

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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MEETING WITH THE ADVISORY COMMITTEE
ON REACTOR SAFEGUARDS

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THURSDAY

JUNE 11, 2015

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The Commission met in the Commissioners'

Conference Room, 1st Floor, One White Flint North, 11555 Rockville
Pike, Rockville, Maryland, at 10:00 a.m., Stephen G. Burns, Chairman,
presiding.

COMMISSIONERS:

STEPHEN G. BURNS, Chairman

KRISTINE L. SVINICKI, Commissioner

WILLIAM C. OSTENDORFF, Commissioner

JEFF BARAN, Commissioner

ACRS MEMBERS:

JOHN W. STETKAR, ACRS Chairman

DENNIS C. BLEY, ACRS Member

MICHAEL L. CORRADINI, ACRS Member

JOY L. REMPE, ACRS Member

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

9:58 a.m.

NRC CHAIRMAN BURNS: Well good morning. We welcome members of the Advisory Committee on Reactor Safeguards, the staff and members of the public to today's meeting. This is one of our periodic meetings with the ACRS.

These meetings provide the Commission an opportunity to hear directly from the Committee about their work, and about detail in general and their detailed reviews on some of the significant issues that are -- that they've recently reviewed and in some cases are before the Commission for further review or decision.

We'll start presentations, followed by a question and answer session with the Commission. But before we begin, I would like to take a moment again to recognize one of our ACRS members for a significant honor recently bestowed on him. Dr. Dana Powers, an ACRS member for more than 20 years, was honored earlier this year by the National Academy of Engineering, which elected him as a new member.

The Academy elected Dr. Powers for his contributions to virtual nuclear power plant safety worldwide, and to radioactive source term processes. This is quite an honor, and again I think my fellow Commissioners acknowledged that earlier this year in a letter to him. But we want to extend, since you're here, extend it personally,

1 and again congratulate you. Any of my colleagues like to say anything
2 before we begin?

3 COMMISSIONER SVINICKI: I'd just like chime in on
4 Dr. Powers. I've sometimes in a light-hearted way teased his attention
5 or his calculating various things during the conduct of these meetings.

6 But in all seriousness, I know that he has shared his
7 knowledge with so many NRC staff through providing seminars and
8 lectures, and I really appreciate that, in addition to his many
9 contributions to the ACRS.

10 I think that he has shared his wealth of knowledge with
11 a lot of our current safety experts here at the agency, and he has -- is
12 really kind of a lion of a figure, really, in nuclear safety, and has a
13 tremendous history. His career is fascinating.

14 So if you're ever at a lunch or anything and the seat is
15 empty next to Dr. Dana Powers, I recommendation you take it, because
16 you'll hear some fascinating stories about the pioneers of the atomic
17 age, and again, I just congratulate you Dana. It's a richly deserved
18 recognition.

19 DR. POWERS: Thank you.

20 NRC CHAIRMAN BURNS: Thank you. Well, we'll
21 begin. John.

22 ACRS CHAIRMAN STETKAR: And with that, as we
23 usually do, I'll begin with an overview of ACRS activities since we last
24 met. Next slide, next slide. Since we met last October, I noticed two
25 faces that I recognize since last October, we've issued 13 reports.

26 The first four topics that I've listed here we'll discuss in

1 more detail during this briefing. So in the interest of time, I'll skip over
2 those. Go to the next slide and the next slide after that. Thank you.
3 We've issued our final report on the Watts Bar Unit 2 operating license.

4 We've also issue our final report on the combined
5 license application for South Texas Projects Units 3 and 4, which are of
6 the ABWR certified design. We've issued reports on license renewal
7 applications for Calloway and for Sequoyah.

8 Next slide. A report on a Commission paper for
9 integration and mitigating strategies for beyond design basis external
10 events and flooding hazards; a draft generic letter on treatment of
11 natural phenomena hazards in fuel cycle facilities, Branch Technical
12 Position 8-9 on open-phased conditions in electric power systems.

13 If any of you are electrical engineers, it's scintillating
14 reading. We've issued a letter on Standard Review Plant Chapter 19,
15 which relates to risk-informed reviews, and Section 17.4, the standard
16 review plan which pertains to the liability assurance programs, and a
17 letter on -- next slide, please -- a topical report for GE Hitachi simplified
18 stability solution for boiling water reactors.

19 Next slide. What are we working on now, in kind of
20 the near future. In the new plants area, we're following subsequent
21 combined license applications for the AP-1000 design at the Levy
22 County site, and the ESBWR at North Anna, which we'll begin in I
23 believe around the October time frame. We have a subcommittee
24 meeting, our first one on North Anna.

25 Small modular reactors. We've refocused our
26 attention from mPower, which we were following over the last couple of

1 years, to now Nuscale, and in particular we're starting to engage with
2 the staff on reviews of the design-specific review standard that needs to
3 be in place to support the staff review of that application, which I believe
4 is expected by the end of next year, by the end of 2016.

5 We have a lot of work to do, so we're starting to meet
6 with the staff on that topic this month.

7 We have been reviewing an early site permit for
8 PSE&G, and we expect to issue a report on that review this month, and
9 we are heavily involved in the review of the safety evaluation for
10 licensing the Cheyenne Medical Radioisotope Production facility.

11 We will be involved in that pretty heavily starting this
12 month again, through October, which according to our schedule we
13 plan to issue our final report in the October time frame to support that
14 licensing activity.

15 Next slide. In the area of license renewal, we've seen
16 an uptick in the license renewal activities from the hiatus of the Waste
17 Confidence Rule. We plan to have a full Committee meeting on Byron
18 and Braidwood in September of this year. It's on our schedule.

19 We had a briefing on the Indian Point license renewal,
20 status of Indian Point in April of this year, a subcommittee briefing. We
21 have a subcommittee meeting scheduled in September for
22 Davis-Besse license renewal, and unfortunately because of the timing
23 at which we send these slides in, we have a subcommittee meeting
24 scheduled on Seabrook, which has now slipped to March of next year.

25 We also continue to follow specific technical issues
26 related to subsequent license renewal, extended beyond 60 years and

1 those topics are listed here.

2 Next slide. We've been fairly heavily involved of late
3 in reviews of license amendments for operation of boiling water
4 reactors in the maximum extended load line limited analysis plus
5 region. In particular for Grand Gulf, we expect to finish our report on
6 that license amendment this month, and next month in July, we have
7 Nine Mile Point Unit 2 coming up.

8 We're following, continue to follow, it's a long story, the
9 risk-informed resolution of GSI-191. We had a briefing on that issue in
10 March of this year, a subcommittee briefing again, and that continues to
11 be a rather fluid subject, which we're trying to stay on top of. No pun
12 intended.

13 We are we? Next slide. Fukushima is entering a
14 really important phase, in our opinion, of transitioning to actual
15 rulemaking activities, and more importantly implementation of both
16 hardware and guidance at individual sites. We're following very
17 closely the containment protection and release reduction rulemaking for
18 BWR.

19 We have subcommittee meetings scheduled, which I
20 was informed this morning are still moving around a little bit. But in the
21 July and August time frame, and we'll be following very closely the staff
22 schedule for that rulemaking.

23 We'll continue to follow, you'll be briefed in a few
24 minutes here on the mitigating strategies. But we'll continue to follow
25 that rulemaking as it evolves, and the industry's implementation
26 guidances regarding those strategies.

1 A few other items I've listed here, I think that you can
2 read at your leisure, and the next slide. We are following, you'll hear
3 more about the cumulative effects of regulation and risk prioritization
4 initiative. In particular, the staff path forward after Commission
5 direction on that initiative and again the industry guidance in terms of
6 implementing those initiatives.

7 We continue to follow the risk management regulatory
8 framework. We had a briefing on its status just earlier this week, and
9 have our next subcommittee briefing scheduled currently for
10 September. We continue to engage with the staff, research staff on
11 their development of the Level 3 PRA project, and also their
12 development of human reliability analysis methods.

13 We are just beginning our work on the biannual report
14 on the NRC Safety and Research Program, which we plan to issue that
15 report in March of next year, according to our normal schedule. And
16 that's -- that's kind of a brief overview of where we are and what we've
17 done since we last met with you.

18 The next topic on our briefing is the proposed
19 rulemaking for mitigation of beyond design basis events, and because
20 I'm on a roll, I'll keep talking.

21 Next slide. As you're well aware, the draft proposed
22 rule consolidates several activities: order requirements for mitigation
23 of beyond design basis external events, requirements for monitoring
24 spent fuel pools, station blackout mitigation strategies, onsite
25 emergency response capabilities.

26 Next slide. Please, next slide. Requirements for

1 several accident management guidelines, integration of response
2 capabilities and mitigation strategies, emergency plan requirements,
3 and a number of other items currently being addressed by the industry,
4 for example, flex implementation guidance.

5 Next slide. In April of this year, we issued a report that
6 contained two major recommendations. The first recommendation is
7 summarized on this slide, and it was the draft proposed rule should be
8 published for public comment subject to the following items:

9 That the public comment period should be extended
10 beyond the proposed 75 days; that Section 6 of draft regulatory guide
11 DG-1301 should be completed, which by the way we received a draft
12 version of that draft guide just this week, and indeed Section 6 has
13 material in it; and that the staff should confirm that NEI-1206 Revision 1
14 is published in its final form, and that the guidance in that report is
15 acceptable to the staff.

16 Our report contained a second recommendation that I'll
17 get to in a few minutes here, but I'd like to set the stage for that with a
18 little bit of background and context on a couple of topics.

19 Next slide. Severe accident management guidelines.
20 The staff has concluded that the requirements for SAMGs cannot be
21 justified according to the quantitative criteria that are applied under the
22 backfit rule.

23 However, we observed that the conclusion was based
24 only on a limited analysis that was performed to evaluate the safety
25 benefits from venting options for BWRs with Mark I and Mark II
26 containments. So it was a fairly limited analysis.

1 Despite the lack of quantitative justification, the staff
2 also noted, however, that the SAMGs do indeed enhance defense
3 indepth for accident mitigation, containment and emergency planning.

4 Next slide. During our meetings, it was apparent to us
5 anyway that the staff, the industry and numerous public stakeholders
6 that we had feedback from agree that there are benefits to the SAMGs.
7 The BWR and PWR Owners Groups have completed updates to their
8 generic SAMGs. They were completed last fall, and licensees are
9 currently working on developing updated to their plant-specific
10 guidance.

11 So in our view, the issue is not whether SAMGs should
12 be developed and implemented, because everyone seems to agree
13 that they're good and they should.

14 Next slide. The primary issue at hand seems to be
15 rather that confidence is needed that the SAMGs will be updated and
16 will be maintained current throughout the plant lifetime. In our letter,
17 we state that confidence can be assured if each licensee makes a
18 formal licensing commitment to develop, implement, maintain and train
19 on those SAMGs, and that those commitments are subject to staff
20 oversight.

21 Next slide. There's a second related topic for our
22 second recommendation, and that is the integration of response
23 capabilities and mitigation guidance.

24 The draft rule language in particular states that the
25 following types of guidance should be integrated with the emergency
26 operating procedures, and the guidance that's called out specifically in

1 the rule language is the mitigation strategies for beyond design basis
2 external events or, as popularly known, the flex guidance, the existing
3 extensive damage mitigation guidelines, the EDMGs, and the severe
4 accident management guidelines, the SAMGs.

5 Next slide. A little perspective. One of the important
6 lessons learned from the Three Mile Island accident was that the
7 event-based procedures and training that were in place in the industry
8 at the time could lead operators and decision-makers into traps, if the
9 evolving event scenario didn't quite match the entry conditions or the
10 implicit assumptions that were built into those procedures.

11 That realization prompted a major effort to effectively
12 revise the overall concept for operator response during accidents, and
13 resulted in the development of what we now recognize as
14 symptom-based emergency operating procedures that focus on plant
15 safety functions, rather than emphasizing a need to very quickly
16 diagnose, identify the particular event that is occurring, and the needed
17 response to that particular event.

18 The symptom-based procedures have demonstrably
19 enhanced operator performance, and have improved reactor safety,
20 and we fully agree with the staff that the symptom-based EOP
21 framework should not be altered by the proposed rulemaking. The
22 industry also, by the way, fully supports that notion.

23 Next slide. You're there. We've also noted,
24 however, that guidance that extends beyond the EOPs has been
25 developed over time in response to specific regulatory issues, and that
26 guidance often applies to a particular set of event-based conditions.

1 For example, guidance for a fire in a particular room.
2 Guidance for flooding at a particular compartment at a particular
3 elevation in a nuclear power plant. Guidance for response to loss of a
4 large area of the plant due to severe fire or an explosion, specific station
5 blackout types of scenarios.

6 We've noted that there's overlap and duplication of
7 strategies among these various procedures and guidance that have
8 been developed over time, and that the event-based focused of this
9 guidance often requires operators to determine which particular set of
10 guidance might be most appropriate for the evolving plant conditions.

11 Next slide. These types of event-based decision
12 prescriptions are fundamentally contrary to the symptom-based focus
13 that's within the EOPs. As I noted a couple of minutes ago, actual
14 events may not match the criteria or the assumptions that are built into
15 many of those event-based procedures.

16 Efforts to determine which particular set of guidance is
17 most appropriate adds complexity to decision-making, during what is
18 often a very challenging situation. Remember, these are outside of the
19 normal EOPs, and that in turn could cause confusion or delays in timely
20 response. And I might add we have actual operating experience that
21 substantiates those concerns.

22 We've had fire events at plants. We've had
23 complicated losses of support systems, where operators have
24 eventually responded fine, but have been a bit delayed in their
25 response, because of a need to determine what the most appropriate
26 guidance might be.

1 Next slide. So with those considerations in mind, and
2 now I get to the second major conclusion and recommendation in our
3 April letter, and that is that a more comprehensive symptom-based and
4 function-oriented framework should be developed for integration of
5 response capabilities that extend beyond those EOPs.

6 Next slide. And in particular, the framework should
7 coordinate the strategies and guidance currently distributed among the
8 following sets of procedure and guidance, and particularly the fire
9 response procedures, flooding response procedures, flex support
10 guidelines that are currently being developed, the existing extensive
11 damage mitigation guidelines, and the severe accident management
12 guidelines that are either being developed or enhanced.

13 And with that, I will turn the attention to Dr. Michael
14 Corradini.

15 DR. CORRADINI: Thank you, Mr. Chairman. So the
16 next topic that we want to discuss with you is containment-hardened
17 vents, and the associated interim staff guidance.

18 Next slide, please. So as you're well aware, the
19 original order was 12-050, that required licensees to installed hardened
20 vents capable of removing the heat and thereby lowering pressure
21 within containment.

22 Subsequent to that, the Commission deliberated then,
23 I guess the right way to say it, is took away the first order and installed a
24 new order, 13-109, which included additional requirements for the
25 hardened vent, to ensure that venting functions are able to operate
26 under severe accident conditions.

1 When I say severe accident conditions, pressures
2 beyond the design-based temperatures, potential radiation dose areas,
3 and potentially hydrogen concentrations that have to be considered.

4 Next slide, please. So the way in which staff has
5 decided to deal with this is a phased approach. This was
6 recommended to ensure implementation with minimal time delays.
7 And so the first phase, excuse me, which is wetwell venting, the wetwell
8 venting system, the ACRS did review that back in October of 2013, and
9 issued a letter to the EDO discussing that.

10 So what we're here today to discuss is really Phase 2,
11 drywell venting systems or alternative approaches.

12 Next slide, please. So the ISG, as designated here --
13 if I keep on saying it, I'll get it wrong -- the Interim Staff Guidance
14 endorsed the industry's guidance, NEI-1302, with exceptions and
15 clarifications to assure that all the Phase 2 objectives are met.

16 That guidance extended the Phase 1 approach, and
17 the revised NEI document to include the guidance for implementation of
18 both phases of the order, and so essentially allowed one to go from
19 Phase 1 to Phase 2 in a structured fashion. In addition, the revisions
20 to the ISG also addressed the ACRS' concerns from our original report
21 on Phase 1, as well as recommendations for that review.

22 Next slide, please. So in the ISG now, the guidance
23 proposes three possible approaches to Phase 2, and so what I'll do is
24 talk about them in kind of the two extremes, the first method being direct
25 use of drywell venting systems, and the second approach is alternative,
26 actually two alternative approaches that would rely on severe accident

1 water addition.

2 They have an acronym for everything, but we won't go
3 there, as a common element. In fact, if I get, and I'll get them wrong.
4 But the key is two different ways of doing this. So one alternative is to
5 use the wetwell vent, as long as available with water addition to the
6 containment, and when the wetwell vent floods, that is when the water
7 level rises from continual additions, such that you can't vent through the
8 wetwell, then venting would be transferred to a severe
9 accident-capable drywell venting system. So that's one approach that
10 was originally there.

11 Next slide, please. So the alternative approaches,
12 there are actually two, and I'll just speak of one, which is I'll say the
13 other extreme is to use a wetwell vent with water addition to the
14 containment, but monitor and control the rate of water addition.

15 Again, there is a term for it, severe accident water
16 management, and by managing the rate of flow of water in, you now
17 would not require a drywell vent. Rather, you could for days be able to
18 manage the accident, and essentially with monitored and controlled
19 water addition, preclude the need of a drywell vent.

20 So the ACRS really agrees with the staff's analysis,
21 and we feel that both of these approaches satisfy the Order.

22 Next slide. The staff and the industry performed a
23 series of -- an extensive series of MELCOR/MAAP analyses, staff with
24 MELCOR, industry with MAAP, that demonstrated that the water
25 addition approach is necessary to maintain acceptable drywell
26 temperatures during venting, so that one can accomplish this in a

1 successful manner.

2 And I would just note parenthetically, and I think we do
3 it in the letter, that as further information becomes available from the
4 damaged reactors at Fukushima, this information can really help assure
5 that models used for these analyses prove valid.

6 I'll just say parenthetically that a couple of the
7 members, of our members, Dr. Rempe, working with the DOE, and Dr.
8 Powers, working with the staff, are monitoring this on a continual basis,
9 trying to understand what the examinations are showing us relative to
10 the damaged reactors as things evolve and as the Japanese do their
11 decontamination and decommissioning.

12 Next slide, please. So our recommendations -- our
13 conclusions and recommendations. First, the staff really should
14 address our comments, achieve reasonable closure to the open items
15 identified for discussion with the industry, and answer the public
16 comments before issuing the ISG.

17 Our feeling is it's got to be a consistent, complete
18 document. You don't want to go out with anything in a partial state.
19 Secondly, we'd like the opportunity to review the final version of the ISG
20 and its supporting documents, so that we can look at it. Some of what
21 we reviewed was in a state of flux and various revisions, and so we'd
22 like to see the final version.

23 Next slide, please. In particular, the staff's draft ISG
24 and NEI-1302, particularly Revision OE2, is what we reviewed at the
25 time of the letter. We feel it provides reasonable guidance on the
26 system design and the implementation on a generic basis. On the

1 other hand, it's very clear that substantial work remains to evaluate,
2 justify and implement things on a plant-specific basis.

3 We also want to make sure that it's clear the staff is
4 taking steps to address our recommendation and concerns. Staff has
5 been very cooperative, coming back and talking with us on a continual
6 basis. So that Phase 1 program review also applies to Phase 2.
7 Each of these will require additional attention from the staff during the
8 review for plant-specific, the hardened venting systems for
9 plant-specific basis.

10 Finally, we want to note that because of the inherent
11 severe accident modeling uncertainties, there's not a way but there are
12 many ways in which things may evolve. Particularly for Mark II BWRs,
13 all the methods of water addition during a severe accident should be
14 considered, including drywell sprays, to take a full advantage of any
15 reductions one can get in terms of the radioactive source term, when
16 one does wetwell venting. And with that, I'll turn it back to the
17 Chairman.

18 ACRS MEMBER CORRADINI: We'll hear from Dr.
19 Bley on the cumulative effects of regulation and risk prioritization
20 initiatives.

21 DR. BLEY: Thank you, John. Excuse me. I have
22 trouble saying the first one myself.

23 CHAIRM BURNS: Is there not an acronym from that?

24 DR. BLEY: Yes. CRPM, but they're as bad. So
25 we're going to talk about cumulative effects of the regulation process
26 enhancements that are proposed, and the prioritization initiative.

1 Next slide, please. I wanted to start with a little
2 background to put this in perspective. Since WASH-1400 in the
3 mid-1970's, and followed by the TMI accident, where some of the
4 reviews reminded us that in fact WASH-1400 gave us a way to deal with
5 some of those issues and we weren't using them, the Commission has
6 issued a string of guidance, policy statements and the staff has followed
7 with regulatory guidance as well, on the use of risk information in the
8 regulatory process.

9 So we have 25 to 40 years, depending on where you
10 start counting, of history. There was some concern a few years ago
11 expressed by people inside and outside of the agency, that maybe
12 we've lost a little bit of our focus on the risk-informed side of regulation,
13 and I think that led to the work on the cumulative effects of regulation.

14 As that was in progress, in 2012 Commissioners
15 Apostolakis and Magwood issued their COM, proposing a risk
16 prioritization initiative, that would allow bringing risk information and
17 encourage bringing risk information into the scheduling of responses to
18 regulatory issues, and ranking them by safety significance.

19 The goals were to speed completion of the most
20 important safety issues, and in this way begin to address cumulative
21 effects of regulation to some extent, and they thought it would be helpful
22 incentivizing, getting better PRAs out in the plants.

23 A few months later, the Commission issued guidance
24 to pursue that effort, but not to interfere with the cumulative effects of
25 regulation work that was going on. Pardon me. As the staff worked
26 on these issues, they began to see that they're more and more tied

1 together throughout the plants, and came back and requested that
2 these two be tied together, and in fact a year ago the Commission
3 issued an SRM that combines the two.

4 Now we have the SECY from the staff, identifying four
5 options, the usual Option 1 of status quo, and Options 2, 3 and 4, which
6 progressively extend these ideas from a voluntary limited program to a
7 very broad program.

8 Next slide. I'm sorry. Spring and summer in
9 Washington is beautiful, but I suffer the ill effects of that beauty to some
10 extent. In their Option 2, they want to augment the existing regulatory
11 process for power reactors with the proposed practices to address both
12 cumulative effects and risk prioritization.

13 This would be a voluntary process that would require
14 getting NRC approval to adjust the schedules for dealing with
15 regulatory issues, regs, orders, documented commitments and license
16 conditions. We noted that it wasn't clear what to do with inspection
17 findings, and in our discussions with staff, their view was that the
18 inspection issues that can be done readily should not enter this
19 process, but move quickly.

20 But if something were significant enough that it ended
21 up as a docketed commitment, then it ought to belong in this process.
22 I don't think that it's completely clear in the SECY that that's the case.

23 The second part of this was NRC would pilot an expert
24 panel process to look at these issues, similar to other expert panels in
25 other areas, looking at risk issues, kind of following the integrated
26 decision process model from Reg Guide 1.174.

1 Next slide. Option 3 extends this to establish
2 voluntary alternative plant-specific implementation schedules and new
3 rules. It took us a while to parse this, and at least us it seemed to -- on
4 the surface a subtle extension, to go from requesting to make changes
5 to existing rules and scheduling process, to putting these schedules in
6 as part of the new rule.

7 I'm sure there's concern that -- and we raised it, that in
8 fact this might make the rulemaking process pretty burdensome. Their
9 proposal in Option 3 is to at least at first try this, and see if it can work.

10 Next slide. In Option 4, the voluntary and process of
11 coming in with requests for changes and getting an NRC approval
12 would be changed into a rulemaking process, that would allow risk
13 prioritized scheduling flexibility, and in fact, it would allow the licensees,
14 depending on how their rule came out, to do this without prior NRC
15 approval.

16 But to do that, they would need to have a PRA that was
17 very thorough and could support this kind of work. For the staff, this
18 would be a very substantial effort for the licensees. It isn't clear
19 whether it would be accepted in any substantial way.

20 Next slide. We get to our letter and our
21 recommendations. We endorsed implementation of Option 2,
22 proceeding with a trial application of Option 3. We were concerned
23 about the Option 3 side being maybe too difficult to carry out, but maybe
24 it would be useful to have at trial.

25 Going ahead with Option 2 would allow the staff and
26 licensees to gain experience with this process and see how it works. It

1 would also give us some idea of how much industry participation we'd
2 see in such a process.

3 Our second recommendation was that the staff should
4 explicitly include risk information as input to decisions and priorities for
5 proposed regulatory actions, regardless of the Commission's decisions
6 about specific options or approaches presented in the SECY.

7 It seems pretty bold on the surface, but we weren't
8 trying to be bold. We were trying to remind the staff that in fact you
9 have decades of guidance already on the table, and that rulings on this
10 specific issue wouldn't obviate all of those in the past.

11 Next slide. We noted that one of the challenging
12 aspects of the prioritization process will be to take quantitative
13 information from the PRAs of power plants, and combine that with some
14 quantitative information, but also a lot of qualitative information with
15 regard to security, emergency planning, radiation protection and
16 equipment reliability.

17 In a way, that's what the Reg Guide 1174 integrated
18 decision process is about, but formalizing this will take some effort. I
19 think efforts are already in progress to see how they might want to
20 proceed with this, and how industry's looking at it.

21 Our last slide, we recommended that if the
22 Commission endorses a prioritization process, then in fact the staff
23 should expedite development of the regulatory guidance for its use and
24 reviews. There has been a lot of work on both sides so far testing this
25 idea, and it should proceed very quickly if in fact we move forward.

26 And with that, I think I'll turn it over to Dr. Joy Rempe, to

1 talk about our study of research projects.

2 DR. REMPE: Thank you, and as Dr. Bley indicated, the objective of
3 my presentation is to discuss and provide for you an overview of how
4 ACRS does assess the quality of research projects.

5 Next slide, please. As I'm sure you're well aware of
6 the -- throughout its history, an essential ACRS activity has been to
7 review NRC-sponsored research.

8 These research activities, review activities include
9 reviewing research that's been performed in support of specific
10 regulatory activities, episodic reviews of important ongoing research,
11 biannual reviews of the overall NRC reactor safety research program,
12 and since 2004 we have performed reviews of -- quality reviews of
13 selected research projects.

14 The primary focus of this presentation is to provide you
15 an overview of the latter item, but I will briefly discuss our biannual
16 review process.

17 Several factors -- next slide, please. Several factors
18 motivate ACRS' performing this quality review. It does provide the
19 agency an independent evaluation of the quality and utility of research
20 programs, and secondly, it helps the agency meet a requirement that's
21 been instituted by the Government Performance and Results Act of
22 1993 or the GPRA Act of 1993.

23 The next few slides provide you an overview of the
24 process that we use to perform this quality review. I should note that
25 the process and the criteria were jointly developed between ACRS and
26 the Office of Research. Typically, ACRS selects two or three projects

1 from a list that's been provided by the Office of Research to perform.

2 Then a panel of three ACRS members are assigned to
3 each project to complete an indepth review. As part of their review,
4 this three member panel will then meet with the Office of Research, as
5 well as the sponsoring program office that has developed the user
6 need, to better understand that user need and to understand the scope
7 of the project.

8 The three member panel will develop a written report,
9 and they'll present it to the full Committee for peer review, and the
10 quality ratings that are provided in our report are actually finalized by
11 the whole Committee. Then the annual report is submitted to the
12 Director of the Office of Research.

13 In the next -- in the slide that's up there now, the way
14 that we develop our quality rating is evidenced from this value tree
15 that's shown on this slide. ACRS defines success using two major
16 characteristics, documentation and that the results meet the objective
17 of the project.

18 We have weighting factors of .25 for the
19 documentation and .75 for results meeting the research project
20 objectives. Then we further develop and evaluate these
21 characteristics using the lower level performance measures that are
22 shown in the lower level boxes on this value tree.

23 The characteristic of documentations evaluated using
24 performance measures of clarity of presentation and the identification
25 of major assumptions. The characteristic of results meeting the
26 objectives is evaluated using performance measures of justification, of

1 major assumptions, the soundness of the technical approach and the
2 results, and the ability of the project to identify and appropriately treat
3 uncertainties and sensitivities.

4 The values and numbers that are shown beneath each
5 of these lower tier boxes are the weighting factors that we use for each
6 performance measure, and as you can see, the soundness of the
7 technical approach and the results is given the most emphasis by
8 ACRS.

9 The table in the next slide shows the scoring system
10 that we use to evaluate our quality scores, and the scoring system is
11 actually driven by the GPRA Act of 1993.

12 The scoring system was developed in a way to allow
13 improvement in the system, and as a starting point, ACRS considers
14 the score of five, which does indeed correspond to satisfactory or
15 professional work that satisfies the research objectives.

16 In many such evaluations, a score less than excellent
17 is given a negative connotations, but that shouldn't be the case with
18 these ACRS quality evaluations. But nevertheless, we do look at the
19 full report and we adjust the score upward or downward based on
20 attributes we see as we complete the review process.

21 In the next slide, I listed the report titles as well as the
22 report numbers that we considered in our fiscal year 2014 review, and
23 as you may have realized from the report we submitted to you, we gave
24 each of these reports a ranking of satisfactory, which means that we
25 considered them professional works that satisfied the research
26 objective.

1 And the last point of this topic, I'd like to mention that
2 we've already identified the reports, assigned the committees or the
3 expert panels that will be reviewing those reports for a 2015 quality
4 review.

5 Next slide. As I mentioned at the beginning of this
6 presentation, I want to briefly discuss our biannual review of NRC's
7 research program. We've already started that process for this next
8 review, and we consider in this review the programmatic justification for
9 the research, as well as the technical approaches and progress of the
10 work.

11 We try to also identify research that's crucial to NRC
12 missions, and on the other hand over the years ACRS has recommend
13 that an ongoing research project be stopped, because the ongoing
14 research has satisfied the regulatory objectives.

15 We anticipate, as the Chairman mentioned earlier in
16 his presentation that will complete our activities and provide a report to
17 the Commission by March 2016, and the final report will be issued as
18 Volume 12 of NUREG-1635.

19 The last slide of this presentation shows the outline
20 that we use in our research report, and as you can see from the bullets
21 in this slide, we do have a fairly large review that we perform, covering
22 most of the agency's research areas, and we also identify each year a
23 current topic of interest that we recommend that the agency pursue
24 more heavily. With that, I'll turn it back to the Chairman.

25 ACRS CHAIRMAN STETKAR: Thank you, and
26 completes our part of the briefing. So we'll be happy to entertain

1 questions.

2 NRC CHAIRMAN BURNS: Well thank you. Thank
3 you all for your presentations, and as I emphasize again, the important
4 work that the ACRS does, in terms of supporting the agency's mission,
5 both from a standpoint of some of the required reviews that are
6 necessary, related to, you know, particular licensing matters, as well as
7 doing sort of a general overview of things like our research program,
8 and then specific initiatives that come before us.

9 Obviously this morning, we've talked about several
10 things that are currently on the Commission's plate or soon to be, but
11 particularly in terms of just to give some context, again the Commission
12 recently met on the paper on the cumulative effects of regulation, and is
13 deliberating on that, and recently received at the end of April/beginning
14 of May the mitigation of beyond design basis events rulemaking.
15 That's a mouthful.

16 And we'll be having a Commission meeting I believe in
17 July, where we'll further receive presentations with respect to that. But
18 again, I think the review that the ACRS is doing is valuable to providing
19 us insights on that.

20 I'll start with a few questions, and I think Rochelle, you
21 need to start my timer there. I'm already into it. Excuse me. Yeah, I
22 think I'm having the effects that you were mentioning as well here.

23 (Off mic comments.)

24 NRC CHAIRMAN BURNS: Why thanks.

25 (Off mic comments.)

26 COMMISSIONER SVINICKI: I was going to throw

1 one at Bley that might be..[Laughter]

2 NRC CHAIRMAN BURNS: Yes, this is mitigating a
3 design basis event right now, I think. Let me start with the mitigation of
4 beyond design basis rulemakings and, you know, one of the issues
5 certainly that we've been -- I think we've been hearing, you know, from
6 the industry, and I appreciate the commentary you provide in terms of
7 the Committee's evaluation, is with respect to the severe accident
8 mitigation guidelines.

9 And again, I think as I understand it, the Committee's
10 recommendation is that imposing the SAMGs by rule would be an
11 unnecessary burden on licensees, due to the low likelihood of events.
12 As you know, even if we had sort of -- well, I would say more perfect
13 PRAs that quantified the benefits of SAMGs, you think you probably
14 would be in about the same position.

15 Help me again in terms of what the Committee's
16 consideration were here.

17 ACRS CHAIRMAN STETKAR: That's a good
18 question. I think we discussed this quite a bit obviously. The ability to
19 develop a generic quantitative justification for the safety benefits of
20 SAMGs is a, in my opinion anyway, a fairly onerous task, because in
21 many cases, the relative benefits of SAMGs are very, very
22 plant-specific.

23 So performing a few simplified generic analyses to try
24 to draw an overarching conclusion about the overall safety benefits
25 throughout the industry, I think, would be very, very difficult, and I think
26 that's part of the problem that the staff faced.

1 I think our letter, you've characterized our letter very
2 well, that the burden on licensees of requiring the SAMGs by regulation
3 would be substantial. In my personal opinion, there's also a risk that it
4 could substantially delay the actual development and implementation of
5 those SAMGs, and as I mentioned in my comments, that everyone
6 seems to agree that they're a good idea, and actually do bring safety
7 benefit.

8 So then the question becomes what's the most
9 effective path forward, and if I can use the glib concept of trust and
10 verify, we had experience where we trusted but we didn't have the
11 ability to verify in the past, and what we're recommending is to
12 reinstitute that, trust the licensees to implement the guidance, but make
13 a firm commitment in their licensing basis to do that.

14 And that would provide the staff then the opportunity,
15 through the oversight process, to examine and make their the fact that
16 they did it and the fact that they're keeping them up to date. That
17 seems to be a reasonable compromise, at least in our mind.

18 NRC CHAIRMAN BURNS: Okay, thanks. One other
19 thing, one of the other areas I found interesting is this -- the discussion
20 in terms of the various procedures that have come about over the
21 years, as we address certain types of events, and certainly the
22 symptom-based procedures in the EOPs, and then we have these
23 other, other things.

24 You mentioned FLEX procedures, other type of fire
25 response procedures and things like that. One of the things, in terms
26 of the Committee's evaluation, is -- and in terms of pushing or looking at

1 the benefits of the EOP, the symptom-based approach, and if you
2 changed it, did you look at or consider in terms of the benefits of having
3 to in effect do the change, going more completely to the
4 symptom-based in some of these other areas?

5 I want to make sure if I've understood this area
6 correctly, because what I heard is sort of this potential conflict, where
7 the operator is -- the operators, those in the plant, are having to
8 choose or identify what it is they need to do, and I'm trying to
9 understand where you all are coming from, I guess.

10 ACRS CHAIRMAN STETKAR: I'll try to frame it in
11 things that are in place. We've had some examples where there are
12 fire response procedures in place, and in many cases those fire
13 response procedures provide direction to operators of specific actions
14 to occur.

15 I'm not talking about now extinguishing the fire; I'm
16 talking about things like deenergizing power supplies; going out in the
17 plant and aligning flow paths for alignment. In some cases, if they're
18 deterministically based, based on very conservative presumptions
19 about what the damage might be.

20 So they're wrote procedures. Go do this if a fire
21 occurs in this location. We've had instances where people have
22 become too focused on doing that, and not focused on necessarily what
23 is else going on in the other part of the plant.

24 NRC CHAIRMAN BURNS: Okay.

25 ACRS CHAIRMAN STETKAR: Because this is a very
26 important event. It's a fire, and some of these procedures are very,

1 very complex. So we've seen -- we've actually seen that occur in
2 plants.

3 We're now seeing people saying well, the concept of
4 integrating the FLEX support guidelines, the existing EDMGs, the
5 SAMGs with the EOPs seems to be addressed in the sense of we'll
6 have a link from the EOPs into the FLEX guidelines.

7 We'll have another link from the EOPs into the EDMGs.
8 We'll have another link from the EOPs into the SAMGs, the same way
9 that we have links in principle now from the EOPs into the fire
10 procedures, into the flooding procedures.

11 And our concern is that we see a growing set of now
12 procedures that are developed with specific assumptions and guidance
13 in them. For example, the FLEX procedures guidance that we've seen
14 focus on a beyond design basis external event that causes a loss of all
15 AC power and loss of access to the ultimate heat sink. They don't
16 address other things.

17 Now we've been told by the industry that perhaps we
18 have not had enough exposure to the actual procedures, and we fully
19 admit that. We haven't. In fact, we're trying to work with the industry
20 to get exposure to their -- to the guidance, and how it will in fact be
21 integrated, and we're hopeful that perhaps some of our cynicism can be
22 alleviated.

23 But our concern is raised, because we see this growing
24 set of links to individual procedures, and we have that experience from
25 and analogy to the fire procedures in particular.

26 NRC CHAIRMAN BURNS: Okay, yeah.

1 ACRS CHAIRMAN STETKAR: So that's the genesis
2 of our idea of is it time to step back and look at all of these beyond the
3 EOP types of guidance, step back and say are there some basic
4 functions that we want to preserve, core, containment, mitigate off site
5 releases.

6 Given what you have available and what you don't
7 have available in the plant at a given time, what actions might you take?

8 NRC CHAIRMAN BURNS: Okay. That helps and
9 thanks.

10 ACRS CHAIRMAN STETKAR: Well answered.

11 NRC CHAIRMAN BURNS: No, that's good, that's
12 good. Dr. Bley, you talked about in terms of the cumulative effects,
13 and they're particularly noted in terms of -- you noted in a way,
14 particularly in terms of how the agency has tried to develop its use of
15 risk information and risk-informing, there's actually a fairly long history.

16 One of the things that is, as I understood it, in terms of
17 the, if you will, motivation or incentives it was viewed as, in terms of the
18 recent effort the staff undertaking for the, you know, risk prioritization
19 initiative and the cumulative effects, was in effect a further incentives, if
20 you will, for industry PRAs.

21 Some of I think what the Commission heard at our
22 meeting last month is while there are, I think, potentially good things
23 about the particular proposal we have, the incentives really aren't there.
24 And so I guess one of the questions for the Commission, as it
25 deliberates on this is should we endorse these particular efforts, absent
26 a lot of incentive for improvement in industry PRAs, and in those types

1 of efforts?

2 ACRS MEMBER BLEY: This is a hard one to stick to
3 Committee positions on. But I think I can. I think we've seen
4 evidence through the participation in the table top exercises and the
5 development of guidance on the part of the industry, that at least what's
6 proposed in Option 2 is likely to have a fair amount of support.

7 Going off our, this is just speaking for me, we've been
8 to some power plants and talked to people at various licensee facilities,
9 and there are some who will definitely pursue this, and who are very
10 interested in it. The one thing, and I don't remember if we wrote -- what
11 we wrote on NFP-805, but that experience we've chased.

12 I'm not sure if we've spoken as a Committee on that.
13 But there's a real mixture of opinion when you talk to people in the
14 industry and here at the NRC. Some say that was -- there was no
15 positive for the industry coming through that. Other ones say yeah,
16 they've gotten something from it.

17 So I've run across real mixed messages. But some of
18 the negative messages have been really sent broadly throughout the
19 industry, even to those who didn't participate and create the impression
20 that you might not be able to win at this process.

21 Others who have done PRAs have found things on
22 their own, and have fixed them and feel very positive about it. I think
23 what we said in this letter, at least hinted at, was that there is concern
24 that sometimes when we pursue risk-informed options, we add more
25 requirements and don't back off from the other side.

26 Or we do probabilistic analysis and then judge it based

1 on some deterministic criteria. For Option 4, we said in our letter, you
2 know, it's not at all clear that there's substantial -- that you'd get a lot of
3 industry participation.

4 And on Option 2, right, I think our feeling from what
5 we've heard is, and that's why we recommended it, that that definitely
6 has a positive effect, unless -- if somebody wants to add to this in any
7 particular way.

8 NRC CHAIRMAN BURNS: Well thanks, thanks. My
9 time's up. Commissioner Svinicki.

10 COMMISSIONER SVINICKI: Well thank you for your
11 presentations. I have a number of frankly scribbled notes here, some
12 thoughts and some questions. Maybe I'll just start at the beginning.

13 Chairman Stetkar, I appreciate your acknowledgment
14 up front that in terms of our regulatory activities post-Fukushima, we're
15 moving into, your words, a very important phase, and I think that's
16 definitely true.

17 As we look to codify in the rulemaking or undertake
18 rulemaking on a number of measures that we've not yet issued any
19 orders, it's very important to me that we get it right.

20 As a matter of fact, in the Commission's first meeting in
21 2011, after the events in Fukushima, I asked our then executive director
22 for Operations, Bill Borchardt, how would we avoid some of the
23 measures that had occurred post-Three Mile Island, that were
24 subsequently found either not to add value or not to add the value that
25 they were predicted to add, and many things were rolled back and it
26 was a somewhat chaotic situation for a number of years.

1 His answer to me was along the lines of well, we're
2 going to approach it, you know, in a very fact-based way, and we're
3 going to take the time to get it right. I know that there is this soft
4 objective of 2016 that the Commission itself has spoken to. I've
5 testified multiple times that is target or goal.

6 It is not a deadline in my mind, and when I look at the
7 sweeping scope of the mitigating beyond design basis rulemaking, it's
8 very important to me that we get it right. I'm told that the staff's
9 pushback to you on extending the public comment period by what I
10 believe to be a very modest time frame; frankly, I was thinking 90 days
11 would be an absolutely minimum.

12 I'm told that you are -- you with the staff, the NRC staff,
13 indicated that would interfere perhaps with 2016. But I think that
14 again, harkening back to Mr. Borchardt's testimony to me in 2011, it's
15 very, very important that we get it right.

16 Many of the measures are in place. So I think that
17 there is some level of artificiality to rushing a complex rulemaking out
18 the door. Rulemaking schedules are routinely extended. If we look at
19 our good friends in the Environmental Protection Agency and the Clean
20 Power Plant, you know, there's often statutory deadlines that are
21 missed by years, not months.

22 So I appreciate that the ACRS has probed that issue
23 with the staff. I also appreciate that the ACRS has looked closely at
24 the basis for SAMGs. I think that sometimes we lose sight of
25 something that you put up front, which is that there is broad, broad
26 agreement on the value of SAMGs.

1 This is not a discussion about having them or not
2 having them, and industry initiatives have been a part of this agency's
3 regulatory framework basically I think since its inception. We need to
4 remember that we do want to have a regulatory framework that gives an
5 incentive for matters and issues and measures that we do not have the
6 legal authority to compel.

7 We have a structure that brings those forward, often by
8 an industry initiative. That's been part of our history, and there is a
9 difference between having a permissive standard for the use of
10 qualitative factors, and having no standard at all.

11 If the standard for use of qualitative factors is if
12 something enhances defense indepth, it is justified, then I think we can
13 think of many, many measures that enhance defense indepth. So I think
14 we need, as a Commission, to preserve some standard on the use of
15 qualitative factors. So I certainly have been outspoken about that, so
16 that's nothing new to the ACRS.

17 I do, you confuse me a bit on integrated response
18 capability and integration of the procedures. Chairman Burns asked
19 you about this. I'm not comforted by your answer, because my vague
20 worry is that you would have us wander into writing people's procedures
21 for them.

22 As a matter of fact, your Slide 22 says "Requires
23 operators to determine which guidance is most appropriate for evolving
24 plant conditions." My margin note to that was yes, exclamation point.
25 They -- we again, there's great peril in countries that wander away from
26 a singular and exclusive obligation on the part of operators to respond

1 evolving emergency situations at a plant.

2 I think that, you know, my concern is, as I listen to your
3 answer to the Chairman and have read your letter report, you're in
4 search of some enlightened stage of integrated procedures that we
5 would have a perfect, exquisite forecast of how sequences of events
6 would evolve, and we would have completely informed pointers to
7 everything.

8 I again, you know, I'm comfortable that in this country,
9 we have great clarity on who's responsible for determining the set of
10 actions to be taken when something goes wrong, and it's not the
11 regulator. And with all due respect to the extensive knowledge of the
12 NRC experts, we do not have superior knowledge to the operators on
13 exactly what measures should be taken as site-specific events unfold.

14 And so I know you'd like to weigh in and tell me that's
15 not what you're seeking and not what you're doing. So I'll give you a
16 chance to pushback on that.

17 ACRS CHAIRMAN STETKAR: That's not what we're
18 seeking and not what we're doing.

19 (Laughter.)

20 ACRS CHAIRMAN STETKAR: No. In seriousness,
21 you make a lot of good points, and perhaps I think you may have not --
22 perhaps we didn't, both in our letter and in my response to the
23 Chairman, elaborate our actual concerns.

24 I think that at this juncture, this is mostly mine. It's
25 reflected to some extent in our letter, that we have an opportunity now
26 to step back and say look, we've learned some things. We've learned

1 some things about how we've been treating events beyond the EOPs
2 over the last 20 to 25 years.

3 We've learned some things from Fukushima. We're
4 now going forward, developing additional guidance for these beyond
5 design basis events, and many of these fires and internal plant floods
6 and station blackout events are indeed beyond design basis events.

7 And I think our recommendation is to take a step back
8 and take a look at more of an integrated perspective, and see that
9 rather than developing yet another set of procedures that operators will
10 need to be trained on individually, and might, might try to force the
11 guidance in those procedures to fit an evolving set of conditions in a
12 plant that don't match it.

13 The next even that we have is going to be a surprise.
14 It's not going to match what we've seen before, and we've had
15 experience where operators try to force-fit what they have to match an
16 event, or force-fit the event to match their guidance, and that
17 sometimes gets them in trouble.

18 COMMISSIONER SVINICKI: Well, and I think --

19 ACRS CHAIRMAN STETKAR: And that's the whole
20 notion.

21 COMMISSIONER SVINICKI: I think -- so on this
22 point, and maybe the topic I'm going to comment on next, perhaps I'm
23 with you on problem identification, but I may depart from you on solution
24 or remedy.

25 ACRS CHAIRMAN STETKAR: Okay.

26 COMMISSIONER SVINICKI: So maybe I agree that

1 you are using "we" a lot, and I think we collectively, as a community of
2 nuclear safety professionals, have learned a lot. But all of what you're
3 talking about, I think, is part and parcel with this obligation we put
4 squarely on the shoulder of operators. They need to do all the things
5 you say, and I think we can't do it for them as the regulator.

6 We can't -- I'm not sure we can even craft a generic
7 thing that would be a useful structure for each site to approach it under
8 some structure that we establish. So I think, you know, maybe we're
9 not differing so much on what needs to be done.

10 But the notion that it would be part of the mitigating
11 beyond design basis rulemaking, I just don't, you know, I don't see how
12 we could encompass it there in a way that would be beneficial.

13 And then on the risk prioritization initiative, same thing.
14 I think that there is broad agreement on the problem definition, but I
15 think what I and others perhaps are struggling with is do some of the
16 potential remedies to this pose new or additional problems in terms --
17 and this gets to be very process oriented in terms of exemptions and
18 rulemakings and other things.

19 But you don't ever want to put a solution in place that
20 just creates -- the remedies create a whole new set of, you know,
21 procedural hurdles and other things. I think that in Dr. Bley's response,
22 I heard a little bit of that.

23 Pilots are often the solution. So to get back to
24 something that the Committee recommended, pilots are often how we
25 deal with that. The uncertainty of saying gosh, is the cure going to be
26 worse than the disease, is we do some pilots.

1 So I, as Chairman Burns indicated, you know, I'm still
2 full on in my deliberation on what I will decide on that particular matter.
3 And then just briefly, before I end, I'd like to turn to Dr. Rempe.

4 I was very struck in reading your presentation, and also
5 then the backup materials about the panels' work on the two particular
6 research topics. To me, the ACRS assessment of research is a very,
7 very valuable undertaking. I've not been convinced in my time here
8 that as a Commissioner, I have made the full and best use of the time
9 you all spend on doing that.

10 And so I've struggled with this. I don't know what the
11 answer is, but I'm very appreciative of the time and effort that ACRS
12 puts into the reviewing the safety research program. It's more being in
13 receipt of it. How could I make best use?

14 You know, I try when we're deliberating budget to say
15 could I look to this and find the areas that if we don't have, we can't fund
16 everything, what are the areas that we would best fund? So again, I
17 would just say I don't -- I don't like people just doing work that kind of
18 gets put on shelves.

19 So I appreciate what you're doing. I do think it's a
20 great way of going about it, in terms of the structure that you described
21 in your presentation. That's very valuable. I don't know if there's any
22 way to peer a little more, you know, over the horizon. The
23 independence of the review you undertake of the research program I
24 think is so essential for everybody's research program, whether it be the
25 Department of Energy or anyone else.

26 All of these programs become a kind of a status quo

1 thing after a while. So it is very beneficial. On this point, I was
2 recently asked and could not answer the question. Someone asked
3 me if the Department of Energy light water reactor, you know, program
4 on materials aging and things, part of how DOE pitches that to
5 Congress is that it supports resolution of regulatory issues and all of this
6 information feeds into it.

7 So I was asked by a member of Congress is that, you
8 know, achieving that. As the regulator, there was a request kind of to
9 opine on the DOE and nuclear energy research program, of whether or
10 not it achieves its regulatory support objectives.

11 Dr. Rempe, you're uniquely positioned to let me know.
12 Is there any report or any group that looks at that, in terms of being able
13 to answer that kind of question?

14 ACRS MEMBER REMPE: We've had several
15 presentations about the Beyond 60 topic, and during those
16 presentations, individuals associated with the LWRS program have
17 attended, and some of that information does come into play. I don't
18 think that --

19 COMMISSIONER SVINICKI: Tangible examples.
20 Like I was told yeah, you spent ten -- Congress, you funded this at \$10
21 million and it did resolve these five issues. I take it we don't have
22 anything that would give us a nice, tidy answer like that?

23 ACRS MEMBER REMPE: I'm not aware of
24 something for all topics. Specific topics it may. Dr. Corradini, would
25 you like to --

26 ACRS MEMBER CORRADINI: Well so I guess I have

1 multiple answers. One is that as Dr. Rempe has said, that we've had
2 members of the program come and talk about issues. But I don't think
3 we have ever undertaken did it satisfy what was advertised.
4 Conversely though, I think the program itself is required to have a
5 review by their -- by their equivalent, the Nuclear Energy Advisory
6 Committee, and that has occurred.

7 (Simultaneous speaking.)

8 COMMISSIONER SVINICKI: Are there folks on that
9 could speak to -- are there folks on their advisory committee who would
10 have the relevant background to speak to this question of --

11 ACRS MEMBER CORRADINI: Yes, yes.

12 COMMISSIONER SVINICKI: --whether in a
13 regulatory issue resolution framework it's been beneficial?

14 ACRS MEMBER CORRADINI: I think the answer is it
15 should, and I think at least from --

16 COMMISSIONER SVINICKI: That's a great answer
17 for me. I can tell the next member of Congress you should go call
18 DOE's advisory board.

19 ACRS MEMBER CORRADINI: Oh I can give you -- I
20 can give you names,[Laughter] emails, addresses. But in all truth, all
21 teasing aside, I do think that the LWRS program does this, and in fact
22 early on, about five years ago when it was started, they did not have a
23 review, and NEAC came back and unfortunately I'm on that committee,
24 so I was part of that subcommittee.

25 COMMISSIONER SVINICKI: So it's your phone
26 number and email, I guess --

1 (Laughter.)

2 ACRS MEMBER CORRADINI: But I'm now off of
3 NEAC, so I can say this with all -- but I guess my only point is that about
4 five years ago, this process was not complete, and so they actually
5 started a review on an annual basis. So I do think that's appropriate.

6 COMMISSIONER SVINICKI: Okay. Well thank you,
7 Mr. Chairman. I'm over my time.

8 NRC CHAIRMAN BURNS: Commissioner
9 Ostendorff.

10 COMMISSIONER OSTENDORFF: Thank you,
11 Chairman. Thank you all for your presentations. I want to pick up a
12 little bit where Commissioner Svinicki left off, and I'll go to Dr. Rempe on
13 the research piece.

14 I look at the assessments of 5.4 for the
15 thermohydraulic project and 5.6 for the battery status charge project. I
16 look at the scale, and that's kind of in the satisfactory range, maybe a
17 category. Minimum wasn't good enough, it wouldn't be a minimum
18 kind of thing.

19 Should the agency -- should the Commission be
20 satisfied with those projects?

21 ACRS MEMBER REMPE: Yes sir. Again, as I tried
22 to convey during my presentation, we consider a satisfactory ranking as
23 a professional work that satisfies the user need and the objectives of
24 the research project.

25 If you'll look at the more detailed report, you'll see
26 certain areas. Documentation is ranked higher in one versus the

1 technical results might be ranked higher in another. But yes, they
2 accomplished the research objectives for the regulatory need.

3 COMMISSIONER OSTENDORFF: I assume,
4 because in conjunction with your written report and/or any other face to
5 face communications you might have with research, that there's an
6 opportunity for research to fully understand your comments and
7 perhaps agree or disagree with your approach?

8 ACRS MEMBER REMPE: Sure.

9 COMMISSIONER OSTENDORFF: I assume that
10 happens.

11 ACRS MEMBER REMPE: Yes.

12 COMMISSIONER OSTENDORFF: Okay, that's
13 good. Chairman Stetkar, you know, I grew up in an era where silence
14 is acquiesce, and I have to join Chairman Burns and Commissioner
15 Svinicki on the integration procedures piece. I'm sorry, but I have to.

16 ACRS CHAIRMAN STETKAR: Seems to be a theme.

17 COMMISSIONER OSTENDORFF: Well, you know,
18 in all seriousness, I'm going to tell you a sea story, and it's a true sea
19 story. This is in the -- I won't say where we were, but this is the fall of
20 1995, and I was in command of a submarine doing a sensitive
21 operation. Our trim pump had been out of commission because of a
22 seized bearing.

23 So a trim pump is how you move water around and
24 allow achieving neutral buoyancy on a submarine. So trim pump was
25 out of commission, rigged up on a chain hoist, and the only other -- what
26 we were doing is we cross-knitted the drain pump with the trim system.

1 So using the drain pump to allow for proper ship's ballasting.

2 We had -- this is 688 class submarine, so we had a
3 rupture of a seal on a turbine generator lube wall pump. That rupture
4 caused the loss of the port ship service turn regenerator, and the flow
5 path of that high pressure oil went up into the drain pump controller,
6 caused a fire in the drain pump controller, lost the drain pump.

7 So we were in the reactor plant manual doing the loss
8 of partial AC power. We ran the ship's emergency procedures, not
9 reactor plant manual for the fire procedure. Then we had other
10 procedures associated with how do you maintain your proper buoyancy
11 given the nature of these operations.

12 And I could give you countless examples of other sea
13 stories where, and going back to Commissioner Svinicki's point, we rely
14 upon the operators to use their understanding of basic principles of
15 casualty control. And there's no way under, from my experience in the
16 Naval Reactors Program, we can legislate or mandate via procedures
17 every single action.

18 Now nor can you -- I worry about where ACRS may be
19 headed here, and I'm cautioning you. I can't provide any direction to
20 you, but as a former operator of propulsion plants on submarines, I'm
21 very anxious about what I heard today and what I see in your letter
22 report.

23 I agree with Commissioner Svinicki, and I think the
24 Chairman's motivation for his questions, that this is perilous territory to
25 tread in, and I'm a little bit anxious. We can have a separate
26 discussion on it.

1 But I just would caution. You've got to look at what the
2 operators know how to do and how do they know what to do, and I
3 think -- I worry about anything that's going to complicate our existing
4 procedures more than they already are. Please respond, if you want
5 to.

6 ACRS CHAIRMAN STETKAR: Well, I don't really
7 want to, but I feel obliged to respond. I think that, this again, this is my
8 opinion, because I'm trying to stick to our letter as much as possible. I
9 don't believe that we were advocating that the rulemaking dictate how,
10 how all of these bits and pieces of procedures and guidance should be
11 integrated, because in fact the rulemaking already says that they
12 should be integrated. It doesn't say how.

13 Perhaps guidance, which is why I focus on it's an
14 important part of the evolution of Fukushima activities right now, we're
15 finally getting into the position where both the industry is developing
16 guidance and the agency is developing guidance, and they're talking to
17 one another very closely.

18 The implementation guidance of how it is done, how
19 people look at the problem, how people identify those critical functions
20 and how you might address them during these beyond design basis
21 conditions, is not what we're advocating be dictated in the rulemaking,
22 because the rulemaking already says you should integrate these
23 things.

24 It doesn't say fire procedures, it's doesn't --

25 COMMISSIONER OSTENDORFF: Well, you
26 specifically in your letter criticized the fact that the fire procedures were

1 -- page six of your letter, first full paragraph, you criticize the fact that
2 fire response procedures are excluded, so --

3 ACRS CHAIRMAN STETKAR: And, and, and we've
4 --

5 COMMISSIONER OSTENDORFF: And that was an
6 example I was using from my own experience.

7 ACRS CHAIRMAN STETKAR: And we've done that
8 -- we've actually done that in previous letters.

9 We've had feedback from the staff, quite frankly, that
10 says well, fire procedures in terms of extinguishing a fire, performance
11 of the fire brigade, are not appropriate to integrate into these beyond
12 design basis, and we fully agree with that. We're not talking about that.

13 What we're talking about are the procedures, for
14 example, for a fire in a particular location. As soon as the alarm goes
15 off, the operators are instructed to deenergize DC to half of the plant.
16 That is not a fire procedure. It is an event response action. That
17 action is a fairly dramatic action,--

18 COMMISSIONER OSTENDORFF: I understand that.

19 ACRS CHAIRMAN STETKAR: --and you might not
20 want to do that.

21 COMMISSIONER OSTENDORFF: I understand that,
22 but having fought a number of fires where it involved electrical
23 equipment, real fires, I will tell you that the basic principles of
24 deenergizing equipment, in many cases, is not an unsound practice to
25 follow.

26 ACRS CHAIRMAN STETKAR: In many cases, that's

1 true, but not necessarily in all cases, and we're saying step back.
2 Perhaps there's a way of looking at it a little more globally. But not in
3 the sense of rulemaking; in the sense of working with the industry in
4 terms of how this implementation is actually accomplished on the
5 ground.

6 COMMISSIONER OSTENDORFF: I felt compelled to
7 follow my colleagues in this, because I feel very strongly that this is a
8 challenging area, and that -- I urge caution.

9 ACRS CHAIRMAN STETKAR: And I personally
10 agree with you fully. It is a very challenging area, as it was after TMI,
11 to take all of those event-based procedure and form symptom-based
12 EOPs. It was a tremendous challenge.

13 COMMISSIONER OSTENDORFF: I'll let you off the
14 hook now. Thank you. Dr. Bley, following up on some other
15 questions already that -- because this issue is before us on the
16 cumulative effects of regulation and this prioritization initiative, and I
17 think the Chairman's already alluded to this.

18 A key entering assumption by Commissioner
19 Apostolakis and Magwood at the time was incentivizing PRAs, and that
20 whole framework, that assumption, has completely fallen apart.

21 ACRS MEMBER BLEY: I didn't quite understand that.

22 COMMISSIONER OSTENDORFF: So it's my -- okay.
23 The whole precept for this risk prioritization initiative assumed that
24 you'd have uniform or some uniformity and consistency in PRAs from
25 one site to the other. We don't have that commitment from industry,
26 nor is there a basis for the NRC to regulate that. That's just my

1 personal view.

2 So and you may disagree with that. If you agree that
3 there's not the uniformity of PRA consistency that was envisioned three
4 years ago when Dr. Apostolakis originated this COM, does the agency
5 put itself at risk in having a -- opening the doors for lack of consistency,
6 as to how we might deal with licensee requests to perform certain
7 sequences, time periods for upgrades or modifications, with some
8 common approach for risk?

9 ACRS MEMBER BLEY: Well, given your
10 precondition, one would have to be extraordinarily careful.

11 COMMISSIONER OSTENDORFF: You can
12 disagree.

13 ACRS MEMBER BLEY: But I think with our Reg
14 Guide 1.200, and the peer review process that's in place, that there's a
15 good mechanism for ensuring that a licensee's PRA is of sufficient
16 quality and depth in the area you're trying to use it, to give confidence in
17 the results.

18 COMMISSIONER OSTENDORFF: But does that --
19 do we -- as a regulatory body, should we be concerned about a PRA for
20 let's say North Anna having a different approach than Columbia
21 Generating Station, and that there would be very different unevenness
22 of PRA methodology between sites? Does that lessen our authority or
23 our decision-making as a regulatory body?

24 ACRS MEMBER BLEY: You know, it would if that
25 were the case, and I'm not sure exactly what you mean by different
26 methodologies. But the basic methodology is essentially the same

1 across them all, and they're all supposedly, and under Reg Guide
2 1.200, required to meet the criteria in the joint standard for doing PRA.
3 Such that that goes in and checks the level of modeling, of the
4 equipment where the data comes from, the scenario analysis, all of
5 that.

6 Now they don't all -- at this time, they aren't full scope.
7 They don't all cover fires --

8 COMMISSIONER OSTENDORFF: Well, that was the
9 goal of the COM back in 2012, was to get full scope PRAs.

10 ACRS MEMBER BLEY: And I think that's still the goal
11 of many.

12 COMMISSIONER OSTENDORFF: But that's not
13 what's happened, though. That's not where we are. Okay. My
14 time is up. I appreciate it. Thank you.

15 ACRS MEMBER BLEY: Okay.

16 NRC CHAIRMAN BURNS: Commissioner Baran.

17 COMMISSIONER BARAN: Thanks. I wanted to --
18 because we haven't spent any time on this mitigation of beyond design
19 basis rulemaking, I want to start there. I want to follow up on a
20 comment that Commissioner Svinicki made about timing, and get your
21 thoughts about that.

22 So the target date for completion of this is the end of
23 2016 for the rulemaking, and ACRS has recommended an extended
24 comment period, which I agree with Commissioner Svinicki. Given the
25 complexity and the importance of the rule, it makes a lot of sense, I
26 think.

1 If we had an extended comment period, if -- and we
2 also want to get the draft regulatory guidance out at the same time, how
3 realistic do you think that December 2016 target is at this point?

4 ACRS CHAIRMAN STETKAR: I'm going to politely
5 duck that one. No, seriously. We've had many discussions with the
6 staff regarding deadlines, and whether it's a hard deadline or a
7 perceived deadline. ACRS doesn't typically get involved in those
8 schedule issues. I think the staff is much better placed to answer
9 those questions.

10 COMMISSIONER BARAN: Okay. What's your
11 sense of how far along we are on the draft guidance? In your
12 comment, there was a section for guidance, filled with material.

13 (Simultaneous speaking.)

14 ACRS CHAIRMAN STETKAR: This is -- okay. I'll be
15 as candid as I can in this forum. We've seen the draft guidance, but
16 we've only recently seen -- first been introduced to the draft guidance.
17 It's still a work in progress.

18 So my sense of where is the draft guidance in terms of
19 finality, it's still a work in progress, and we've just recently -- as recently
20 as May, a month ago, started to engage at that level on the draft
21 guidance.

22 We've seen preliminary drafts in some cases of
23 industry and the I reports. But our first exposure to NRC draft
24 regulatory guidance, in a way that we can study it in some degree of
25 stability, has occurred very, very recently.

26 COMMISSIONER BARAN: Okay. So let me ask

1 about SAMGs, since that's a topic that there's been a lot of focus on.
2 You mentioned that the staff's quantitative analysis there was -- was
3 limited, because it was focused just on BWR Mark Is and IIs.

4 And you also mentioned, which I thought was
5 interesting, that you'd expect that the benefits of SAMGs would be quite
6 site-specific.

7 In your view and that's a question for you or anyone
8 else who wants to chime in, I mean was there, is there an opportunity to
9 do -- for the staff to perform more detailed quantitative analysis there?

10 And I -- just to follow up on that, to kind of ask a
11 compound question, is that something the Committee considered
12 recommending?

13 ACRS CHAIRMAN STETKAR: I'm going to try to be
14 careful here also. We had been -- we reviewed, in the sense that our
15 subcommittee met on those particular studies for the venting several
16 months ago, and we had comments on the completeness, indeed even
17 within that microcosm of those studies.

18 We understood how those studies I think would be
19 used to support the CPRR, the venting potential rulemaking. The fact
20 that they were then used -- those particular studies were then used as
21 justification of why the SAMGs could not be universally developed,
22 quantitative justification for universal acceptance of the SAMGs was a
23 bit surprising.

24 We honestly never had an opportunity to weigh in on,
25 you know, an alternative Plan B. That being said, it is difficult, because
26 in order to really measure the benefits of the SAMGs quantitatively, you

1 need reasonably developed Level 2 PRAs for a fairly broad spectrum of
2 plant designs.

3 The NRC staff has some level of -- some degree of
4 Level 2 PRAs in the SPAR models, but not necessarily fully developed.

5 So in terms of the tools to perform that type of
6 comparative analysis, where you look at the risk with and without
7 particular SAMGs, it's not clear that the staff has those tools available to
8 perform that level of comparative analysis. Even if we were to
9 recommend it, for example.

10 COMMISSIONER BARAN: So this may be a case
11 where the staff doesn't have the tools to do a full quantitative analysis in
12 this area?

13 ACRS CHAIRMAN STETKAR: It may very well.

14 (Simultaneous speaking.)

15 COMMISSIONER BARAN: --at the time where you
16 would look at qualitative --

17 ACRS CHAIRMAN STETKAR: We haven't had the
18 opportunity to even explore that with the staff, to say what -- for what
19 types of plants do you have reasonably well-developed Level 2 models
20 that you could then use to explore what is the risk with and without a
21 particular set of guidance. And again, that guidance might be very
22 specific to that particular plant design also.

23 COMMISSIONER BARAN: Based on the quantitative
24 analysis -- did you want to jump in?

25 ACRS MEMBER CORRADINI: I was just going to go
26 back and use his example that he started with about CPRR. I think

1 industry is in the middle of doing that, relative to the severe accident
2 water management issue. In fact, that's the examples that we were
3 presented, that John had referred to. That's all I guess I'm going to
4 say.

5 So I think industry's well aware of the need to do that,
6 but I think they are focusing on a couple of areas to begin with.

7 COMMISSIONER BARAN: Okay, and so just to wrap
8 up on this, I guess, based on the quantitative analysis that has been
9 done by the staff on this, recognizing the challenges there, do you think
10 that analysis is sufficient for the Commission to confidently conclude
11 that the quantified benefits of SAMGs, requiring SAMGs, do not exceed
12 the costs?

13 ACRS CHAIRMAN STETKAR: I think, you know, I'll
14 let our letter speak for itself. I think we identified the limitations in those
15 analyses, and that we noted that that probably was not adequate to
16 justify globally across the entire industry, all types of plants, different
17 designs, whether you could conclude that SAMGs were universally
18 beneficial or not.

19 I think our letter went on to say that it's not clear if you
20 did that comprehensive comparative analysis, that you would
21 necessarily draw the conclusion for every single site, every single unit
22 that they were always beneficial, but that for some units, there would be
23 more benefit than others. We don't know how much that benefit is in a
24 quantitative sense.

25 COMMISSIONER BARAN: And I don't want to spend
26 a lot of time on the integration of procedures issue, because that's been

1 well covered. But as I understand it, ACRS is recommending that the
2 rule require the integration of procedures, including SAMGs.

3 But do you think there's some tension between that
4 recommendation and the recommendation to not require SAMGs?
5 How could the regulation require integration of SAMGs, if the regulation
6 does not require SAMGs?

7 ACRS CHAIRMAN STETKAR: I don't see that
8 personally, that as a diverse issue, because how one -- whether or not
9 one implements SAMGs is one issue. Is it required by rulemaking?
10 Is it required by some sort of voluntary initiative, with the ability to,
11 through some sort of oversight process, confirm the fact that they are
12 implemented and maintained?

13 It is different from once they're implemented, how are
14 they integrated with the whole litany of other procedures and guidance
15 that you have available. So the integration addresses the second part.
16 It doesn't address the first part. The other part of our letter addresses
17 the first part.

18 COMMISSIONER BARAN: And so, just so that I
19 understand. So ACRS is recommending that with respect to SAMGs,
20 are you -- are you contemplating that each licensee would voluntarily
21 seek to -- seek a license amendment to commit to the SAMGs? Is that
22 the process you're envisioning?

23 ACRS CHAIRMAN STETKAR: A license -- a
24 commitment in their license, yeah. It may not be -- I'm not as familiar
25 with the law, but we've had some discussions with the industry
26 regarding how that would be implemented.

1 COMMISSIONER BARAN: And what if the licensee
2 or a number of licensees didn't want to make that commitment?

3 ACRS CHAIRMAN STETKAR: That's a good
4 question.

5 COMMISSIONER BARAN: I'm running out of time,
6 but I do want to ask Dr. Corradini just for a minute on BWR and vents.

7 ACRS MEMBER CORRADINI: John's happy.

8 COMMISSIONER BARAN: He's happy I only spent
9 9-1/2 minutes with him?

10 ACRS MEMBER CORRADINI: Could have spent ten.

11 COMMISSIONER BARAN: Okay. The ACRS letter
12 on hardened vents expressed concern that additional combustion gas
13 control measures should be given a higher priority than they are
14 currently. Can you just talk a little bit more about those concerns with
15 the current guidance, and what you believe could be done to address
16 those concerns?

17 ACRS MEMBER CORRADINI: Sure. I figured
18 somebody was going to ask something about the concern page. So I
19 -- so I think we had three. One about anticipatory venting, one on
20 hydrogen and one on essentially appropriate dose predictions for
21 operator actions.

22 But on the hydrogen one, I think our focus was is that
23 we wanted to ensure that there would be detailed evaluation
24 requirements on a plant-specific basis.

25 So not that what was being proposed was
26 inappropriate; rather, that that's good generically, but you've got to go

1 back and look at the venting system on a plant-specific basis, and make
2 sure that you understand how that affects every individual plant, and
3 how you would, as I think the HTVS intent is, to try to have the venting
4 system such that you minimize the chance of any sort of passing
5 through flammability limits as you're venting. So it's more of a
6 plant-specific check.

7 COMMISSIONER BARAN: Okay.

8 ACRS MEMBER CORRADINI: That's at least how
9 we framed it in the letter.

10 COMMISSIONER BARAN: Okay, great. Thanks. I
11 should stop there. Thank you.

12 NRC CHAIRMAN BURNS: Commissioner Svinicki.

13 COMMISSIONER SVINICKI: Although not a topic for
14 today's meeting, it's my understanding that in the Committee's meeting
15 of yesterday, the topic of the agency's reactor oversight process or
16 ROP was discussed among members.

17 Specifically, I believe Committee Member Skillman
18 spoke at some length about the evolution and the framework of the
19 reactor oversight process during the conduct of that meeting.

20 I have been engaging with the NRC staff on what they
21 termed the reactor, the ROP enhancement or improvement initiative,
22 and there are a number of NRC staff activities underway, to look at the
23 significance determination process and other aspects of the ROP, and
24 perhaps propose changes, some of which may rise to the level of
25 Commission decision-making and policy engagement.

26 I was just wondering, without in any way directing you,

1 I would find it of value to have ACRS maybe provide perspectives at the
2 right point in time, when we get there on some of these initiatives, and I
3 think that the Committee has the requisite background and expertise in
4 its membership.

5 So I can't direct you to undertake a topic that is not
6 mandatory for you. But I -- it seemed like maybe you were already
7 setting the stage for that yesterday, and I think the proposed changes to
8 the SDP concerned me. I've engaged with the staff about that.

9 But I think that it would, in my individual view, be
10 maybe worth the Committee's time and of benefit to the Commission.

11 ACRS CHAIRMAN STETKAR: And we agree and we
12 are planning to follow that.

13 COMMISSIONER SVINICKI: Okay, thank you.

14 NRC CHAIRMAN BURNS: Any other questions or
15 comments? Well thanks again. It's been a good discussion, and
16 again, to reemphasize the value of the work the ACRS does for this
17 Agency, in helping us in terms of our decision-making, both on specific
18 licenses as well as generic matters. So I thank you again, and with
19 that, we're adjourned.

20 (Whereupon, the above-entitled matter went off the
21 record at 11:35 a.m.)
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