up
23 with recommendation 8, okay, so that we can fold in
24 the treatment of this FLEX - work out alliance with
25 that.

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1 It would also, of course, give more time
2 for this committee to inform the process. But as of
3 right now, that's not the schedule we're on. So I
4 just want to let you know that that's the situation.

5 Right now we are planning to bring this
6 back to the ACRS. We have the specific dates there,
7 in fact, at the end there - March 5th to the
8 subcommittee, 2013, and April to the full committee.
9 That's our current schedule we're on.

10 So that's my plea for - my scheduling plea
11 or whine or however you want to look at it and, of
12 course, the committee - if you want to comment to
13 somebody or help me in that regard that's certainly
14 appreciated, any feedback in that regard as others -
15 the schedule should be revised it'd be greatly
16 appreciated.

17 So that's really the next steps though.
18 That's what I talk about there and a challenging
19 schedule. So that's all I have in terms of my
20 presentation and appreciate it -

21 CHAIRMAN SHACK: Are you formally asking
22 the Commission to change the schedule?

23 MR. REED: Not at this point in time, no,
24 I'm not.

25 MR. CHEOK: I think that the stakeholders

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1 would like to see rule making and action sooner rather
2 than later. So that's what's driving the schedule.

3 MEMBER CORRADINI: What's driving the
4 schedule?

5 MR. CHEOK: We have stakeholders. You
6 know, they would like to see us, the agency, act on
7 some rule making, especially in the station blackout
8 area, sooner rather than later and that, you know,
9 five years beyond the Fukushima event would be a
10 guideline - would be a good schedule to make.

11 MR. REED: And, of course, my personal
12 response to that is is that we are actually way ahead
13 of schedule. The rule was put into the order March
14 12th of 2012. Those are the requirements. You can't
15 go more than that. They're already placed.

16 Now, you can argue that implementation, of
17 course, is taking some time.

18 MEMBER CORRADINI: I don't know that
19 you're anticipating what I'm about to say but I'm
20 still of the opinion of what's the rush on a whole
21 bunch of this. But that's my position.

22 MR. REED: Well, okay. You're -

23 MEMBER CORRADINI: I'm the other side.

24 MR. REED: You are. So I think it's a
25 communication problem myself, you know, because I

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1 think as far as stakeholders some, as Mike mentioned,
2 I think they think we only do things in rule making.

3 Well, the Commission does things in orders
4 and rule making among other but when we impose
5 requirements they're by those two vehicles principally
6 and in this case this order was the rule. It was a
7 performance-based version of all of NTTF 4, now, and
8 in theory, in my view implemented at maximal speed in
9 terms of we developed the guidance as fast as we could
10 up to August.

11 We're giving these guys two refueling
12 outages. You know, when you think about it they got
13 to go in and take a look at things, see what they need
14 in the first refueling outage. The second outage
15 you're going to be doing some substantial changes.

16 They've purchased a lot of equipment.
17 They are actually working it down now to a detailed
18 level and you'll find it in those plans next February.

19 So a lot is happening and it's - this is
20 very real. It's apparently going on and those would
21 be, I think, what - basically the same requirements as
22 would be in the rule making.

23 My rule making would only be different, in
24 my view, if I had to take a guess in terms of offering
25 more flexibility than what was - and reflecting what

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1 we optimally accepted in the order.

2 As of right now it's going to - if I'm on
3 the current schedule as a practical matter it's going
4 to look like the order virtually identical, really,
5 for all intents and purposes.

6 So that - so yes, to answer directly
7 though we haven't explicitly gone to the Commission to
8 do that. I just want to make sure this committee is
9 aware of that and this committee is free to inform
10 whoever they want to.

11 MR. CHEOK: In addition to what Tim had
12 said, what we heard from this subcommittee today was
13 that we could probably better risk inform this
14 regulation and, you know, doing - and that would
15 actually be a argument as to why we should take more
16 time to think about this.

17 MR. REED: Yes. I'm a big fan of, you
18 know, risk informing with you guys all working the
19 50.63 yourself. But yes, right now that's - that's a
20 luxury we can't even, you know, address.

21 MEMBER SKILLMAN: Tim, let me ask you
22 this. You've got the Ginna folks saying here's our
23 dedicated system.

24 MR. REED: They - I shouldn't commit them.
25 They were actually talking about it, just, you know -

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1 MEMBER SKILLMAN: Okay. But just in
2 theory say they said this is what we want to do.
3 We've got the SSF at Oconee. It's my understanding
4 that they're beginning to move, saying, you know, we
5 can use this for this application.

6 MR. REED: They've talked to us also.

7 MEMBER SKILLMAN: Are there other sites -
8 there's two of the 68 sites - are there other sites
9 that are coming up with a clever solution like this?

10 MR. BOWMAN: We're scheduled to talk to
11 Prairie Island tomorrow. I haven't got any details on
12 what they're going to propose and I think that's about
13 it.

14 MEMBER SKILLMAN: Okay. But these
15 solutions seem to be almost independent from FLEX.
16 They're coming up with another way to do this with the
17 intention of protecting the core, protecting the
18 containment, protecting the spent fuel pool.

19 MR. BOWMAN: The difference - the Ginna
20 approach as they discussed it with us the difference
21 is that they'd be using an installed generator which
22 the terms of the order wouldn't allow. If they use
23 the portable generator doing the same thing it would.

24 So that's the kind of thing that could
25 inform the rule. But we would have to figure out how

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1 do we address it in the - in the order space.

2 Is it necessary to relax it or is it
3 necessary to consider it as an alternative approach to
4 the guidance that was endorsed?

5 MEMBER SKILLMAN: Okay. Thank you. Thank
6 you.

7 MEMBER STETKAR: I really think a part of
8 - you talk about risk informing this or you talk
9 about, you know, Ginna's proposed option, you just
10 really need to be careful about how do you - how does
11 a licensee provide assurance that they can feasibly
12 mitigate the spectrum of conditions that can happen
13 during these beyond design basis scenarios?

14 For example, Ginna says, well - I don't
15 what their thought process but it sounds like well,
16 they didn't assume a simultaneous LOCA. So otherwise
17 aux feedwater does well for transients doesn't so well
18 for LOCAs.

19 I'm not sure what presumptions have been
20 built into the FLEX strategies regarding the types of
21 scenarios that they're designed to mitigate or protect
22 against.

23 And so just saying well, you know, FLEX is
24 being implemented according to the order I think we
25 need to be careful to think about what the spectrum of

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1 those scenarios might be, as we discussed earlier,
2 within the range of somewhere between a de minimis
3 acceptable risk and, you know, what we're saying is a
4 benign thing.

5 So I'd just - as you go forward, just keep
6 that in the back of your mind. I mean, if it isn't a
7 fully risk informed process just be aware of where
8 those edges are.

9 MR. REED: Yes. The order - and Eric can
10 correct me if I misstate - I'm sure you will - yes,
11 the order is saying no AC power, okay, but DC power -
12 you know, intact and therefore the vital distribution
13 system intact and deliver.

14 So there's some - and we've got comments
15 on why did you assume that - that wasn't there at
16 Fukushima, you know, for example.

17 Of course, the guidance says if you don't
18 have that you go right to the decay removal. So the
19 guidance is built in to try to go to what makes sense.

20 They'll give you that probability again to
21 be successful but yes, we have some strange
22 assumptions and - or maybe seemingly strange or not
23 logical or even coherent, whatever.

24 But I think they work fairly well in terms
25 of what ended up being the equipment, the strategies

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1 and everything and how it flows. It's worked out
2 fairly well. I think it is built pretty well.

3 CHAIRMAN SHACK: But still, until you do
4 the full PRA you don't really know where you're at.

5 MR. REED: I don't know where you ended
6 up, yes. Yes, I understand that and that would be
7 nice to know.

8 If you - yes, if you ask me what I think
9 we might have done I think we might have taken that
10 ten to minus five and driven it into ten to minus six
11 from SBO, you know, for example.

12 I think we did some - we did some - we're
13 doing good things here. I don't know what it really
14 means though for some of these other design basis
15 external events, you know. That's where I'm really at
16 a loss.

17 What are the probabilities of these
18 things? What, you know, is there any - what for each
19 facility and what do we do - how much do we get of
20 that. That's going to be really - that would be
21 tough.

22 That would be really, really informing as
23 to what - how much we accomplish here.

24 CHAIRMAN SHACK: That makes sense.

25 MR. REED: Just - we really won't have

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1 that luxury at the speed we're going right now to do
2 that.

3 So that's all I have. I mean, I guess we
4 have another half an hour if you want to keep
5 interacting on anything, going back to anything else.

6 CHAIRMAN SHACK: See if anybody would like
7 to make comments. Is the bridge line open?

8 COURT REPORTER: The bridge line should be
9 open.

10 CHAIRMAN SHACK: Is there anybody on the
11 bridge line who would like to make a comment? Is
12 there anybody on the bridge line that can hear me and
13 can make a response?

14 MEMBER STETKAR: Easier to just say if
15 you're out there please say something so we know it's
16 open.

17 CONSULTANT FLACK: I have a question. I
18 guess it's sort of a question. This is John Flack.
19 Getting back to adequate protection and the use of
20 nonsafety related equipment it gets to be that -
21 somewhat a slippery slope.

22 I mean, where does that end? I know it
23 was already done in one part of the regulation under
24 50.55 but I mean, if you put it into this context I
25 think you start ending up in a situation where where

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1 do you draw the line and I mean, how do you enforce it
2 if you're saying you can use this equipment, nonsafety
3 equipment, to provide adequate protection. I mean,
4 does that present a problem here in this context of
5 the rule making activity?

6 MR. REED: Yes, it's presented a - it's a
7 problem for me and this goes back to my, you know, the
8 old way of thinking.

9 You know, when I think of adequate
10 protection it's really simple to think in terms of
11 design basis, safety related, all that equipment, all
12 the pedigree, you know, the whole analysis and
13 everything. And when I apply that as words to this
14 beyond design basis situation and I'm using this stuff
15 without the pedigree, what the heck does that mean?

16 And I'll give you a real simple example.
17 You know, one of the challenges we have is trying to
18 figure out how to maintain the configuration and
19 change control for this situation, all right, and in
20 design - and within the design basis that's well done
21 by 50.59. It means - that means that's developed
22 exactly for that.

23 When they go outside of that, 50.59
24 doesn't see it, doesn't even know it's there. It
25 means it's blind to it and what is success anymore and

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1 how you judge changes and how can this be adequate
2 protection if I don't know what success is.

3 I understand it exactly. So that's why I
4 went back to the beginning and said I think we're
5 going to call success being this - the mitigating
6 strategies, the core of equipment and everything that
7 we accept under this thing and maybe more flexibility
8 and that's what success is - success is and I think
9 another way I've thought about it is is that this is
10 almost like a set of stuff, if you will, that
11 addresses uncertainties, okay, and it's more defense
12 in depth.

13 You can almost take it like a - another
14 containment, for example. I'm simply - the Commission
15 say I have uncertainty. I'm putting the stuff in.
16 It's more defense in depth and it's adequate
17 protection.

18 And so if you think of it in that bin,
19 okay, but it's still - it's still challenging - it's
20 still challenging when you get down into some of the
21 nuts and bolts and you're looking to change control or
22 whatever.

23 Somebody's trying to figure out where it
24 goes. Should it be the FSAR, for example. When you
25 work it down through it gets to be very challenging -

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1 in other words, what should be the treatment. That's
2 why we talked about the augmented treatment.

3 I'm not treating it likes it's safety
4 related or special treatment. I've been shaking and
5 baking it, you know. That's why we're going to all
6 those actuaries to try to figure out where the heck do
7 we fit this thing and it was a challenge under
8 50.54(hh)2 also.

9 MR. BOWMAN: Yes. The one thing that I
10 would add to that is that a lot of the equipment
11 that's being procured has its closest parallel in the
12 fire protection equipment, which is not safety related
13 per se.

14 It's got its own fire protection QA
15 program that's an augmented sort of quality type of
16 thing but it's not Appendix B.

17 MEMBER SIEBER: I think for the - this is
18 really a legal question and perhaps our friend from
19 the Office of General Counsel could comment.

20 MR. WEISMAN: This is Bob Weisman from OGC
21 and I was going to chime in but Tim said pretty much
22 what I was going to say. I think that the difference
23 is that safety related items are designed - that it's
24 within a design basis.

25 Once you step outside of the design basis

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1 that's a different world and - legally speaking. So
2 we can set whatever requirements we want to set for
3 being out - when you're outside the design basis.
4 Doesn't have to be safety related.

5 That doesn't necessarily have an
6 implication for the safety related equipment that's
7 relied upon in the design basis. Okay, and that is
8 the distinction.

9 MEMBER SIEBER: Is there freedom to step
10 any place outside the design basis that you -

11 MR. WEISMAN: Well, we have - the staff
12 has -

13 MEMBER SIEBER: - perceive the need that
14 you want to be there?

15 MR. WEISMAN: The staff has to justify it
16 why it's - why - either why it's adequate protection
17 or why it's cost justified. But those are - those are
18 - that's what establishes the limits I think.

19 MR. REED: And I think there have to be
20 a safety or it becomes defense and security -

21 MEMBER SIEBER: It sounds - it sounds like
22 you need a risk analysis and an economic study for -

23 MR. REED: We'll have reg analysis that'll
24 support the rule. But I'm not sure that's what you're
25 talking about. I will - I will say one thing in

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1 regard - it just jumped in my head now and this is
2 also important.

3 You know, when you - we have this - put
4 this stuff in place one thing we do have to be
5 concerned about is adverse interactions, you know,
6 with this putting in portable equipment, adverse
7 interactions it might have with safety related
8 equipment.

9 MEMBER SIEBER: Absolutely.

10 MR. WEISMAN: And we have many provisions.
11 I mean, we're addressing that.

12 MR. REED: Yes, we're worried about that.
13 I'm talking about process, physical, electrical,
14 whatever. And you don't want to have that happen for
15 sure. But in general it's - we're in this other Alice
16 in Wonderland world and it's very tough to deal with
17 it.

18 MEMBER SIEBER: Yes. And the structure is
19 not there, the legal underpinnings, as they are for
20 issues within the design basis.

21 CHAIRMAN SHACK: Dennis, are you still on
22 the line and want to make a comment? You just sent me
23 an email saying you did.

24 (Laughter.)

25 MEMBER RAY: While we're all waiting for

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1 Dennis if the OGC could comment on - the issue of not
2 having to be safety related that's, I think, pretty
3 simple. But what about the problem of change
4 management, change controls?

5 You present one thing today and that's
6 deemed to be acceptable but it can't last forever and
7 it's got to be replaced someday with something else
8 different.

9 What do you look to to say well, I'm still
10 within the - I don't know what do you call it -
11 licensing basis or what you call it. I haven't
12 deviated from what I said ten years ago that much.

13 MR. WEISMAN: That's certainly an issue
14 and we are drafting change control processes with
15 respect to the equipment and with respect to the
16 strategies themselves.

17 So how you're going to measure that, there
18 are a lot of - there are several different ideas
19 floating around.

20 MEMBER RAY: Okay. That's fine as long as
21 it's on your radar screen.

22 MR. WEISMAN: Yes. We're thinking about
23 it and we have some proposed ways of dealing with it.

24 CHAIRMAN SHACK: Dennis, can you - can you
25 speak now?

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1 MEMBER BLEY: I can - I can speak. Can
2 you hear?

3 CHAIRMAN SHACK: We can hear.

4 MEMBER BLEY: Hey, it's a miracle. Is
5 that any better than before?

6 CHAIRMAN SHACK: Yes. Get three sentences
7 out.

8 MEMBER BLEY: I won't go over the other
9 stuff but I had two things that came up since then.
10 Back in that early discussion about the battery
11 testing that might be going on up at Brookhaven with
12 old batteries, there are a few things bothering me
13 about that and they have to do with plant-specific
14 batteries.

15 I mean, whatever ones we get to test will
16 have their own history. The ones in a particular
17 power plant will be different, and from a couple of
18 experiences in the past when working with the
19 electrical folks at a plant they did some of their own
20 testing.

21 The guys I had worked with found that -
22 they don't know all the loads on the batteries.
23 Despite whatever records they have of what should be
24 running there were more loads than they expected. So
25 that when they really monitored things weren't as in

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1 the plans.

2 So if you don't look at details and do
3 some testing at the plants I'm not sure what we'll
4 gain from the battery testing.

5 The other thing that came to me in one of
6 the latter discussions about things other people are
7 doing or have done, I wonder if you guys on the staff
8 have talked with the Dutch at all.

9 Because of their potential for flooding
10 they've done some very innovative protective measures.
11 On the one plant I worked on they had put risers in
12 for electric power and for water at multiple places
13 around the plant so they could float up a barge.

14 We could drive up a truck maybe in some of
15 ours, and hook up there and then inside the plant both
16 in containment and the equivalent of the aux building
17 they were able to make internal hookups to use the
18 supply.

19 So it might be worth seeing what they were
20 up to and see how that meshes with what's going on in
21 the FLEX approach. Those were the only things I
22 wanted to toss on the table.

23 MEMBER SIEBER: The Borssele plant in
24 Zeeland, Netherlands.

25 MR. BOWMAN: Okay. This is Eric Bowman.

1 Thanks for that, Dennis.

2 I have not seen what the Dutch approach is
3 but I have had discussions with some plants in the
4 U.S. and some licensees are considering putting the
5 external connections for the FLEX equipment at various
6 different elevations that would be accessible based on
7 their site-specific considerations.

8 I haven't had anyone actually say they
9 were planning on floating a boat over to hook
10 something up.

11 But they have discussed putting the
12 connections so they'd be accessible from adjacent
13 rooftops and things like that.

14 MEMBER BLEY: Okay. Well, I think what
15 they had done was interesting. I had seen the Dodewar
16 plant, which is now shut down. But they had some
17 pretty interesting capability.

18 MR. MCCONNELL: This is Matt McConnell.
19 I just wanted to address your questions on the
20 batteries or comments on the batteries. I don't know
21 if I misspoke earlier but the batteries that
22 Brookhaven is testing are relatively new batteries.

23 They were procured about three years ago,
24 I believe, and they are very similar - actually the
25 same models that are being used in the industry.

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1 So there are three battery vendors that
2 are currently - have nuclear qualified products and
3 it's the C&D Technologies, GNB, who's qualified
4 through Nuclear Logistics, and the last one is
5 Enersys.

6 So the models that we're actually testing
7 or Brookhaven is testing are very similar - maybe
8 slightly different in capacities but they're generally
9 representative to what's being used in the industry
10 and they were procured the same way.

11 So, you know, with the exception that
12 we're not testing full banks of battery we are doing -
13 I think they're scaled down testing. I think they
14 have around 12 cells per battery.

15 But the actual duty cycles are being
16 modeled and represented accordingly. With regard to
17 your question on the loading that might not be
18 accurate, I can't speak to that except for the
19 licensees are required to ensure that they are able to
20 meet their demands.

21 MEMBER BLEY: Thank you. I appreciate the
22 first half, which means they'll be more relevant. But
23 I also think that other - maybe it's worth considering
24 some in-plant testing to make sure because it was
25 surprising both places where I'd seen it done.

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1 MR. MCCONNELL: Well, and I appreciate and
2 understand your comment. One of the other, I guess,
3 deficiencies or weaknesses that you want to call with
4 the existing 50.63 rule was that we did not specify
5 any testing guidance for the Class 1E batteries that
6 are being credited for station blackouts.

7 So and based on my working with industry
8 I'd say less than half of the industry actually tested
9 their station blackout profiles, which may be in
10 certain circumstances more severe than their actual
11 loop LOCA design loads because you really only need
12 them for a few seconds actually when you - in that
13 situation.

14 So I think one of the - one of the other
15 things I'm keeping in my back pocket going forward is
16 whatever the utilities are going to credit in the
17 mitigating strategies specifically with new coping
18 times that there are testing requirements attached to
19 it.

20 MEMBER BLEY: Thank you.

21 CHAIRMAN SHACK: Are there any further
22 comments from any of the other members?

23 MEMBER SCHULTZ: Well, I just want to make
24 a clarification on the initiatives that you described
25 with Ginna and Oconee as examples, and the

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1 possibilities that others are coming forward.

2 It sounded as if you're still looking for
3 ways in which to accept such initiatives and work them
4 into the process. But given the way things are today,
5 that has not been formulated as to how to work that
6 into the program for an individual licensee or -

7 MR. BOWMAN: For the FLEX order we have,
8 of course, endorsed by means of the interim staff
9 guidance the NEI document 12-06 and we've invited
10 licensees if they have a better idea to use an
11 alternative approach that doesn't conform precisely to
12 that guidance to come in and tell us what they want to
13 do now because we are on a very short time line to go
14 through and evaluate the innovative plans we get and
15 give them feedback if those plans are indeed
16 acceptable and that they will be considered to be in
17 compliance with the order based on what they've
18 submitted to us and based on the modifications they
19 make after that second refueling outage when the full
20 compliance is required.

21 MEMBER SCHULTZ: And are they making the
22 justification argument in comparison to FLEX or are -
23 in terms of developing your acceptance criteria?

24 MR. BOWMAN: We have been seeing really
25 bare bones sketches because nobody has gotten to the

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1 point of having a full-blown integrated plan yet as to
2 what they're going to do.

3 We are looking to criteria similar to what
4 we have in place for the crediting of existing design
5 features for new reactor designs for the 50.54(hh)2
6 material.

7 It's in Section 4.2.3.4 of NEI 0612
8 Division 3, which is the guidance for the compliance
9 with the prior set of mitigating strategies. It's not
10 a perfect fit for the order.

11 We had sought input from industry and
12 other stakeholders on what we should use for such
13 criteria if we wanted to formally set it up. We
14 haven't got formal criteria established right now.

15 I would be looking at things similar to
16 that. I would - given a proposal like Ginna's to have
17 a - and bearing in mind that it's not a proposal, it
18 was just a discussion informally with them, to
19 prohibit the use of an installed generator adjacent to
20 a motor-driven pump but allow a portable generator
21 doesn't make a lot of sense and it may be possible to
22 equate the system as a diesel-powered pump using an
23 electric motor driving force because it's separated
24 from internal power distribution systems and you avoid
25 exposing the systems - supporting systems as much as

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1 it would be in relying on the general power
2 distribution system.

3 Ideas like that are the type of things
4 that we'll take into consideration in coming to a
5 conclusion on whether or not it's acceptable.

6 MR. REED: Right. I guess - so we've
7 heard this, had some interactions, but we don't - it
8 hasn't, you know, gotten to the point where it's
9 distilled and you have to factor that in. That's kind
10 of why it's so open ended on my slide, you know.

11 MEMBER SCHULTZ: Okay. I appreciate that.

12 MR. REED: Does that answer that?

13 MEMBER SCHULTZ: More to come later.

14 MR. REED: I hope.

15 MEMBER SCHULTZ: I hope so too. The other
16 comment I had, earlier in the discussion you mentioned
17 several of the other initiatives or programs that are
18 associated with the NTF response that have an effect
19 here and also potentially will be affected by what is
20 going on in this activity.

21 And this applies to all of them but it's
22 nice to mention those connections but it's also good
23 to try to determine how those connections are going to
24 be implemented. You know, we talked about the
25 schedule here being -

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1 MR. REED: Right.

2 MEMBER SCHULTZ: - driven on a fast track
3 and some senses I heard, at least in one occasion,
4 perhaps two, that out of sync with what's going on in
5 2.1, for example, it would be nice if these things
6 came together.

7 MR. REED: Yes.

8 MEMBER SCHULTZ: I think the committee
9 would really like to see more about how the
10 communications are happening with regard to those
11 connections and interfaces -

12 MR. REED: The most important one -

13 MEMBER SCHULTZ: - with the other parts of
14 the program.

15 MR. REED: Yes, sorry. The most important
16 insight, in my view, is recommendation 8. That's a
17 full year behind us.

18 So in terms of my schedule and if I was to
19 at least resolve one issue, I'd want to explicitly
20 slow this down to be lining up with recommendation 8's
21 core making, okay. So that the treatment of the FLEX
22 support guidelines or the mitigating strategies could
23 be done in that rule making as opposed to mine, okay.

24 So they would go through the process
25 together and they would - they would be interactive

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1 between the two.

2 I'd point over to Bob Bell, the PM for
3 that, and say that's where the treatment of the
4 mitigating strategies is in that rule making, okay.
5 So that would slow this thing down by one year.

6 So there's an explicit example where if I
7 at a minimum I would put this thing out until one year
8 later than what it is and line those two rules up
9 because they - recommendation 8 and recommendation for
10 rule makings are very closely tied.

11 The other ones on that list there I think
12 they get, really, into the guidance and those aren't
13 as much of a driver for the schedule. You mentioned,
14 of course, 2.1.

15 That would, of course, have an impact.
16 But I don't think that affects me directly in terms of
17 how I structure these requirements. It's more the
18 feedback from the order, of course. That's incredibly
19 important.

20 That's the most - the biggest driver and
21 you know that's - I'm in front of that, okay, and I'm
22 also in front of 8. So I'm trying to give the
23 committee some - a more detailed understanding of the
24 schedule would be at least - I'd move it back at least
25 one year and I'd probably move it back to where it

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1 makes sense in terms of trying to get the final rule,
2 okay, for this rule making to be about aligning during
3 the final implementation of the order as close as
4 possible because they're basically the same.

5 And I think you would have to have a
6 little lag now that the implementation of the order
7 goes all the way to the end of 2016.

8 So if you want to do this at a normal
9 process and forgetting expediting anything we're on
10 now this would go into at least 2017 so I can see
11 whether in fact ultimately that our implementation for
12 everybody under the order resulted in deviations or
13 exceptions to the order or there were problems and so
14 that I don't put into the Code of Federal Regulations
15 something that doesn't get me out of completely
16 crossways with that order.

17 Okay. So because they're really very
18 closely linked. So that kind of puts me back to the
19 firewall way back into end of 2016 or 2017. In the
20 proposed rule it would be no sooner than a full year
21 later and if you want to know what - if it was me I
22 would have a schedule that would a lot more like that.

23 Of course, I would give another full year
24 of interaction that's potential for this committee and
25 also to consider some of these issues that we've also

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1 - we talked about around the table today. So I'm
2 trying to give you a little bit more detail, I
3 understand. I was very - kind of a little bit -

4 MEMBER SCHULTZ: Verbally is good but I
5 would also recommend you do that diagrammatically so
6 that -

7 MR. REED: Okay.

8 MEMBER SCHULTZ: - these interconnections
9 can be displayed because even though ideally
10 recommendation 8 in this effort would come together
11 and would end at the same date and that would be
12 wonderful.

13 But the other part of that is that even
14 though they're a year later than you there is activity
15 ongoing. There are preparatory work that is being
16 done there that also needs to somehow feed into this
17 process.

18 And so how that would happen in the
19 absence of it coming together all at the end would be
20 something that - you know, to be investigating.

21 MR. REED: Yes. Right now the way it
22 would work, and this is not a good situation, would
23 I'd be - I'd put my rule out first, okay, and that
24 rule - my rule will have some sort of requirements
25 placed on the strategies themselves in terms of

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1 exercises or drills or testing and that kind of thing.
2 Exercises and drills and training really - is really
3 the thing here.

4 And then Bob would come along with
5 recommendation 8 later on and say - probably be about
6 15 or 16 months later, okay, and he's going to do the
7 training and exercises for all of this stuff and he
8 would extract out of my rule and put it into his rule,
9 you know, just to give you an example of how this gets
10 a little bit crazy.

11 MR. CHEOK: And I think you all are saying
12 - you both are saying the same thing.

13 MR. REED: Yes.

14 MR. CHEOK: I mean, what you are proposing
15 is to actually map it out -

16 MR. REED: Map that out.

17 MR. CHEOK: - our table so that when we
18 are going forth with this recommendation 4 rule that
19 we are taking into account everything that's being
20 considered and talked about in recommendation 8.

21 And so when they go forth in their rule
22 making they will already have this road map mapped out
23 for them and they will be consistent with us.

24 MEMBER CORRADINI: I guess - I think
25 Steve's idea is great but I guess I assumed the Japan

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1 task force had this all on paper already.

2 MR. CHEOK: Not to the level of details
3 that probably - that's going to be needed.

4 MEMBER CORRADINI: Well, the high levels -
5 I figured you systems engineers had it all figured
6 out.

7 MR. REED: It's, again, a drawing with all
8 my lines on it and they would be down to this kind of
9 level.

10 MR. CHEOK: And, you know, I think it's
11 optimum to have both rule makings go out at the same
12 time but logistically it's going to be a nightmare to
13 have two or three different rules hit the streets at
14 the same time, both for the staff and for the
15 industry.

16 MEMBER SCHULTZ: I really wasn't talking
17 about having the Gantt Chart be perfect. I was
18 really talking about making sure that the interactions
19 were, in fact, are happening because as we've seen in
20 other areas there's valuable information that's being
21 done over here that is not necessarily affecting us -
22 the program, another area, and it's because of the
23 same issues.

24 We have to move forward so we don't - you
25 know, we'd love to have their input but we have to

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1 move forward and that's not a good situation - the way
2 to work it. But that's all right. It should not be
3 on a collision course either.

4 MR. CHEOK: Maybe next time when we come
5 back in March we'll talk to you about a draft rule we
6 can have at the beginnings of such a road map.

7 CHAIRMAN SHACK: That would be helpful.
8 Thank you.

9 Any additional comments? Well, thank you
10 very much. It was a tour de force presentation, Tim.

11 MR. REED: Thank you. I didn't need
12 anybody beside me and didn't want my water.

13 CHAIRMAN SHACK: The odds - you were going
14 pretty good but it was all safe and controlled.

15 MR. CHEOK: I picked this seat for a good
16 reason.

17 MEMBER STETKAR: You see - you see the
18 bruises. They choreographed this thing, you know, or
19 something.

20 CHAIRMAN SHACK: Well, we're adjourning
21 then. Thank you very much.

22 (Whereupon, the above-entitled meeting
23 concluded at 11:53 a.m.)

24

25

Station Blackout/Mitigating Strategies Rulemaking

Advisory Committee on Reactor Safeguards
Regulatory Policies and Practices Subcommittee

December 5, 2012

Purpose

- Provide the ACRS with a status of our rulemaking activities
 - Status on efforts to develop the regulatory basis and proposed rule
 - Current thoughts on draft rule language
- Obtain ACRS feedback to inform our rulemaking efforts going forward

Background

- Commission direction:
 - Initiate rulemaking with an Advanced Notice of Proposed Rulemaking (ANPR) in SRM-SECY-11-0124
 - Use a performance-based regulatory approach similar to B.5.b requirements (now 10 CFR 50.54(hh)(2))
- NRC published the Station Blackout (SBO) ANPR on March 20, 2012
 - To gather feedback to support regulatory basis development
- Staff held Category 3 public meeting with stakeholders on April 25, 2012
 - To inform stakeholders and support improved written comment
- ANPR comment period ended on May 4, 2012
 - 45 comment submissions

NTTF Recommendations

- This action stems from the Near Term Task Force (NTTF) Report
- NTTF Report recommendations most directly involved are:
 - NTTF 4.1 – driving force for the SBO Rulemaking
 - NTTF 4.2 – evolved into the Mitigating Strategies Order (EA-12-049)
- Additional NTTF Recommendations that relate to this rulemaking effort include:
 - Recommendation 8 rulemaking - “Onsite Emergency Response Capabilities”
 - Recommendation 9.3 request – staffing and communications
 - Recommendation 7.1 Order – Spent fuel pool level instrumentation
 - Recommendation 5.1 Order – BWR Mark I and II Vents
- Most of the remaining NTTF recommendations have some connection

ACRS Feedback

- From October 13, 2011, memorandum - staff should:
 - Issue an ANPR
 - Require licensees to provide an assessment of capabilities to cope with an extended SBO:
 - System vulnerabilities
 - Capabilities to mobilize resources
 - Delivery of offsite resources
- Staff asked for feedback on these issues in the ANPR
 - Capability assessment in integrated plans

ACRS Feedback Cont'd

- ANPR feedback on ACRS thoughts:
 - The issues raised are being addressed as part of EA-12-049 implementation
 - New plants should be examined through the combined license and design certification process
- EA-12-049 was issued on March 12, 2012
 - Largely bounded all of NNTF Recommendation 4
 - Performance-based approach
 - As a result - feedback and lessons-learned from implementation of EA-12-049 is key

Evolution of the Regulatory Approach

- Staff considered feedback from all sources:
 - 45 sets of comment submissions from ANPR (NRC-2011-0299)
 - Feedback received through development of NEI 12-06 and JLD-ISG-2012-01 (Mitigating Strategies Order implementation guidance)
 - Internal discussions with JLD steering committee including feedback from other ongoing post-Fukushima efforts
- Staff's thinking has evolved substantially

Key and Early Insights

- EA-12-049 initiating events are unbounded in terms of the “beyond-design-basis external events” – the bounds are set in the implementing guidance
- Traditional success criteria cannot be established – instead we must establish a framework with procedures, guidance, and equipment to give operating staff the best chance to mitigate the beyond-design-basis events as the objective
- Applying “special treatment” assurance requirements (e.g., equipment qualification) would likely add large costs with little safety return
- Developing the mitigating strategies for beyond-design-basis external events should result in a bounding approach for the mitigation of loss of all alternating current (ac) conditions under more benign conditions

Key and Early Insights Cont'd

- Regardless of the cause of the “loss of all ac” mitigating strategies requirements apply
- 10 CFR 50.63 requirements to withstand and recover for a specified duration are no longer limiting requirements; licensees must maintain/restore functions indefinitely per Order EA-12-049
 - Coping time determinations may no longer add value *per se*
- Flexibility should be afforded to designers to support use of strategies that rely on design rather than human action
- The mitigating strategies can be built on the work done in Regulatory Guide 1.155/NUMARC 8700 (that supported 10 CFR 50.63) – but become more involved due to the event conditions, duration, and severity

Draft Rule – Current Thoughts

- All necessary changes to the regulations are part of making EA-12-049 generically applicable
 - All changes stem from adequate protection provisions
- Making EA-12-049 generically applicable drives 10 CFR 50.63 change:
 - EA-12-049 requirements apply regardless of the event sequence that leads to a “loss of all ac power” condition, whether from a beyond-design-basis-external event or from a loss of offsite power with failure of the onsite emergency ac system (e.g., failure of two emergency diesel generators (EDG))
 - 10 CFR 50.63 specified duration determinations per Regulatory Guide 1.155 are outdated and the more restrictive EA-12-049 adequate protection requirements to have strategies that maintain or restore key functions apply
 - If left as is, 10 CFR 50.63 could lead to confusion regarding the governing requirements that must be met should a loss of all ac power condition occur

Draft Rule – Current Thoughts

Cont'd

- Ongoing implementation efforts at the procedures/guidance level are consistent with this (i.e., the way industry's FLEX guidelines fit into the plant procedures)
- Staff believes that it is important to maintain:
 - Alternate ac (AAC) power sources that were put in place for 10 CFR 50.63
 - EDG reliability
- Staff recognizes that the initial phase (using installed capacity) of mitigating strategies established to address beyond-design-basis external events should bound “10 CFR 50.63” SBO sequences
 - Need feedback from order implementation to confirm this view
 - This issue will likely be discussed in either the proposed rule or statements of consideration and may include consideration of reasonable minimum times (using installed capacity) to withstand conditions

Draft Rule –Current Thoughts Cont'd

- Staff believes that there could be more flexibility in the proposed rule than provided by the Order
- Robust AAC sources could be allowed
 - Meet General Design Criterion 2 and \geq available physical margin
 - Independent, diverse, and separate from current 1E ac power sources
 - Multiple and separate supply paths to all emergency ac buses
 - Requirements for portable independently powered equipment as a last means of defense would remain
- Perhaps alternatives such as that being pursued by R.E. Ginna should be allowed:
 - Local diesel generator powering motor-driven auxiliary feedwater pump with 24 hour Cat. 1 seismic water source (robust decay heat pump)

Next Steps

- Staff continues developing the proposed rule and supporting regulatory basis
- Challenging schedule
 - Order implementation: Guidance issued 8/12; Plans to be submitted; 2/28/2013; Implementation: 2 refueling outages - no later than 12/2016
 - Proposed rule due: April 2013 (4/4/13 to EDO, 4/18/13 to Commission)
 - Final rule due: April 2014 (4/4/14 to EDO, 4/18/14 to Commission)
 - Future ACRS interactions:
 - Proposed rule – March 5, 2013 (S/C), and April 11-13, 2013 (F/C)
 - Final rule – March 4, 2014 (S/C), and April 10-12, 2014 (F/C)