UNITED STATES OF AMERICA

U.S. NUCLEAR REGULATORY COMMISSION

BRIEFING ON THE TASK FORCE REVIEW OF NRC PROCESSES AND REGULATIONS FOLLOWING THE EVENTS IN JAPAN

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TRANSCRIPT OF PROCEEDINGS

Public Meeting

Before the U.S. Nuclear Regulatory Commission:

Gregory B. Jaczko, Chairman

Kristine L. Svinicki, Commissioner

George Apostolakis, Commissioner

William D. Magwood, IV, Commissioner

William C. Ostendorff, Commissioner

APPEARANCES

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

2 CHAIRMAN JACZKO: Good morning everyone. The Commission
3 meets today to discuss the Japan task force's near term report and
4 recommendations. I first want to thank Charlie Miller and the other members of
5 the task force for all their work in conducting the 90 day near-term review. I think
6 everyone is here with the exception of Jack Grobe, who had a previous
7 commitment but so our thanks to all of you for your efforts and your work on this.
8 The report's analysis and recommendations reflect your expertise, experience
9 and commitment to nuclear safety. I also want to acknowledge the many other
10 NRC staff members who supported their efforts in conducting this review, as well
11 as the Federal Emergency Management Agency, The Institute for Nuclear Power
12 Operations, and other groups and individuals who shared their views with the
13 task force.

14 In laying out a regulatory framework for the 21st century, the
15 Commission's task force developed a comprehensive set of 12 recommendations
16 they believe are needed to strengthen nuclear safety. These recommendations,
17 many with both short- and long-term elements range in areas from loss of
18 electrical power to earthquakes, flooding, spent fuel pools, venting, and
19 emergency preparedness.

20 Throughout the report, the task force emphasizes that effective
21 NRC action is essential in addressing these challenges, and that voluntary
22 industry initiatives are ultimately no substitute for strong and effective NRC
23 oversight.

24 We are in a very good position today to be able to move forward
25 quickly and effectively, because of the task force's outstanding work. The task

1 force clearly has done its part in helping us to better understand what nuclear
2 safety requires in a post-Fukushima world. Now it's time for my Commission
3 colleagues and me to do our part to systematically and methodically review each
4 of these recommendations in a public and transparent way.
5 These meetings -- well, the meeting that we're having today and the
6 meetings that we have had up to this point, I think have provided a very good
7 opportunity for the public to understand the approach in the decisions that the
8 task force would reach. And I think, what I've seen, certainly follows very closely
9 from what I've seen them do as we've had the briefings and the meetings and
10 ultimately what came out in the report.
11 I do think it's important that as we go forward we find a way to get
12 additional stakeholder feedback, and I think we can do that in a reasonable
13 period of time. And as I've said, I think that's something we can do in 90 days.
14 There are many people both inside and outside the agency I think can contribute
15 to this dialogue. That includes of course, the NRC's own experienced and expert
16 staff, public interest groups committed to nuclear safety and environmental
17 protection, and of course the industry leaders who ultimately bear the prime
18 responsibility for ensuring that an accident like Fukushima never occurs in the
19 United States. I believe today's meeting on the task force's report will be among
20 the most important at the NRC in recent years. These safety issues are simply
21 that important.
22 So with that I would offer my colleagues an opportunity to make
23 comments. Commissioner Svinicki?
24 COMMISSIONER SVINICKI: Thank you, Mr. Chairman. As you've
25 described the members of the near-term task force have covered tremendous

1 ground in the short three months provided to them. I want to thank each of you
2 individually and collectively for your efforts.
3 After a more extensive examination than earlier NRC post-
4 Fukushima efforts we're able to undertake, the task force concluded that a
5 sequence of events like the Fukushima accident is unlikely to occur in the United
6 States and that continued operation and continued licensing activities do not
7 pose an imminent risk to public health and safety.
8 In addition to providing this safety reassurance to the Commission
9 and the public, the task force's work conducted with some urgency, given their
10 mission of finding any near-term deficiencies or reconfirming the safety of
11 continued operation, now allows the NRC the opportunity to proceed with a
12 systematic and methodical review of lessons learned that the Commission
13 directed at the outset.
14 Moreover, the agency is now in a position to conduct the fulsome
15 stakeholder engagement and review by the Advisory Committee on Reactor
16 Safeguards, which the Commission, in my view, only reluctantly excused the
17 near-term task force from undertaken, given the urgency of the task force's work.
18 An executive order issued just last week by President Obama on
19 the topic of regulation and independent regulatory agencies reminds us that wise
20 regulatory decisions depend on public participation and on careful analysis of the
21 likely consequences of regulation. In that vein, the delivery of the near-term task
22 force report is not the final step in the process of learning from the events at
23 Fukushima. It is an important but early step.
24 Now the conclusions drawn by the six individual members of the
25 near-term task force will be open to challenge by our many stakeholders and

1 tested by the scrutiny of a wider body of experts prior to final Commission action.
2 We begin this scrutiny with our discussions here today. I look forward to your
3 presentations and gain I thank each of you for your dedication. Thank you, Mr.
4 Chairman.
5 CHAIRMAN JACZKO: Thank you. Commissioner Apostolakis?
6 COMMISSIONER APOSTOLAKIS: Thank you. I would also like to
7 congratulate the task force for doing a great job in such a short period of time. I
8 really enjoyed reading the report. I appreciated that in each part you had a
9 section reviewing the relevant regulations and then offering the task force's
10 evaluation of the issue and then proceeding with a recommendation. I thought it
11 was a great report and I'm looking forward to interacting with you later today.
12 Thank you.
13 CHAIRMAN JACZKO: Commissioner Magwood?
14 COMMISSIONER MAGWOOD: Thank you, Mr. Chairman. Well
15 first, lady and gentlemen, thank you very much. The work you've done here has
16 been very important and it's work that the Commission is taking very, very
17 seriously as you can tell. You know, it's now been over four months since the
18 natural disaster that created so much death and destruction in Japan. And over
19 those four months, the world has learned to pronounce the word “Fukushima
20 Daiichi” correctly.
21 Now while our friends in Japan still wrestle with this aftermath of the
22 crisis, they've come a long way towards stabilizing the situation. And there are
23 many heroes in Japan that have made that possible. And speaking of heroes,
24 my warmest congratulations to the Nadeshiko’s who won on Sunday.
25 Congratulations.

1 Today, as instructed by the Commission, a task force we charted to
2 quickly identify the lessons learned from Fukushima, is before us to discuss the
3 findings. The task force found that much is right with the operation and
4 regulation of U.S. nuclear power plants. The task force found that our plants our
5 safe and will remain safe under even difficult circumstances brought on by
6 natural disasters. But the task force also found there's room for improvement.
7 The recommendations of the task force are both intriguing and
8 challenging. And the Commission, the staff, and many stakeholders must
9 engage and assess what the task force had to say.
10 We have the responsibility to consider these recommendations in a
11 quick but comprehensive and holistic fashion. We also have the responsibility to
12 hear and understand the thoughts and conclusions of experts outside this
13 agency, many of whom have worked diligently over the last several months to
14 consider the lessons of Fukushima. We may not agree with everything they
15 suggest, but it would be arrogant of us not to listen to them very closely, very
16 carefully.
17 This work should be our highest priority and I think this a message
18 that I'd like to give to the staff as a whole. This should be our highest priority, to
19 get this work done, to assess the task force's recommendations, to listen to our
20 stakeholders. I look forward to working with my colleagues on the Commission
21 and with the staff to make this possible. And I look forward to working with
22 everyone. Thank you. Thank you, Mr. Chairman.
23 CHAIRMAN JACZKO: Commissioner Ostendorff?
24 COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman. I
25 want to echo my colleagues' comments and thank the task force. Your

1 recommendations, due diligence, thoughtfulness and the flat out hard work is
2 evident in your work product, and we are grateful for that. Dr. Miller, we
3 appreciate very much you're having changed your retirement plans to lead this
4 key effort. We are very grateful for your efforts here.
5 The NRC's next steps following this task force report issuance are
6 clearly, and I echo Commissioner Magwood's comments, the most important
7 thing before the Commission, before the agency. And I join with my colleagues
8 in being committed to work towards getting swift but thoughtful and careful
9 resolution of these issues.
10 I echo the observations of the task force that the NRC's current
11 regulatory approach has served the Commission and the public well. And the
12 continued operation and the continued licensing activities do not pose an
13 imminent risk to public health and safety.
14 While I fully support the thoughtful consideration of any potential
15 safety enhancements in a systematic and holistic manner, I personally do not
16 believe that our existing regulatory framework is broken. Further it is my belief
17 the Commission must carry out its policy-making going forward with full
18 awareness in understanding the views of our stakeholders. As echoed by my
19 colleagues here today, that includes the NRC senior staff. In this regard,
20 Commissioner Magwood and I issued a COM dated June 23rd of 2011, that
21 brought forward a proposal for engaging stakeholders in the longer term review
22 regarding events in Japan. This proposal's been approved by the Commission
23 and we're currently finalizing the direction to the staff on what it means.
24 I look forward to hearing your briefing today and to engaging you in
25 questions and answers. Thank you. Thank you, Mr. Chairman.

1 CHAIRMAN JACZKO: Well I think it's good to start off the meeting,
2 I think you heard very clearly from the Commission that -- very appreciative of the
3 work that you've done and obviously the Commission has an interest in hearing
4 from others as we look at deliberating and ultimately making decisions on this,
5 but certainly, I'll speak personally, that I think this is a very good starting point for
6 us to begin that discussion and if not, ultimately the end point that we come to as
7 well. So, with that, I'll turn it over to Marty and begin.
8 MARTY VIRGILIO: All right. Thank you. Good morning Chairman.
9 Good morning Commissioners. We're here today to provide us -- provide you a
10 briefing on the results of the task force that was established – conduct a near-
11 term review of the Fukushima accident. Today Dr. Miller, who will for the rest of
12 this meeting probably be known as "Charlie," and Charlie's task force, he led this
13 effort and will provide the Commission with the overview of the findings and
14 recommendations. After we hear from Charlie, I'll discuss briefly next steps.
15 If we go to slide three, this may in fact be Charlie's last opportunity
16 to present before the Commission as well. So not only did he delay his
17 retirement, but he's here today and will have served out a few additional
18 responsibilities and then be on to his next assignment, which I think involves golf
19 and a few other things.
20 [laughter]
21 MARTY VIRGILIO: Charlie directed this task force. He stepped
22 away from his day job, which is the Director of the Office of Federal and State
23 Materials and Environmental Programs, and he was supported by several other
24 task force members: Amy Cubbage, who is from our Office of New Reactors;
25 Gary Holahan, who is from our Office of New Reactors; and then we have Dan

1 Dorman, who is from our Office of Nuclear Material Safety and Safeguards;
2 Nathan Sanfilippo, who is currently serving in the Office of the Executive Director
3 for Operations; Jack Grobe, who you mentioned is not available with us today.
4 Jack is on vacation in Maine. I understand his son is getting married this week.
5 And Cynthia Davidson, who's up in the booth today with us. She supported the
6 team and she's supporting us today with the slides.
7 The task force also received support from many staff members.
8 They had at their disposal all of our experts and I know that they drew on those
9 experts in developing the information that helped them form their findings,
10 conclusions and recommendations. Before I turn this over to Charlie, I would like
11 to join the Chairman and all of you in expressing my thanks to Charlie and the
12 task force for the job that they did. A job well done. So with that, Charlie, thank
13 you.
14 CHARLIE MILLER: Thank you. Good morning. Before I begin my
15 presentation, I too want to give some thanks to folks. I know we've covered the
16 fact that many have joined in providing us insights with regard to our efforts, but I
17 just want to say, and I think reiterate what I've said in previous Commission
18 meetings, that the staff, the technical staff of the offices was at our disposal. Any
19 time we needed information, that information was provided timely whether it be
20 information as provided from historical documents, whether it be briefings to us,
21 whether it's providing their personal insights as to what they feel we should
22 consider. So I'm indebted to them. I'm indebted to the staff from NRR,
23 Research, New Reactors, NMSS, our Regional staff, our team in Japan and the
24 team that we have here supporting the team in Japan. With that said, there's
25 also those that work behind the scenes to make this happen, and that's our

1 support organizations. The efforts that we got from graphics, the reproduction
2 folks and the typical editors were key to us producing the report that we did. We
3 couldn't have done it without their help in a very short time. So I'm indebted to
4 them. The task force is indebted to them. And with that, I'll begin my
5 presentation. May I have slide five, please?
6 As some of the Commissioners have mentioned, the task force has
7 concluded that a similar sequence of events is unlikely to occur in the United
8 States. The existing mitigation measures at U.S. plants could reduce the
9 likelihood of core damage and radiological release if available. On this basis, the
10 task force concludes that there's no imminent risk for continued operation and
11 licensing activities. However, the task force has recommended safety
12 enhancements including three interim measures warranting implementation in
13 the next several months. May I have slide six, please?
14 The task force appreciates that an accident involving core damage
15 and uncontrolled release of radioactive material to the environment, even one
16 without significant health consequences, is inherently unacceptable. The task
17 force also recognizes that there likely will be more than 100 nuclear power plants
18 operating throughout the United States for decades to come. The task force
19 developed this recommendation in full recognition of this environment. On this
20 basis, the task force concludes that enhancements to safety are warranted in the
21 near-term. We conclude that a more balanced application of defense-in-depth
22 supported by risk insights would provide both a coherent regulatory framework
23 and a systematic approach for the agency to address low-likelihood, high-
24 consequence events. This concept is the basis for redefining the level of
25 protection regarded as adequate and provides the foundation for the task force's

1 recommendations. May I have the next slide, please?

2 The task force conducted a systematic and methodical review of
3 the insights from Fukushima in the time that we had allotted. Our report and our
4 recommendations are structured around the focus areas of regulatory framework,
5 defense-in-depth as it's applied to protection from natural phenomena, mitigation
6 of prolonged station blackout events, and emergency preparedness. And lastly
7 the task force evaluated NRC programs. Next slide, please.

8 The task force report presents twelve over-arching
9 recommendations, and I will discuss each of these in detail during my
10 presentation this morning. The task force report also includes a number of
11 detailed recommendations that provide an overall implementation strategy. The
12 detailed recommendations are grouped into five categories: a policy statement,
13 rulemakings, orders, staff actions and long-term evaluation topics. Recognizing
14 that rulemaking and subsequent implementation typically takes several years to
15 accomplish, the task force recommends interim actions to be implemented in the
16 near term. Three of the recommended orders are intended to provide those
17 interim practical safety enhancements for protection, mitigation and
18 preparedness while the rulemaking activities are conducted. In these cases the
19 task force envisions that orders could be issued and implemented in a matter of
20 months.

21 From our perspective, work should begin in the near term on other
22 orders, but the task force recognizes that they could take a longer time to
23 implement. The long-term evaluation topics are those topics where sufficient
24 information was not available for the near-term task force to make specific
25 recommendations. Next slide, please.

1 During our last Commission meeting I presented four themes.
2 Today I'll go back to each of those themes and provide our recommendations
3 stemming from each theme. The first theme is regarding the NRC's regulatory
4 framework. The principles of good regulation promote a consistent, coherent and
5 reliable regulatory framework. Next slide, please.
6 Recommendation 1: the task force has concluded that existing
7 regulatory approach does not apply defense-in-depth and risk insights
8 consistently. This has resulted in a patch work approach to addressing emerging
9 issues. Beyond-design-basis events and severe accident issues have
10 sometimes been addressed with new requirements such as station blackout rule,
11 and in other cases have been addressed by voluntary industry initiatives such as
12 the severe accident management guidelines, which were not included in NRC
13 requirements. We recommend that the Commission establish a logical,
14 systematic and coherent regulatory framework for adequate protection. That
15 framework should appropriately balance defense-in-depth and risk
16 considerations. This regulatory framework would serve all stakeholders well. It
17 would facilitate staff and Commission decision-making. It would provide
18 transparency and clarity for public stakeholders, and it would provide stability and
19 predictably for industry's business decisions on meeting regulatory requirements.
20 Next slide, please.
21 The second theme is related to protection of equipment from
22 natural phenomena. Protection of important plant equipment from the
23 appropriate external hazards is a key foundation to safety. Next slide.
24 Recommendation 2: it is evident from our evaluation of the Fukushima event that
25 it is essential for nuclear plants to be protected against the appropriate design-

1 basis external events. Design-basis external hazards were established during
2 the construction permit phase for U.S. operating plants, and they are not typically
3 revisited through the life of the plant. For many plants, this was completed in the
4 1960s. The last construction permit for an operating U.S. plant was issued in
5 1978. Since that time there have been significant advancements in the state of
6 knowledge and the state of analysis methods per seismic and flooding hazards.
7 Through the years various NRC programs have been initiated to
8 evaluate the risk from external hazards. Most notably the Individual Plant
9 Evaluation, otherwise known as the IPE, and the Individual Plant Evaluation of
10 External Events, otherwise known as the IPEEE. Through the IPEEE and other
11 efforts, some actions were taken to address plant vulnerabilities that were
12 identified, however, the hazards were not comprehensibly reevaluated for all
13 sites and the design-basis was not necessarily updated. State of knowledge of
14 seismic and flooding hazards has evolved to the point that it is appropriate for
15 licensees to reevaluate the designs of existing nuclear plants to ensure that the
16 structures, systems, and components important to safety will withstand such
17 events without the loss of capability to perform their intended safety function. On
18 this basis the task force recommends that the Commission require licensees to
19 reevaluate the design-basis seismic and flooding hazards and as necessary
20 upgrade the protection of plant structures, systems, and components. The task
21 force recognizes that recommended reanalysis and potential modifications take
22 time to implement. Therefore, as an interim action, the task force recommends
23 seismic and flooding protection walk-downs be completed over the next several
24 months to identify and address plant specific vulnerabilities and verify the
25 adequacy of monitoring and maintenance for protection features such as

1 watertight barriers and seals. Slide please.

2 Recommendation 3: the task force also evaluated potential concurrent,
3 related external events. Seismic events have the potential to cause internal
4 floods and fires. The staff evaluated seismically induced fires and floods as part
5 of the IPEEE effort. In that light, Fukushima accident and other recent
6 experience with the 2007 earthquake that affected the Kashiwazaki Nuclear Plant
7 in Japan, the task force concludes that these topics warrant additional evaluation
8 and consideration. Therefore the task force recommends that the staff evaluate
9 potential enhancements to the capability to prevent or mitigate seismically
10 induced fires and internal floods as part of the long-term review. Slide 14 please.

11 The next theme is that mitigation, equipment, and strategies
12 provide additional defense-in-depth. Consistent with this theme, the task force
13 has developed recommendations covering several aspects of mitigation. These
14 include prolonged station blackout, containment over pressure, hydrogen control,
15 spent fuel pool cooling, and on-site emergency response capabilities. I will now
16 discuss our recommendations in each of these areas. Next slide please.
17 Recommendation 4: a prolonged station blackout could result from beyond
18 design-basis external event or multiple concurrent equipment failures. The task
19 force recommends a comprehensive and integrated approach to mitigating
20 prolonged station blackout scenarios. This approach would provide
21 uninterrupted core and spent fuel cooling and provide integrity of the reactor
22 coolant system and containment as needed. The approach is divided into three
23 phases; an eight-hour minimum coping phase, a 72-hour extended coping phase,
24 and off-site support phase. The first phase is an eight-hour minimum coping
25 duration. The strategy during this phase relies on permanently installed

1 equipment that is protected from natural phenomena including beyond design-
2 basis flooding with minimal need for operator action. This strategy enables
3 operators to focus efforts on restoring AC power and deploy equipment used for
4 extended coping capability. The next phase is a 72-hour extended coping phase.
5 During this phase the same safety functions are provided as the initial eight-hour
6 coping phase. Reasonable operator actions can be relied upon and on-site
7 portable equipment may be used in addition to permanently installed equipment.
8 The 72-hour duration allows time for effective acquisition, transportation,
9 installation, and the use of pre-planned and pre-staged off-site resources.
10 During the third phase, pre-planned and pre-staged off-site
11 resources are used to provide continued achievement of the goals of core and
12 spent fuel cooling, and reactor coolant system and primary containment integrity.
13 Again, the task force recognizes that rulemaking and implementation will take
14 time to complete. Therefore, we recommend interim measures be implemented
15 within several months to enhance existing mitigation capabilities provided under
16 50.54(hh). The task force recommends that licensees reasonably protect
17 mitigation equipment from external hazards and provide sufficient capacity to
18 mitigate multi-unit events. Next slide please.
19 Recommendation 5: as discussed during our last Commission
20 meeting, all boiling water reactors with Mark I containments installed hardened
21 wetwell vents in response to Generic Letter 89-16. The wetwell vents are
22 intended to ensure containment integrity is maintained by preventing containment
23 overpressure. Each licensee installed a plant specific configuration and the
24 designs vary in several aspects including capability of opening during prolonged
25 station blackout event. The task force recommends that Mark I wetwell vents be

1 a requirement and that the wetwell vent designs be enhanced to provide
2 capability to open and reclose as needed during prolonged station blackout
3 scenarios. Eight boiling water reactor units in the United States have Mark II
4 containment designs. Three of these units have installed hardened vents and
5 the remaining five units at three sites have not installed hardened vents. The
6 Mark II containment is approximately 25 percent larger than the Mark I
7 containment. It can be reasonably concluded that Mark II containments, under
8 similar circumstances as Fukushima Daiichi Units 1, 2, and 3, would have
9 suffered similar consequences. Therefore the task force recommends that
10 reliable hardened vents be required for all BWRs with Mark II containments. The
11 task force also recommends that the staff reevaluate other containment designs
12 as part of the long-term review to ensure that hardened vents are not necessary
13 to mitigate beyond design-basis accidents. Next slide please.
14 Recommendation 6: the next mitigation topic is hydrogen control.
15 It is important to note that Recommendation 4, regarding enhanced mitigation of
16 prolonged station blackout would if implemented reduce the likelihood of core
17 damage and hydrogen production. Recommendation 4 also includes provisions
18 for back-up power, for hydrogen igniters and BWR Mark III, and PWR ice
19 condenser containment designs. In addition, while primarily aimed at
20 containment overpressure prevention, Recommendation 5, for enhanced wetwell
21 vents for Mark I and Mark II containments, would provide a reliable means for
22 venting hydrogen to the atmosphere. These steps would greatly reduce the
23 likelihood of hydrogen explosions from a severe accident. Sufficient information
24 is not yet available for the task force to reasonably formulate any further specific
25 recommendations related to combustible gas control. Therefore, the task force

1 recommends that the staff identify insights from hydrogen control and mitigation
2 in primary containment and other buildings as part of the longer-term review.
3 Slide please.
4 Recommendation 7: complete understanding of the detailed
5 sequence of events and the condition of spent fuel pools will not fully be
6 developed for some time. However, the task force had sufficient information to
7 form our recommendations in this area. The task force concluded that the two
8 most important insights from the Fukushima accident related to spent fuel pool
9 safety relate to (1) the instrumentation to provide information about the condition
10 of the pool and the spent fuel, and (2) the plant's capability for spent fuel pool
11 cooling. The task force recommendations address both of these insights. First,
12 the task force recommends that spent fuel pool instrumentation be required to
13 provide reliable information on the conditions in the spent fuel pool. Second, the
14 task force recommends a requirement for spent fuel makeup to have safety
15 related AC power that is controlled under a technical specification. And lastly the
16 task force recommends a requirement for a seismically qualified flow path to
17 spray water into the spent fuel pools including an easily accessible connection to
18 supply the water from outside the building. Next slide please.
19 Recommendation 8: the last recommendation for enhanced
20 mitigation capability is in the area of on-site emergency response. This includes
21 emergency operating procedures, severe accident management guidelines, and
22 extensive damage mitigation guidelines that are required under 50.54(hh). The
23 task force recommends that on-site emergency response capabilities be
24 strengthened and integrated for a seamless response to severe accidents. This
25 includes several components. EOPs and EDMGs are currently required. The

1 SAMGs are a voluntary industry initiative. The SAMGs are an important
2 component of accident mitigation. The task force concludes that an expansion of
3 the regulatory requirements to include SAMGs is warranted to strengthen the
4 mitigation layer of defense and depth.
5 The task force also concludes that integrating the EOPs, SAMGs,
6 and EDMGs, and including them as a reference in the Plant Technical
7 Specifications, would further clarify authority, streamline decision-making, and
8 prevent potential delays in taking important emergency actions. Lastly the task
9 force concludes, that the NRC should require more formal, rigorous, and frequent
10 training of reactor operators and other on-site emergency response staff on
11 realistic accident scenarios with realistic conditions. Effectiveness of on-site
12 emergency actions is a very important part of the overall safety of nuclear power
13 plants. The task force believes that the NRC should strengthen the current
14 system substantially by implementing these measures. Slide 20 please.
15 The fourth and final theme is that emergency preparedness
16 provides further defense-in-depth by minimizing public dose should radiological
17 releases occur. The task force examined how the insights from the accident at
18 Fukushima might inform both on-site and off-site emergency planning in the U.S.
19 Slide. Recommendation 9: while the task force believes that the emergency
20 planning basis in the United States provides radiological protection to members
21 of the public, the task force identified two aspects of the Fukushima accident that
22 warrant additional consideration in the United States. These two aspects are
23 emergency preparedness for prolonged station blackout events and emergency
24 preparedness for multiple unit events. The complications of a prolonged station
25 blackout would affect communications capabilities such as power supplies for

1 wireless and satellite telephones, the ability for a licensee to transmit data to the
2 NRC via the Emergency Response Data System, and backup power supplies to
3 emergency preparedness facilities such as the Technical Support Center. The
4 complications of an accident affecting multiple units at the same site would
5 challenge EP from the perspective of insuring adequate staffing capable of
6 responding to multiple accidents, the capability to perform dose assessment for
7 simultaneous releases, and the size of EP facilities and the quantities of
8 equipment. Enhanced training and exercises would be needed for prolonged
9 station blackout and multi-unit emergencies. Again, the task force recognizes
10 that rulemaking implementation will take time to complete, therefore we
11 recommend the interim measures be implemented within several months. Next
12 slide.
13 Recommendation 10: in addition, the specific items regarding
14 prolonged station blackout and multi-unit events in Recommendation 9, the task
15 force identified three additional topics for longer-term review. First, the task force
16 recommends that the staff analyze current protective equipment requirements for
17 emergency responders and guidance based upon the insights from the accident
18 at Fukushima. Second, the task force recommends the staff evaluate the
19 commanding control structure and the qualifications of decision makers to ensure
20 the proper level of authority and oversight exists in the correct facility for a long-
21 term station blackout or multi-unit accidents, or both. For example, concepts
22 such as whether a decision-making authority is in the correct location within the
23 facility, whether the currently licensed operators need to be integral part of the
24 emergency response organization outside the control room, that is the TSC, and
25 whether licensee emergency directors should have formal license qualification for

1 severe accident management. Finally, the task force recommends that the staff
2 evaluate additional ERDS enhancements such as the alternate methods via
3 satellite for example to transmit ERDS data that do not rely on hardwired
4 infrastructure that could be unavailable during a severe natural disaster, and
5 whether ERDS should be required to transmit continuously so that no operator
6 action is needed during an emergency.
7 Recommendation 11: the accident at Fukushima also provided
8 insights on a number of other EP topics. The task force has identified four areas
9 it recommends for longer-term review. First, the staff should study whether
10 enhanced on-site emergency response resources are necessary to support the
11 effective implementation of licensees' emergency plans, including the ability to
12 deliver the equipment to the site under conditions involving significant natural
13 events or degradation of off-site infrastructure or competing priorities for
14 response resources could delay or prevent the arrival of off-site aid. Second, the
15 staff should work with FEMA, the states, and other external stakeholders to
16 evaluate the insights from implementation of EP at Fukushima to identify
17 potential enhancements to U.S. decision-making framework including the
18 concepts of recovery and reentry. Finally, the staff should conduct training in
19 coordination with the appropriate federal partners on radiation, radiation safety,
20 and the appropriate use of potassium iodide in the local community around each
21 nuclear plant. Next slide please.
22 Recommendation 12: regarding reactor protection and mitigation
23 systems, a fundamental characteristic of the reactor oversight process is that
24 inspection activities or samples are selected for relative risk significance of the
25 activity or equipment being examined based on its effect on core damage

1 frequency. Further the NRC evaluates inspection findings in these areas and
2 uses the significance determination process to determine significance based on
3 risk. The ROP's reliance on risk undervalues the safety benefit of defense-in-
4 depth and consequently reduces the level of NRC resources focused on
5 inspecting defense-in-depth characteristics that contribute to safety. In addition,
6 the reactor oversight process does not consider the industry's voluntary safety
7 enhancements. Consequently, the staff devotes limited or no inspection effort to
8 voluntary initiatives such as the implementation and adequacy of SAMGs.
9 Finally, the structure of risk based inspection program under the
10 ROP focuses on licensee compliance with regulations and requirements and
11 leaves very limited opportunity for inspection staff to evaluate the adequacy of
12 the licensing basis at a given facility. The task force concluded that
13 enhancements for inspection program would improve its focus on safety. The
14 task force recommends that the NRC strengthen regulatory oversight of licensee
15 safety performance by balancing emphasis on defense-in-depth requirements
16 consistent with recommended defense-in-depth framework. The task force
17 recommends expanding the scope of the annual reactor oversight process self-
18 assessment and biannual reactor oversight process realignment to more fully
19 include defense-in-depth considerations and enhancing NRC staff training on
20 severe accidents, including training of resident inspectors on SAMGs. Next slide.
21 Let me turn now to the New Reactor Design Certification Reviews.
22 In our report the task force proposed an implementation strategy for new
23 reactors. The two designs currently in the certification rulemaking process, that
24 is the AP1000 and the ESBWR, have passive safety systems. By nature of their
25 passive safety designs an inherent 72-hour coping capability for the core

1 containment and spent fuel pool cooling with no operator action required, the
2 ESBWR and the AP1000 designs have many of the design features and
3 attributes necessary to address the task force recommendations. The task force
4 supports completing those design certification rulemaking activities without delay.
5 The task force suggested that licensees referencing the AP1000 and ESBWR
6 could confirm that these designs meet the intent of Recommendations 4 and 7
7 regarding station blackout and spent fuel pool safety after licensing but before
8 operation. For new reactor designs without passive safety features, namely the
9 ABWR design certification renewal application, and the EPR and APWR design
10 certification applications, the task force recommends that the staff apply
11 Recommendations 4 and 7 prior to certification. Next slide please.
12 For the South Texas Project combined license application, the task
13 force recommends that the Commission proceed with rulemaking for the ABWR
14 design certification amendment, however the task force recommends that the
15 applicant address Recommendations 4 and 7 prior to licensing. For all near-term
16 combined license applications under review, the task force suggests that
17 Recommendations 8 and 9, regarding emergency procedures and emergency
18 preparedness be implemented after licensing but before plant operation. The
19 task force notes that the combined operating license and early sight permit
20 reviews have adequately addressed Recommendation 2.1, regarding design-
21 basis external hazards in the context of updating the state-of-the-art and
22 regulatory guidance used by the staff in its reviews. Next slide.
23 For the expected Watts Bar 2 and Bellefonte Units 1 and 2
24 operating license applications, the task force proposes that Recommendation
25 2.1, regarding seismic and flooding design-basis be addressed before licensing,

1 in addition to Recommendations, 4, 7, 8, and 9. In conclusion, the task force
2 found there's no imminent risk from continued operation and licensing activities.
3 However, the task force identified a number of recommendations to clarify our
4 regulatory framework, enhance safety with interim actions to be completed over
5 the next several months, initiate rulemaking and additional orders to further
6 enhance safety, and lastly, the task force provided recommendations for long-
7 term evaluations. The task force recognizes that what we've recommended here
8 is a lot to chew on, and we also recognize there are various expert and technical
9 reviews, but the task force is very sound in our agreement on proposing these
10 recommendations for your consideration and getting input to help you make your
11 decisions. And with that I'd like to turn the presentation back to Marty for the
12 long-term review.
13 MARTY VIRGILIO: Thank you Charlie. The Commission also
14 directed the staff to conduct a longer-term review of the events that occurred at
15 Fukushima and this longer-term review is essentially a continuation of the work
16 that the near-term task force has started. The long-term review will address
17 issues that the near-term task force wasn't able to address in part because of the
18 information that was available. In some cases, we just don't have sufficient
19 information to understand the detailed sequence of events and some of the other
20 issues. So we'll deal with that. Also, as Charlie mentioned, the long-term task
21 force will have to address some of the issues that he has placed on the table, for
22 example, the issue of seismic flooding and fires. That's an issue that we'll
23 address in the longer-term. Furthermore, the near-term task force was limited in
24 scope. We focused on the operating reactors and the facilities that are under
25 licensing review today. So as part of the longer-term effort, we will look at our

1 materials licensees, non-power reactors, non-operating reactors, et cetera. On
2 slide 29, just back to the near-term review for a moment. The near-term task
3 force was specifically directed to maintain its independence, and as such the
4 team did not have extensive interaction with stakeholders. So, as part of
5 responding to the near-term task force recommendations, the NRC will provide
6 an opportunity for external stakeholder input, stakeholders from industry, federal,
7 state, local stakeholders, and the public. Our interactions as we envision them
8 will be primarily through public meetings, but we also envision solicitation in the
9 Federal Register to obtain comments.
10 We're currently planning a meeting on the 28th; this will be, of July.
11 This will be a public meeting where the task force will once again have an
12 opportunity to provide an overview of their findings, conclusions, and
13 recommendations. And this meeting will allow the audience an opportunity to
14 seek clarification from the task force if there're any issues that they don't
15 understand. These meetings will be transcribed. We'll also have them webcast
16 and teleconferenced as well. In closing, I just want to once again, express my
17 appreciation and the appreciation of the EDO's Office and the staff for all the
18 effort put in by this near-term task force, and at this point now we look forward to
19 your questions. Thank you very much.
20 CHAIRMAN JACZKO: Well thank you Marty and Charlie, thank
21 you for your very thoughtful presentation and all the members of your team.
22 We'll start our questions with Commissioner Magwood.
23 COMMISSIONER MAGWOOD: Thank you, Mr. Chairman. It's
24 kind of hard to know how to proceed with this. I have so many questions; we
25 could sit here all day [laughs].

1 CHAIRMAN JACZKO: We can do that if you'd like.

2 COMMISSIONER MAGWOOD: Oh, that's okay. I have a plane to
3 catch later. But you know, let me just first skim a few things and that should
4 probably keep this relatively short. First, Charlie, I guess this is the last chance,
5 we'll have a chance to meet across the table this way and again, you know thank
6 you for leading the task force and thank you for your long service with NRC and
7 the government. It's been quite a career. One question, it sort of popped up
8 quite recently actually was related to KI. The Commission received a letter,
9 actually quite recently that highlighted some concerns about the level of detail
10 that the task force put into this. And actually the letter is a public letter from Peter
11 Crane who's a well-known observer of the NRC, asks a series of questions about
12 what actually happened in Japan with KI. What kind of radiation does this to
13 thyroid received by Japanese citizens especially children, and what distance is
14 from reactors? What does this suggest about the need for KI beyond the 10 mile
15 radius in which NRC now offers it? And he goes on to say these are all
16 questions that can be answered into a greater or lesser extent by any informed
17 citizen who reads newspapers and has access to a computer but anyone who's
18 only source of information is the NRC Task Force, which was in theory
19 addressing such issues, would be out of luck.

20 I wanted to give you a chance to react to that, but also give us
21 some ideas as to what kind of discussion, because the task force's comments on
22 KI were relatively limited. And this is an issue that's important to a lot of people.
23 What kind of discussion did you have with the task force and did you have any?
24 What kind of interaction did you have with the staff on that?

25 CHARLIE MILLER: Thank you Commissioner, let me start, but one

1 of the things I want to be able to do today is for the last three months I've been
2 doing all the talking and I'd like to let the task force members have an opportunity
3 today to give you some of their individual insights on issues. I guess first we had
4 a lot of discussion about KI and I think one of the things that we took away was
5 that administration of potassium iodide is something that has to be carefully
6 done, okay. We're not -- we had no medical doctors on the task force, and the
7 administration of potassium iodide does require the insights from the medical
8 community. And so, if you go back to the days right after Fukushima, there were
9 even some that were recommending that residents on the West Coast of the
10 United States start taking potassium iodide. So, that raised some concerns and I
11 think our biggest result from our discussions was this is something that needs to
12 be evaluated again in the longer-term. I think that the agency has looked at this
13 in a lot of detail over a number of years, and I think that with regard to potassium
14 iodide, I think it is a tool to protect the thyroid in appropriate situations.
15 Sometimes it gets confused that it's the magic radiation pill, that's going to
16 protect you against everything. It's not. With regard to what was going on some
17 in Japan, Dan was there for a period of time on-site, so I would ask him to have
18 any insights and Nathan is our Emergency Preparedness Expert on the task
19 force. I'd like to allow them to make any comments that they choose to make.
20 DAN DORMAN: I think during the period that I was in Japan,
21 during the second and third weeks after the accident, there was a lot of
22 discussion of KI and there was a regular stream of American citizens coming to
23 the Embassy to receive distribution of KI, but at no time was there a
24 recommendation to American citizens to administer KI. There was some
25 anecdotal information that there were differing views within the international

1 community within, in Tokyo on the administration. So I think there will be a lot
2 information forthcoming on what was done to administer KI or distribute KI in
3 Japan. I think in our discussions, as Charlie indicated, we also were cognizant of
4 the discussions that were occurring in the same time in the United States about
5 administration of KI on the West Coast. And I think where we ended up as a task
6 force was in Recommendation 11, where we recommended further long-term
7 review of KI issues and particularly a public education component of that.
8 NATHAN SANFILIPPO: And just to -- I had a couple extra points
9 as Dan mentioned, we haven't had a lot of official information with respect to
10 results of protective actions in Japan. There's been a lot of different media
11 reports and whatnot, but we're sure that the effects of the evacuations, the
12 sheltering, other protective actions will be studied in much more detail by the
13 Japanese government. So, of course in the United States, KI is much more than
14 just an NRC issue. It spans a lot of federal agencies and you know I think there
15 is a lot of recognition amongst the task force that any areas that would involve
16 significant interagency coordination would need to be studied in the longer-term.
17 So there wasn't any more specific recommendation other than to maintain
18 awareness of protective actions that were taken in Japan and see what insights
19 we can gain from them as well as doing more public education as Dan mentioned
20 but I think that's really where we limited our discussion with respect to KI
21 because there wasn't any revelation that really indicated that there was
22 something that needed more urgent action in the U.S.
23 COMMISSIONER MAGWOOD: I appreciate that. You know KI I
24 think is going to be interesting because it's that kind of good analog for many
25 issues here because unlike some things that have I think occurred with this

1 incident, it is an area where I think we can take direct scientific outcomes and
2 sort of re-inform the regulatory process. And let me, and again if you feel like
3 you want to pass this off to someone else Charlie, feel free. But you know when
4 I look at many of the task force recommendations there really, while they're
5 insights that were gained from looking, observing what occurred at Fukushima,
6 they aren't necessarily in my view, and just give your response to this, they're not
7 necessarily in my view specific technical conclusions that were reached about
8 things that took place in Japan and therefore need to be fixed in the United
9 States because we have exactly the same problem. That's not the theme I got
10 from reading the report. The theme I got really was we've gained insights from
11 the overall incident and we've gone back, we've looked at our regulatory
12 infrastructure and have decided there's some things we can do better. Is that a
13 fair characterization?
14 CHARLIE MILLER: Let anyone speak for themselves but from my
15 perspective I think there were some things in our recommendations we felt were
16 a direct insight from what happened in Japan. But it is fair to say that we looked
17 at what happened in Japan and it caused us to take a step back and say, "Well
18 are there other ways that you could end up with the same outcome?" For
19 example, flooding as you see is a central theme to our recommendations. So
20 although the event in Japan was caused by you know by a major earthquake
21 followed by a tsunami, there's other ways that flooding can occur and you want to
22 make sure regardless of the way that the water gets in there it's going to cause
23 the same effect if you're equipment is not protected against it. So we tried to use
24 the insights that we got from that directly and say, can we tie it back to what the
25 outcome was in Japan to say are there issues with regard to U.S. plants that

1 need to be looked at and addressed?

2 COMMISSIONER MAGWOOD: I didn't know if anyone else was

3 going to comment on that but -- Gary.

4 GARY HOLAHAN: I would just add that the task force was very

5 cognizant of the fact that we were really responsible for developing

6 recommendations for the U.S. We're not making judgments about you know

7 recommendations for the Japanese and how they should deal with the

8 Fukushima event, nor are we dealing with an event within the U.S. Obviously

9 we're extrapolating, we're trying to learn from what happened in a different

10 situation, how those insights and those facts might apply in the U.S. So you

11 know even though a tsunami is unlikely in the U.S, that doesn't mean that we

12 can't learn something about flooding. So we try to extrapolate from the

13 information at Fukushima.

14 COMMISSIONER MAGWOOD: Well let's sort of pursue that a bit.

15 What did you learn about flooding that you didn't know before, from looking at

16 Fukushima.

17 GARY HOLAHAN: I think we learned that it can affect a plant very

18 extensively; even minor flooding is not limited to one area of the plant. It can

19 take out multiple pieces of equipment across a broad area of the plant, and it's

20 important to protect plants in that way.

21 COMMISSIONER MAGWOOD: Didn't we already know that?

22 GARY HOLAHAN: Well, it's not evident that we actually dealt with

23 it in such a way that in general the approach to flooding is establish a maximum

24 flooding level, and then put a bunch of equipment above that level. And I think

25 the insight from Fukushima is if you're wrong, or if you have a flood that is above

1 what you thought was the maximum flooding level, it doesn't just affect one part
2 of the plant, it could affect multiple parts of the plant. It obviously, in Fukushima,
3 in both Units 1 through 4, and 5 and 6, which got substantially less flooding, there
4 was a very extensive loss of AC power. And it's quite difficult to protect electrical
5 power once flooding starts.
6 COMMISSIONER MAGWOOD: I appreciate that, my time is up,
7 but I just would make an observation, I think this is one where I'd look forward to
8 talking with certain members of the task force, and I know Charlie you're
9 escaping to go golfing but you'll leave Gary behind to clean up the mess. But
10 you know one of the conversations I look forward to having with you and with the
11 staff and with the stakeholders is really the focus on that question of, what is the
12 new knowledge? Because I think that speaks very clearly to what I think is
13 perhaps the most important aspect of the report which is, how to redefine
14 inadequate protection. And I think that's the conversation that we'll have to
15 engage over the next several weeks and months. So with that, once again, I
16 thank all of you for what you've accomplished and thank you Mr. Chairman.
17 CHAIRMAN JACZKO: Commissioner Ostendorff.
18 COMMISSIONER OSTENDORFF: Thank you Mr. Chairman.
19 Again, my thanks. The report was well written, well organized, while I may have
20 maybe some different viewpoints from the task force on a couple of issues, I'm
21 going to try to better understand some of those in questions. I thought the
22 framework in which you approached laying this out for us was extraordinarily
23 helpful. Charlie, let me ask you a couple of questions. I'll ask you to be the
24 quarterback, pass it to the right team member to answer. One of the things I
25 found really useful was the section that begins on page 15, "Regulatory

1 Framework for the 21st Century." Not having been a long-term NRC employee, I
2 found that historical perspective as to what happened the last few decades, how
3 regulations evolved, what was done when, response to TMI, Davis-Besse, 9-11,
4 etcetera, that approach was very, very insightful, and I can understand why you
5 had perhaps drawn the conclusion and you use the phrase "patchwork" to
6 describe the regulatory framework. I may not use that framework to describe it
7 but I understand and appreciate where you're coming from. I guess a high level
8 question that I do have is, when you looked at the recommendations for
9 rulemaking and orders that are contained in your report, did you provide those
10 through the architecture of our existing regulatory framework or through the
11 architecture of your future vision of what the framework might look like if
12 Recommendation 1 were enacted?
13 CHARLIE MILLER: Okay. Thank you. Well, I'll ask Gary to
14 address that.
15 GARY HOLAHAN: I think we developed all the recommendations
16 both the short and long with the same concept in mind, and that being that
17 protection from events beyond the traditional design-basis are important and I
18 think you know both the short-term and the long-term recommendations are
19 really framed to be consistent with the recommended framework. That's not to
20 say that without that framework you couldn't come to a conclusion that some of
21 those elements were appropriate, but the package was put together consistent
22 with the framework that says, you know, be careful about the initiating events and
23 with defense-in-depth in mind you ought to protect just in case you didn't get the
24 design-basis right or if you're unlucky enough that something beyond the design-
25 basis should occur.

1 COMMISSIONER OSTENDORFF: Well, let me put a finer point on
2 that. If Recommendation 1 were not accepted by the Commission, I'm just
3 asking this as a hypothetical but I think this architecture for what framework we're
4 looking at is absolutely critical for us to make informed decisions. If
5 Recommendation 1 were not enacted, would that change how you look at any of
6 your recommendations for rulemaking or orders?
7 GARY HOLAHAN: Yes, I think it does. I think that the framework
8 sets out a vision in which all the plants would be tested against the same level of
9 safety. Without that framework if you used the existing approach which treats
10 some things that are requirements, some things as not. I think you would be led
11 to the conclusion that not all plants would have -- would be subject to all of these
12 recommendations, but I think many of the older plants which probably have less
13 robust flooding and seismic and other features. I think you would be led to do
14 this -- do different things on some plants versus other plants. So part of the
15 concept of the framework is to say, here's an opportunity for the Commission to
16 articulate what it expects as a level of safety and then test all the plants against
17 that same standard.
18 COMMISSIONER OSTENDORFF: Okay. That's very helpful Gary,
19 thank you. Kind of following on that same notion about the regulatory tools, I
20 appreciated the clarity with which the task force specified near-term, longer-term,
21 rulemaking, orders, staff actions. I thought that was very helpful. With respect to
22 the rulemaking and order recommendations, were there any other regulatory
23 tools that you looked at or considered in your deliberations? Bulletins, Request
24 for Information, I'm just, whoever?
25 GARY HOLAHAN: Let me try that. I think we looked at orders and

1 rulemaking because those are the most formal parts of NRC's regulatory actions.
2 I think we look at bulletins and generic letters as really as requests for
3 information and I think we were looking for something that would have the
4 Commission establish expectations of safety. And I think it's pretty clear in the
5 report that we found much more comfort in things that were required than those
6 that were voluntary. And that Requests for Information, either through a generic
7 letter or a bulletin, is leading more towards voluntary activities than necessarily
8 the requirements of rules or orders. You know orders are kind of frightening
9 thought, it sounds like an immediate thing, but in fact we saw that as virtually the
10 only tool to fill in between now and perhaps five or six years from now.
11 COMMISSIONER OSTENDORFF: Let me explore a different
12 notion here. Thank you Gary, that's very helpful. And that deals with a topic that
13 Commissioner Magwood raised in his questions and is associated with the level
14 of information that you had available, and I would just, I've been very impressed
15 with the scope and breadth of your report in a 90-day time period from an event
16 for which there's still probably an evolution of information in areas A, B, and C.
17 And I think you did a nice job in the report of parsing out what are those things
18 you had sufficient understanding of to make some kind of a judgment to those
19 that required a longer-term review. But there's one that I maybe wanted to ask
20 just for context and that deals with the recommendation for an order on reliable
21 hardened vents for Mark I and Mark II BWRs. Last week I had a chance to ask
22 INPO, did INPO feel like they had a sufficient level of understanding of the
23 sequence of events and the modes of failure at Fukushima in order to come to
24 some conclusion as to what the appropriate path forward was? And as I
25 understood it INPO's response to me was that they still had some questions

1 about what was, what happened in that area. And I'd be curious as to anybody,
2 Dan, if that's your point. You know your assessment. I know that on page 40 of
3 your report, it says that "it is unclear whether the operators were ever successful
4 in venting the containment in Unit 1, 2, or 3." The bottom of page 40, I'm just
5 curious as to the level of knowledge.
6 DAN DORMAN: There's a couple of aspects for Fukushima that go
7 into the question of the hardened vent, and part of that is captured in our
8 recommendation related to decision-making in the context of Severe Accident
9 Management Guidelines. But more to the technical aspect of the vent itself,
10 there was certainly some indication that they had some difficulties on several of
11 the units in venting the containments that were attributable likely to a number of
12 factors that relate to prolonged station blackout and the conditions that they were
13 operating in. So we looked at the -- at Mark I vents in the United States, and we
14 looked at several of the plants that have the Mark I, the hardened vents and
15 looked at them with a view toward the ability of the operators to conduct that
16 operation during a long-term station blackout. So we're looking at the mode of
17 power for the valves that would be need, the availability of ruptured discs to
18 facilitate the venting process, and where those valves were located in the facility
19 in terms of the ability of the operator if they needed to operate them locally during
20 a prolonged station blackout to get to that location and conduct the operation
21 needed. And in fact there are some cases where, because the vent is part of the
22 containment boundary, there are measures in place to prevent inadvertent
23 venting during normal operation that contribute to the challenges that operators
24 would experience in operating the vents. So we had some insights from
25 Fukushima, I think sufficient to support our look at specific details of designs in

1 the United States that raise questions in our mind of the ability of the operators to
2 effectively perform that operation, specifically in the prolonged station blackout
3 circumstances.
4 COMMISSIONER OSTENDORFF: Thank you. I'm going to ask
5 one quick question and then I'll wrap up here. The areas of spent fuel pool
6 safety; page 44 of the report is a very nice discussion. We received a number of
7 letters from members of Congress asking us to look at the accelerated
8 movement of the spent fuel from the pool to dry cask. I did not note that you had
9 a recommendation or finding in here that we needed to do that. Could somebody
10 comment on that aspect?
11 CHARLIE MILLER: I'll start and let the others jump in. You're
12 correct, you don't see a specific recommendation to take it out or not take it out.
13 What you saw was -- the way we approached it was recognizing that before you
14 can take fuel out of a pool it has to be at least five years old. By that time we call
15 it, for lack of a better word, cold fuel. So the amount of heat that's being
16 generated is a very small fraction of what originally was. So when we tried to
17 look at it holistically with regard to the pool, what's the best way we can protect
18 the pools. So the recommendations that we made, we feel would enhance spent
19 fuel pool safety more than simply taking old fuel out of the pool. It would provide
20 knowledge of what the levels were in the pool. It would provide the capability to
21 keep the pool cooled. Should you get in a situation due to some external event
22 where the possible integrity of the pool was challenged, you'd have the spray
23 capability to be able to continue to provide some cooling and be able to mitigate
24 any consequences of any radiological releases. So that's the way we
25 approached it. Water in the pool is good, you keep the fuel covered, the fuel was

1 meant to be cooled by water, and we think that that is the prudent measure that
2 we should have taken. And I'll offer for anybody else to amplify on that.
3 NATHAN SANFILIPPO: I would just add that in the early days of
4 the event, there was a lot of uncertainty as far as what was actually going on in
5 that Unit 4 spent fuel pool, and a lot of the calls to move fuel out of the pool I
6 think were generated out of the thought that that pool had completely drained.
7 And since had indications from the Japanese government that that may not be
8 the case, and there's still significant uncertainty as far as what really happened,
9 hence our recommendation on better instrumentation in the pool to help have
10 some indication of the status of the pool. And then with respect to what -- you
11 know the hydrogen generation, when you know there was a lot of discussion
12 about well did the Unit 4 reactor building explode due to hydrogen generation
13 from fuel from the spent fuel pool being uncovered versus coming from one of
14 the other units? That is still uncertain but as those uncertainties rose and this
15 was a situation where there was, we didn't have specific finite concrete
16 information to make a final judgment, it supports exactly the discussion that
17 Charlie said that there was no overwhelming evidence that the fuel would be
18 safer outside of the pool than in it.
19 COMMISSIONER OSTENDORFF: Thank you. Thank you Mr.
20 Chairman.
21 CHAIRMAN JACZKO: Commissioner Svinicki.
22 COMMISSIONER SVINICKI: Thank you all again for your work
23 and I -- my two colleagues who asked you questions before me have covered
24 some of the same issues that I was going to raise, but as usual they've done it in
25 a much more sophisticated nature. And so I'm sitting here, I'm listening carefully,

1 I've read your report, and I generally would come to a meeting like this, I would
2 have thought last night and I would have had some questions that I knew I was
3 answer -- ask you today, but I specifically came today wanting to listen because
4 what I wanted to do was to test. Well you've probably heard this saying, "There's
5 what you wrote, and then there's what I think I read." So, I wanted to test some
6 of that today, obviously you looked at a lot of things in a hundred or so pages you
7 tried to put down on a consensus basis what you concluded.
8 So I'll start out I guess with really the most basic reaction that I had,
9 and you did cover this again today. You talk about the fact that a similar
10 sequence of events is unlikely, and Charlie you've talked about tsunamis versus
11 floods. You've gone on as a task force to say that even though that's unlikely in
12 the U.S. we have mitigation measures that would further reduce the effect of
13 something like that, even if it occurred with its low likelihood. And you go on to
14 conclude that there is not an imminent risk from both continued operation and
15 licensing activities, and so that sounds you know very reassuring.
16 That sounds like something that you read and you're reassured by,
17 but then I get to Recommendation 1, and there's been some talk, both of my
18 colleagues have asked you about the philosophy behind Recommendation 1,
19 and when I read Recommendation 1 what it -- how I interpret is even though the
20 task force has offered these assurances when you get to Recommendation 1 the
21 notion there is that fundamentally what has been encompassed by adequate
22 protection has been not sufficient and needs to be expanded.
23 So, it seems like on the one hand there's that reassurance, on the
24 other hand it's a bit of, concluding slide says it's a clarification of a regulatory
25 framework. I think that that's a real change to our regulatory framework. So is

1 there something I'm missing between those two pieces and could you, again with
2 an opportunity to maybe speak more conversationally about it, can you help me
3 understand what that means?
4 GARY HOLAHAN: Sure, let me try. I think you're right that there is
5 more than clarification involved. That in fact we're calling, or recommending to
6 the Commission that it establish, in some sense, a different line for what is
7 adequate, an adequate level of protection. I think the word clarification refers to
8 the fact that we would hope that the recommended framework would be more
9 clear than our -- than the way historically accidents beyond the design-basis
10 have been dealt with. I think for quite a long time -- decades, it has been difficult
11 for the staff and for the Commission, and frankly for the industry, to deal with
12 situations beyond the design-basis. And they've been dealt with on a case by
13 case basis and sometimes voluntary, sometimes they're requirements, and I
14 think part of the insights from the Fukushima event that led us to say we really
15 ought to deal with the framework, is we found so many cases in which
16 equipment, for example, from 50.54(hh) for security reasons that could be useful
17 in an event such as Fukushima, but that having approached that issue as a
18 security matter didn't lead to protecting that equipment from flooding for example.
19 So where you see it could be quite useful and in fact provide
20 enhanced protection, public health and safety, it might not be available during
21 any specific event. It might not be in a location that was protected from flooding
22 or wind or seismic and the insight that we drew from that is, if you make these
23 decisions in a more holistic way, more cognizant of you know, what kind of
24 protections are you trying to foster, then perhaps you can do them in a more
25 useful way. And so, it probably would have been quite easy to provide 50.54(hh)

1 equipment we call, in effect the guidelines to go along with them, that would
2 protect it from flooding. We just didn't think of it at the time. We were thinking
3 about what should we do about security, and terrorist events, and airplane
4 crashes, and fires, and we moved ahead in that way. And so for some plants
5 they're probably very well protected against flooding and others not so well,
6 because simply it wasn't brought out. And I think, what we're suggesting is that
7 maybe if we can, if we could find a framework that helps us think about those
8 things in advance we'll have a more holistic and coherent system. I think that's
9 the connection between Fukushima and framework.
10 COMMISSIONER SVINICKI: Well, I guess I would say on the
11 patchwork, I think probably the regulatory framework for all regulations in the
12 United States have grown up over time. The Telecommunications Act dates
13 back to 1934, and the FCC has probably made a lot of changes over time. I
14 didn't serve on the Commission immediately after 9-11 but my sense is that the
15 regulatory choices made then were conscious. I think we put in place
16 requirements for B5B and they have a certain regulatory treatment that I think
17 was very conscious and so I think what I interpret is the task force is saying, in
18 light of Fukushima, and I'm not sure that I see this connection, but I think this is
19 what you paused it, is in light of Fukushima whatever treatment was given to
20 some of these activities as beyond design-basis events as you suggest that that
21 be relooked at and again I think it's a very substantive pivot and a lot more than a
22 clarification.
23 DAN DORMAN: If I can make two points on this, you mentioned
24 the 9-11, that was an instance where there was an event that did not impact the
25 nuclear industry, and did not pose an imminent threat to the nuclear industry, but

1 the Commission decided to increase requirements for both design-basis aspects
2 of security and beyond design-basis aspects of security and did it under
3 adequate protection. As we look back over other decisions, such as the SAMGs
4 as a voluntary initiative, the hardened vents as a, I think Charlie's characterized it
5 as a quasi-voluntary initiative, because we asked them to do it in a generic letter,
6 and they all did it but there was an implied, we'll look at possible requirements if
7 you don't.
8 And so I think there's -- what we found is as the agency looks at
9 these low probability, high consequence events and considered them within the
10 context of the decision points that are provided by the Commission to the staff in
11 the backfit rule, there's the cost benefit aspect where we have in the regulatory
12 analysis guidelines nearly 50 pages of guidance to the staff, a wealth of
13 experience in applying that guidance and that decision-making criterion. But as
14 we look at things like the 9-11 decisions, we found very little guidance to the staff
15 in how to prepare a recommendation to those criterion to the Commission. As
16 we looked at the regulatory framework that we had, we talked in the first meeting
17 that we had with you two months ago about the things that we were looking at in
18 the framework that we had to work with that was not there after Three-Mile
19 Island.
20 One of the areas that we looked at was the safety goal policy
21 statement, and we drew this notion of defense-in-depth and the balanced
22 approach to defense-in-depth, and particularly the protection mitigation and
23 emergency preparedness aspects in part from the safety goal policy statement,
24 we found it also to be consistent with the draft IAEA Safety Guide and so we took
25 that, built on that concept. What we found going forward is that as the staff looks

1 at situations in the future with very robust guidance on cost benefit, very limited
2 guidance on adequate protection, we found that for the staff in preparing
3 recommendations to the Commission we could that in a more consistent and
4 coherent manner if we had guidance in this area. That would also, we believe,
5 provide greater clarity to the public in understanding why we're making
6 recommendations and ultimately improve stability of regulation for the industry
7 and what they could anticipate from the Commission.
8 COMMISSIONER SVINICKI: Could I just -- it sounds like this may
9 have been perhaps your portion of the report because you've mentioned a
10 couple of things that this is I have my well-thumbed dog-eared copy of the report,
11 as do many of my colleagues on this side of the table, but you provided me now
12 an opportunity to ask you about this particular sentence which I think, I found the
13 most surprising maybe of anything in the report. But it says the "ROP's reliance
14 on risk undervalues the safety benefit of defense-in-depth and consequently
15 reduces the level of NRC resources focused on inspecting defense-in-depth
16 characteristics that contribute to safety." On one level I can interpret this and
17 say, yes I understand the facts are that because the NRC has gone to those
18 areas where we assessed there to be the greatest risk and said, let's keep risk
19 manageable or reduce risk in those areas. On the other hand I could look at it
20 more sensationally and say, that it you know seems to be almost a repudiation of
21 the multi-decadal pursuit of risk informed regulation in this agency. Can you give
22 me any sense in a very short answer of, did you intend to just say that that's
23 been misguided for the last two decades?
24 DAN DORMAN: I greatly appreciate the opportunity to address
25 that. I think the suggestion that the task force is making here is for a very

1 focused and narrow adjustment to the reactor oversight process. We think that
2 the focus on the risk informed aspects and the most risk significant aspects in our
3 oversight process was a significant enhancement to our oversight process and
4 should remain the principal focus of what we do.
5 As we asked the staff to go out and gather information on the
6 implementation of the severe accident management guidelines, what we found
7 was since those guidelines were implemented in the early to mid-90s, there has
8 been no NRC oversight of those activities, and we found the agency in response
9 to Fukushima pointing to those as an important distinctive as to why we'd be
10 better prepared for such an event. We particularly -- I think as we look as the
11 balanced approach to defense-in-depth and the recommendation that we draw
12 those -- that voluntary initiative into the regulatory requirements, that we were to
13 include having the reactor oversight process folks in their periodic review of the
14 allocation of inspection resources to include a small portion of the inspection
15 resources at the mitigation and emergency preparedness -- emergency
16 preparedness is already well addressed in the ROP, but really the mitigation of
17 the low frequency, high consequence events as a relatively, small piece, but a
18 piece which we viewed that it was not well represented at this point that that
19 would be a consideration that they should include in their annual reviews of the
20 allocation of inspection resources. We're not looking for a significant shift, I think.
21 CHARLIE MILLER: Commissioner, if I could just augment since
22 we're having a dialogue about this, and I think I can freely say this -- some have
23 read that chapter and, kind of, say, "Well, gee, this task goes off, and they come
24 up with these ideas." One of the things I want to really emphasize is that the
25 people at this table are part of where we are today. We're not sitting out on the

1 outside second guessing as to where the agency got today because we were
2 part of the people who were involved in making those decisions as to where we
3 got today. And, I think from our prospective we're looking to the future to say,
4 "Gee, what can we look back on about how we want and how we were involved
5 in making some of these decisions and how can it go forward in a better way in
6 the future?" That said, too, I think there's an interpretation, sometimes, in
7 reading what we've said that this just means more, more, more, more, more, and
8 it doesn't necessarily mean that. We're looking for framework so that the
9 decision-making process has a little more structure to it, and it's a level playing
10 field and some instances, it could provide for the fact that there's areas of our
11 regulations that we would back off of. So, that's, sort of, what we had in mind as
12 we looked each other in the eyes and tried to take this apart and formulate our
13 recommendation.
14 GARY HOLAHAN: Thank you for raising this point, because I think
15 a number of people have misinterpreted, at least parts of their report, to be
16 contrary to a risk-informed approach. The section you were looking at is --
17 relates to the ROP and I think it was at least our intent that what we're saying
18 about the ROP is it should be consistent with oversight associated for the
19 framework that is suggested in the front-end. And the framework that's
20 suggested, certainly, is a risk formed framework, in fact, as Charlie mentioned, I
21 think, you know part of the difficultly over the past, either in making and
22 addressing new issues that are beyond design-basis are, in fact, trying to move
23 issues out of the design-basis, such as -- it's hard for me to get through a whole
24 meeting without talking about ECCS 50.46a --
25 CHAIRMAN JACZKO: --the last time you are invited to a meeting,

1 Gary.

2 [laughter]

3 GARY HOLAHAN: And part of the difficulty in deciding that the

4 Commission might not require a, you know, full break of the reactor coolant

5 system piping, as part of its design-basis is to say well, "If it's not in the design-

6 basis, where would it go? How would we deal with it?" And, I think that has

7 been a difficult issue for a decade, and part of the idea of the framework is to

8 say, "There is a place and there is a way to deal with things that are beyond

9 design-basis." And which, in fact, you can tell we don't like that terminology,

10 "beyond-design-basis," but it's a way of taking, perhaps, overly-conservative

11 things in a design-basis, without giving up, entirely, and taking things that are not

12 fully dealt with within the design-basis and giving them an appropriate home, as

13 well. And, I think, what we're suggesting, without assigning frequency numbers

14 to the cutoff between the design-basis and beyond design-basis because I think

15 that is something that does involve a lot of stakeholder input, is bringing clarity to

16 that idea would, in fact -- I think, clarify what design-basis events and design-

17 basis protections are and what is appropriate to be done beyond that?

18 COMMISSIONER SVINICKI: Thank you. And I went way over my

19 time. Thank you for that indulgence.

20 CHAIRMAN JACZKO: Well, we don't want you to go over your time

21 so -- it was good -- it was a good discussion. Commissioner Apostolakis?

22 COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman.

23 Well, I will start with a comment and then, maybe, invite you to comment on my

24 comment. And, we've heard a lot that what happened in Japan was beyond

25 design-basis. Some people are saying that what happened was the unthinkable

1 and that we have to think about the unthinkable as we regulate nuclear power.
2 There is growing evidence that it was not unthinkable at all. That it was, indeed,
3 beyond design-basis event in Japan, but the design-basis was not good enough.
4 The Japanese, themselves, in a report to the IAEA, say that the assumption of
5 and preparedness for an onslaught of an enormous tsunami were not sufficient.
6 There is -- there were articles in the New York Times last March 26 and Wall
7 Street Journal this month on the 12, where experts are saying that the historical
8 evidence regarding tsunamis was not part of the calculations that led to their
9 design-basis, so, it's not unthinkable, then.
10 I recently received the probabilistic analysis of the sequence that
11 included the historical evidence of tsunamis, and it turns out that what happened
12 there would have had a frequency of about one in a thousand years, and
13 everybody around this table knows that this would be completely unacceptable to
14 any regulator or industry representative. So, it's not really -- we shouldn't be
15 talking about the unthinkable, the design-basis had problems, and I'm wondering,
16 now, if that is true -- and I'm sure the more we learn about the event and the
17 more reports are produced and evaluations, eventually, we'll know to what extent
18 the design-basis was defective. Would that change any of your
19 recommendations, if indeed the design-basis in Japan was not good enough?
20
21 AMY CUBBAGE: That, in fact, supports our recommendation.
22 The task force feels very strongly about our recommendation regarding re-
23 evaluating the design-basis for external events in the U.S. We need to make
24 sure that we don't have vulnerabilities like that.
25 COMMISSIONER APOSTOLAKIS: I think, your Recommendation

1 2 is along these lines. I would generalize it, and say that we should go beyond
2 flooding and seismic. We should rethink the design-basis and, maybe, every
3 now and then, look at the latest information and state of the art and have some
4 sort of mechanism to revisit. But the other recommendations that were made
5 under the assumption that we had a major beyond design-basis event, would
6 those be affected at all by this observation?
7 AMY CUBBAGE: No, the foundation is making sure that you have
8 the design-basis event, correctly. In the case of flooding, that would be ensuring
9 that you have evaluated the appropriate flooding sources and design your plan
10 appropriately, and, then, in light of the effect that we mentioned in the report of a
11 cliff-edge effect, that if you've gotten the design-basis wrong, just a small
12 increase in the flooding level could have catastrophic consequences and that
13 leads to the recommendations to have enhanced mitigation.
14 COMMISSIONER APOSTOLAKIS: Thank you. My second
15 observation is that there is a discussion in the report that I find very peculiar. As
16 you said, repeatedly, defense-in-depth is very important. And you used the
17 broad framework of defense-in-depth to structure your report, which is the three
18 major elements: Prevention, mitigation, emergency planning. So, on Page 22 --
19 well, you don't have to go there, but you're saying that PRAs Level 1 and 2 would
20 be useful in dealing with the first two elements of defense-in-depth, but, then, you
21 do something that I find very peculiar. You're saying we don't recommend,
22 including Level 3 PRAs. Now, in my mind, that says that maybe the third
23 element of defense-in-depth doesn't deserve the same detailed analysis as the
24 first two.
25 And, the other thing that is really peculiar is that this is the only

1 place in the report where you are recommending against using the method. I
2 didn't see anything anywhere else saying, “Boy, in thermal hydraulics, don't use
3 this correlation, or in materials science, don't do that.” So, I'm wondering why
4 this approach was singled out to not be recommended.
5 CHARLIE MILLER: I'm going to ask Gary to answer that, but
6 before I do, I'm going to share a little bit of our internal discussions, and when we
7 formulated this, we said, "We bet Commissioner Apostolakis asks us this
8 question."
9 [laughter]
10 CHARLIE MILLER: But I don’t know -- visionaries of this case or
11 not, but I think we're prepared to answer that question. I'll ask Gary to address it.
12 COMMISSIONER APOSTOLAKIS: I suspected it would be Gary.
13 [laughter]
14 GARY HOLAHAN: Well, I think this is in the report because, in fact,
15 the issue was raised by the Commission at one of our earlier meetings that
16 caused the task force to think about land contamination and about Level 3 PRA,
17 which is calculation of health effects, and, I mean, that's what led us -- it wasn't
18 really the experience of Fukushima that led us to put it in the report. It was, in
19 fact, the Commission's interest in the subject, so we felt obliged to explore to a
20 certain extent, and you see the result of that discussion.
21 I think what we're saying is not that health effects and land
22 contamination are not important issues, but that the Level 3 PRA is quite a
23 complicated way of calculating those things. So, we do calculate health effects in
24 our regulatory scheme, but it’s done in quite a simple way, more like Algebra
25 than probabilistic analysis, and it seems that that is an adequate way of dealing

1 with issues. In fact, preventing core damage, preventing the release of radiation
2 is, probably, the best, most effective, and the simplest concept for preventing off-
3 site doses and land contamination, and that's the area that we focused on.
4 COMMISSIONER APOSTOLAKIS: Well, let me make one
5 comment on this. Level 3 PRA doesn't, necessarily, have to mean that you're
6 calculating health effects, but you are recommending somewhere that we should
7 look at multiunit sites, which have not done so far. And, now, the moment you
8 say that, you know, you may have a release from Unit 1 and certain weather
9 patterns and, then, maybe, Unit 2 undergoes another release, sometime later,
10 where their pattern has changed, and, so on, it seems to me by going to a Level
11 3 or Level 3 minus, you can do a systematic evaluation of these things. It is
12 complicated, but the problem is complicated.
13 You, also, mention somewhere else that we have to make sure that
14 the various groups that would be involved should communicate with each other
15 well, and so on. So, all this stuff, it seems to me, can be evaluated in a
16 systematical and methodical way doing a Level 3 PRA without, necessarily,
17 ending up with deaths or cancers. You can stop a little before that. So, that's my
18 prospective on this, and, as you know, the Commission has a meeting later this
19 month on this issue.
20 And, finally, I want to make another comment. I believe, that on
21 your Page 25, you're perpetuating a misunderstanding and misperception.
22 Defense-in-depth is a major theme throughout the report. So, you're offering --
23 you're opening up -- well, the title of the chapter is Safety Through Defense-In-
24 Depth, and you are giving what I think is a great definition of defense-in-depth.
25 You're saying that, "No single layer is exclusively relied on to protect the public

1 and the environment." I think that's great. That's really what defense-in-depth is
2 all about. Unfortunately, though, you also say, that, "The key to a defense-in-
3 depth approach is creating multiple independent and redundant layers of
4 defense." I think they're neither independent, nor redundant. You want to
5 minimize the degree of dependence, but, certainly, the containment failure
6 depends on what accidents; how the core melted. Certainly, the effectiveness of
7 emergency planning depends on how the containment failed, and when.
8 Now, with respect to redundancy, redundancy means that I can
9 take one of these layers and remove it and I can still do my job. Well, then you
10 will have a problem with adequate protection. If I move the containment, I don't
11 think very many people would think that we have adequate protection. So, the
12 reason why I'm saying that is because it has come up in other context, as well,
13 and it has been used as a major argument against doing something or for doing
14 something. So, it's just a comment, if you want to comment that's fine, but I
15 really think your second part that says, "We don't want to rely a on single layer of
16 defense." I think this is the heart of defense-in-depth. This is really the definition.
17 GARY HOLAHAN: In our defense I would say that –
18 CHAIRMAN JACZKO: -- in-depth --
19 [laughter]
20 GARY HOLAHAN: I think the report acknowledges that defense-in-
21 depth is a philosophy, perhaps not subject to a perfect single definition, and it is
22 depending upon the circumstances. I think it's something that you recognize, but
23 every time you write down something that looks like a definition, it is, obviously,
24 subject to some criticism.
25 COMMISSIONER APOSTOLAKIS: And with this valiant attempt to

1 defend defense – I turn it back to you Mr. Chairman.

2 [laughter]

3 CHAIRMAN JACZKO: Well, and I remind my colleagues that

4 philosophies are difficult, but I think the Greeks gave us a lot of what we know

5 and understand for philosophy, so Commissioner Apostolakis has a good

6 pedigree on that topic.

7 I wanted to turn to the issue of -- the extended design-basis. As

8 you look at the framework that the task force laid out -- which I think is a very

9 good framework. I remember when we were working on the aircraft impact rule

10 meetings with Gary -- probably shouldn't say I had these meetings, but a couple

11 times he came to my office, and I was trying to understand what we meant when

12 we said, "The aircraft impact rule was a beyond-design-basis event." And I kept

13 coming back to, "I don't care what we particularly call it, I want it to be a

14 regulatory requirement." And, we called it a Beyond-Design-Basis Regulatory

15 Requirement, I think as the task force report lays out -- this is the only time I

16 think the words, “Beyond Design Basis,” appears anywhere in our regulations.

17 So, I think it captured very well this idea that, you know -- I think

18 this concept of a patchwork that we have done things in different ways and

19 solved different problems, perhaps, without an overarching concept, and, you

20 know, I heard the words, “patchwork,” and I didn't see it in a negative way, I saw

21 it in a positive. I mean, quilts are patchwork. It doesn't necessarily mean they

22 don't keep you warm, but the pattern may not always look the most pleasing in

23 that, as you add on to that quilt, you may not, you know -- if you don't have a

24 good pattern, you may not get the nicest quilt in the end. But, I think this idea is

25 very intriguing about a design-basis and an extended beyond -- extended design-

1 basis as the committee -- the task force laid out.

2 One of the key features of it, as I understand it -- and maybe you

3 can help clarify this -- is that there would be some level of quality standards that

4 go with these events, which what I took from the report is that those are absent

5 right now, or at least there's no clear, kind of, unified principal of what that is.

6 Clearly, for design-basis events, we look to Appendix B for our quality assurance

7 requirements. So, did the task force give specific thought to what those quality

8 requirement or quality standards would be? Would they be Appendix B type

9 standards or something less than Appendix B -- or I don't even know what that

10 means, but somehow different.

11 DAN DORMAN: I think in looking at the various pieces of the

12 patchwork, if you will, some of them have no explicit quality requirements. Some,

13 for example, the Regulatory Guide on station blackout includes some quality

14 standards. Our expectation would be that it would be likely something less than

15 Appendix B, but that in developing such a framework that the Commission and

16 the staff would look at, what are the critical elements of a quality program that

17 would support the critical attributes of the extended design-basis requirements?

18 So, it would be something that would need further development.

19 GARY HOLAHAN: I think that's fair characterization. The task

20 force recognized that it would be good to have a standard. It probably would be

21 a lower standard than the current Appendix B, some appropriate standard. I

22 think it's probably beyond the task force's scope to go any deeper than that.

23 There are other examples where a standard was chosen for a given issue, and it

24 would be pieces of Appendix B, choose the reporting requirement that are

25 corrective action requirement. Those are the most relevant and most important,

1 so those should be applied to this new issue.

2 So, I would imagine it would be some selected elements of

3 Appendix B, plus it could have elements of programs like a commercial-grade

4 dedication that's currently used for pieces of equipment in plants. So, I think it

5 would put together from -- I don't think it would be invented entirely new, but I

6 think it could be put together from some existing pieces of various programs.

7 CHAIRMAN JACZKO: Well I think that that's helpful, and I think

8 that helps give a good understanding for what this idea of extended design-basis

9 means. I mean, in the end, in some extent it’s embodied by what are the quality

10 standards for what we do in that space, and the overarching concepts for what

11 licensees have to be responsible for.

12 I wanted to touch on the issue of voluntary initiatives a little bit. I

13 know this was an important theme throughout was that you seemed to have

14 found in cases voluntary initiatives didn’t necessarily provide the firm kind of

15 regulatory approach that we'd like to see. And one area, in particular, I think

16 where this comes up clear, you have specific recommendations, I think, with

17 regard to emergency procedures about taking all those emergency procedures

18 and making then in a more coherent way, and that pulls in some voluntary

19 initiatives.

20 But, one of the other areas where I think this issue came up and

21 was touched on in the presentation, is in the issue of the ROP and inspections,

22 and you made a comment that, you know, clearly, we don't inspect voluntary

23 initiatives. So, I wasn't sure what you were trying to say. Was that more a

24 statement that we should as some part as a measure of defense-in-depth, do

25 some small sample of inspections of the voluntary initiatives or that we should

1 look to those voluntary initiatives that should, in fact, be requirements and make
2 them requirements and, then, they would be captured in the inspection program?
3 I wasn't quite sure how to interpret that.
4 DAN DORMAN: We had a lot of discussion around this. I think --
5 first off, let me emphasize a point that I think we included in here that the task
6 force found an appropriate place in the regulatory framework for voluntary
7 initiatives. We think voluntary industry initiatives can be important in enhancing
8 safety. We were looking at -- the SAMGs is the example we keep coming back
9 to, but as something that we appear to be relying on in the context of the
10 Fukushima accident -- and I think where we ended up was that there are some
11 limited set of voluntary initiatives that in the framework we described, we would
12 recommend be included as requirements, and that -- but that when you bring
13 those in and look at them in the current framework of the ROP, that a risk focus
14 will not bring you to any baseline oversight of those activities, and so that's where
15 we have the Recommendation 12 that -- in the ROP assessment, annually, they
16 would look at some small piece of that to look at this defensive-in-depth aspect,
17 but that voluntary initiatives -- the things that truly are even outside this
18 framework that we've proposed as appropriate voluntary initiatives are things that
19 are generally not suitable to inspection oversight because there's not a
20 requirement against which to inspect, so that becomes more challenging.
21 CHAIRMAN JACZKO: Thanks. That helps clarify and I appreciate
22 that. On that topic too, as I've read this discussion of the ROP, what it struck me
23 was in a way, perhaps, what I was hearing was that the ROP is maybe too -- a
24 little bit moved too far in the spectrum to risk-based, and not staying true to the
25 risk-informed. You know, I think as I always think, about the difference between

1 risk-based and risk-informed, to some extent, it’s the addition of defense-in-depth
2 versus these other things that takes you from being strictly risk based. Looking
3 at the risk numbers, which comes out of the significance determination process,
4 primarily, in some cases, our color finding, so it's that element then, ultimately, of
5 the defense-in-depth and that brings up us a little bit back more toward the risk-
6 informed.
7 The issue of station blackout obviously is a theme that's woven
8 throughout, I think, a lot of the recommendations. Clearly there are specific
9 recommendations on that. One, in that turns -- one that is a rulemaking, which I
10 think is really the appropriate approach for that. It’s a comprehensive issue that
11 needs that process to get through, but then there's an order in that section, as
12 well, to deal with the mitigation, so that you've got that interim step. But then it's
13 woven throughout. It's the basis in many ways for the spent-fuel pool
14 recommendations, the ability to maintain instrumentation in the event of a station
15 blackout. So, would I be incorrect in kind of assuming in some ways that that's a,
16 kind of -- almost a cross-cutting theme as to the importance of station blackout,
17 or does the task force think about that or talk about that at all?
18 DAN DORMAN: I think in the way that we look at events at its
19 heart, Fukushima is a prolonged station blackout. And therefore the insights that
20 generally draw from that event as it progressed have a nexus back to a
21 prolonged station blackout. And as we looked at the mitigation element of the
22 defense-in-depth framework that we suggest, the -- when we look at our existing
23 requirements for the ability to deal with station blackout, it's a very limited
24 duration. And so that brings us to the specific recommendation relative to station
25 blackout, but also then, that's why you see that theme popping up.

1 CHAIRMAN JACZKO: Amy, did you want to – you were nodding
2 your head --
3 AMY CUBBAGE: No. I was just nodding. Yeah, it goes in through
4 the themes of the venting, the spent-fuel pool, and it's an EP. It's throughout the
5 report.
6 CHAIRMAN JACZKO: Oh, I appreciate that, and I think that's
7 certainly -- and I think if I look at the -- I think the Commission was on the same
8 page as you all, because that was the one area where we really had a
9 substantive, in-depth meeting on a specific topic prior to the task force report
10 being completed, so, it was good to see that alignment.
11 Well again, I'm --
12 CHARLIE MILLER: Chairman, can I make a comment on the
13 station blackout?
14 CHAIRMAN JACZKO: Sure.
15 CHARLIE MILLER: You know, the one thing that I want to make
16 clear here, is that one of the big insights we got from Fukushima in taking a step
17 back and looking at it in the context of an external event that's of a magnitude,
18 that it can cause a common cause failure both offsite and onsite power.
19 Historically, we haven't looked at it from that prospective. We've looked at it with
20 regard to, you can lose offsite power and then station blackout is looked at from
21 the diesel generator reliability prospective, but in Fukushima's case, the event
22 took out both. And that caused us to take a step back, and that was central to
23 our looking at this as a theme throughout our report.
24 CHAIRMAN JACZKO: Great, I appreciate that, and I think the one
25 interesting point, too, is I think that as we look at some of the risk calculations,

1 the risk models, this does so up prolong station blackout it's not a -- it's not news,
2 so to speak, that this would be a situation in which you would have a very
3 challenging situation, so clearly, that's what played out in what we saw. Well, I'm
4 out of my time, and again I appreciate all of your work in presenting the task
5 force and working on the task force and presenting it to us. I certainly encourage
6 my colleagues who are on the Commission to work through these
7 recommendations in an expedient manner. I've put out a marker of 90 days.
8 We've asked you to do your work in 90 days. I think the Commission can do its
9 work in 90 days, and I look forward to perhaps other meetings where we can
10 explore some of these issues in more depth. I think there certainly have been
11 some here that you've seen interest from the Commission on, and we could get
12 some stakeholder comments, so -- but, again, I want to appreciate -- thank you
13 for all your hard work and appreciate the work that you've done and a very
14 interesting meeting. Thank you.
15 [Whereupon, the proceedings were concluded]