

**WRITTEN STATEMENT**  
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**UNITED STATES NUCLEAR REGULATORY COMMISSION**  
**TO THE**  
**COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS**  
**AND THE**  
**SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR SAFETY**  
**UNITED STATES SENATE**  
**December 15, 2011**

Introduction

Chairman Boxer, Ranking Member Inhofe, Chairman Carper, Ranking Member Barrasso, and Members of the Committee, we appreciate the opportunity to appear before you to update you on the NRC's review of the Fukushima Dai-ichi nuclear accident and implications for the domestic fleet of nuclear power reactors and the NRC's work as a regulator. When we last appeared before you, the agency's Near-Term Task Force ("Task Force") had submitted its report to the Commission for consideration. That report included a comprehensive set of 12 recommendations – many with both short- and long-term elements – to increase safety and redefine what level of protection of public health is regarded as adequate. It also recommended additional study of some issues. In my testimony today, I would like to update you on where the NRC staff and Commission efforts currently stand.

First, I would like to publicly thank the NRC staff for their excellent and tireless work. I especially want to applaud the Task Force and the NRC Senior Management Steering Committee that led the development of papers to supplement the Task Force's outstanding work. The Commission benefits every day from the NRC staff's efforts as we all seek the best path forward following the events in Japan.

### Commission Direction to Staff Following Task Force Recommendations

On August 19<sup>th</sup>, the Commission directed the staff to provide us with a series of vote papers within 21 days, 45 days, and 18 months addressing different aspects of the Task Force recommendations. We have received the first two of these requested papers and held public Commission meetings with stakeholder and staff presentations to discuss them.

Finally, we directed the staff to carry out these activities with the prompt engagement of stakeholders to review and assess the recommendations of the Task Force in a comprehensive and holistic manner for the purpose of providing the Commission with fully informed options and recommendations. We believe that the Commission meetings mentioned above, and other up-front stakeholder involvement that I will mention later, have been time well spent, and should result in the best safety decisions.

### NRC Staff Recommendations regarding Actions to be Taken without Delay

On September 9<sup>th</sup>, staff submitted the 21-day paper that identified those Task Force recommendations that could, and, in the staff's judgment, should be implemented in part or in whole, without delay. In its paper, the staff agreed with the Task Force that none of its 12 recommendations identified an imminent hazard to public health and safety, and also recognized that the agency does not have enough resources to initiate actions on all recommendations in the near term. In completing its work on the 21-day report, the staff conducted a public meeting on August 31 and also received written stakeholder comments. The industry, the Federal Emergency Management Agency, and nongovernmental participants agreed in concept with the recommendations discussed at the meeting, although various viewpoints emerged concerning the pace of implementation and associated regulatory vehicles.

The staff paper identified five of the 12 Task Force recommendations as those that it believes should be implemented immediately in whole or in part; however, in some cases, the staff paper proposed specific approaches and regulatory vehicles different from what the Near-Term Task Force recommended. In general, the staff's approach to each recommendation



involves stakeholder engagement and implementation of the recommendation through the appropriate regulatory vehicle or vehicles. The five Task Force recommendations, as revised and presented by the staff, address issues related to seismic and flooding hazards, station blackout, B.5.b or mitigating strategies equipment, hardened vents for boiling water reactor containments, emergency response capabilities, and response to multi-unit events. The specific recommendations in the 21-day paper are as follows:

- Recommendation 2.1: Continue stakeholder interactions to discuss the technical basis and acceptance criteria for conducting a reevaluation of site-specific seismic hazards, and initiate stakeholder interaction to discuss application of current regulatory guidance and methodologies being used for new reactors to the reevaluation of flooding hazards at operating reactors. Develop and issue a request for information to licensees to (1) reevaluate site-specific seismic and flooding hazards, and (2) identify actions that have been taken or are planned to address plant-specific vulnerabilities associated with the updated seismic and flooding hazards. Finally, evaluate licensee responses and take appropriate regulatory action to resolve those vulnerabilities.
- Recommendation 2.3: Develop and issue a request for information to licensees to (1) develop a methodology and acceptance criteria for seismic and flooding facility walk downs to be endorsed by the staff following interaction with external stakeholders, (2) perform seismic and flood protection walk downs to identify and address plant-specific vulnerabilities and verify the adequacy of monitoring and maintenance for protective features, and (3) inform the NRC of the results of the walk downs and corrective actions taken or planned.
- Recommendation 4.1: Engage stakeholders in support of rulemaking activities to enhance the capability to maintain safety through a prolonged station blackout.

These activities will include the development of the regulatory basis, a proposed rule, and implementing guidance.

- Recommendation 4.2: Develop and issue Orders to licensees to provide reasonable protection of the equipment used to satisfy the requirements of 10 CFR 50.54(hh)(2) from the effects of external events, and to establish and maintain sufficient capacity to mitigate multiunit events. This will include interaction with stakeholders to define acceptance criteria for reasonable protection of that equipment from design basis external hazards.
- Recommendation 5.1: Develop and issue Orders to licensees with Boiling Water Reactor (BWR) Mark I primary containment designs to take action to ensure reliable hardened wet well vents. This will include interactions with stakeholders to develop the technical bases and acceptance criteria for suitable design expectations for reliable hardened vents.
- Recommendation 8: Issue an advanced notice of proposed rulemaking to engage stakeholders in rulemaking activities associated with the methodology for integration of onsite emergency response processes, procedures, training, and exercises. Interact with stakeholders to modify the emergency operating procedures (EOPs) generic technical guidelines in order to include guidance for severe accident management guidelines (SAMGs) and extensive damage mitigation guidelines (EDMGs) in an integrated manner and to clarify command and control issues, as appropriate.
- Recommendations 9.3 and 9.4: Develop and issue a request for information to licensees, including a schedule for interactions with stakeholders, to (1) perform a staffing study to determine the required staff to fill all necessary positions to respond to a multi-unit event, (2) evaluate what enhancements would be needed



to power communication equipment necessary for licensee onsite and offsite communications during a prolonged station blackout event, and (3) inform the NRC of the results of the staffing study and any actions taken or planned in response to those results and to enhance communication equipment. In addition, the staff also recommends that the NRC more closely monitor the industry's completion of the Emergency Response Data System (ERDS) modernization initiative, schedule to be completed by June 2012, so that staff can use additional regulatory tools should licensees fail to meet their implementation schedules.

The staff has concluded that the implementation of each recommendation noted above would improve safety at U.S. nuclear facilities.

In addition to the review of the recommendations by the staff, the Advisory Committee for Reactor Safeguards (ACRS) also has reviewed the recommendations that should be implemented without delay. As part of its review, the ACRS concluded that none of the recommendations will be negated, or rendered inappropriate, by the acquisition of new information.

On Thursday, October 20, in response to the 21-day report, the Commission directed the agency's staff to begin immediately implementing these seven safety recommendations from the Task Force. These recommendations cover issues including the loss of all A/C electrical power at a reactor (station blackout), reviews of seismic and flooding hazards, emergency equipment and plant staff training. The staff was directed to utilize performance-based standards in any new or revised regulations, wherever possible. The Commission also set a goal of completing station blackout rulemaking by 2014, and to strive for completion of all actions in response to the lessons learned from Fukushima within five years – by 2016.

## Prioritization of Recommended Actions to be taken in Response to Fukushima Lessons Learned

On October 3, 2011, the NRC staff submitted to the Commission the requested 45-day report recommending a prioritization of the 12 Task Force recommendations. This paper reflects both the results of a September 21<sup>st</sup> public meeting with representatives of the nuclear industry to better understand their current plans and actions to address the lessons learned from the Fukushima Dai-ichi event, and the continued review of the Task Force recommendations by the staff following submission of the 21-day paper.

As a result of the staff's prioritization and assessment process, the Task Force recommendations were prioritized into three tiers. Tier 1 consists of those Task Force recommendations that the staff determined should be started without unnecessary delay and for which sufficient resource flexibility, including availability of critical skill sets, exists. The staff recommended that this tier include all the actions identified in the 21-day paper, plus two additional items that were identified as part of the staff's continuing review of the Task Force recommendations. Those two additional recommendations are: (1) the inclusion of Mark II containments in the staff's recommendation for reliable hardened vents associated with Task Force recommendation 5.1, and (2) the implementation of spent fuel pool instrumentation proposed in recommendation 7.1.

Tier 2 comprises those recommendations that could not be initiated in the near term due to factors that include the need for further technical assessment and alignment, dependence on Tier 1 issues, or availability of critical skill sets. These include recommendations regarding spent fuel pool makeup capability, and most of the remaining portions of recommendation 9.3 regarding emergency preparedness regulatory actions.

Tier 3 includes those recommendations that require further staff study to support a regulatory action, have an associated shorter-term action that needs to be completed to inform the longer-term action, are dependent on the availability of critical skill sets, or are dependent on the resolution of Task Force Recommendation #1, which deals with clarification of the regulatory



framework and is to be the subject of the 18-month paper requested in the Staff Requirements Memorandum. Tier 3 includes all of the items identified for long-term evaluation in the Near-Term Task Force report. All or parts of three other task force recommendations are included in this tier because they depend on evaluation or completion of other recommendations or on the availability of critical skill sets.

The staff's 45-day paper also includes two other important components: schedules, milestones, and resources associated with Tier 1 and Tier 2 activities and the identification of a number of additional issues with a clear nexus to the Fukushima Dai-ichi event that may warrant regulatory action, but which were not included with the Near-Term Task Force recommendations. These new recommendations address potential safety issues such as spent fuel storage, instrumentation for seismic monitoring, and emergency planning.

The Commission is currently considering the staff's recommendations in the 45-day report. The NRC staff has provided the Commission with additional important information related to the recommendations that the Task Force initially identified. With the benefit of our staff's experience and thoughtful consideration, the ACRS' advice, as well as critical stakeholder input, the Commission is now actively moving forward. The Commission looks forward to reaching a final decision on each of the recommendations in the coming weeks and we agree that the NRC should strive to complete and implement the lessons learned from the Fukushima accident within five years. We continue to welcome and encourage additional safety suggestions from our broad range of stakeholders.

#### 2011 Accomplishments

In addition, I would like to take this opportunity to update you on the many important accomplishments the NRC has made this year. The year 2011 has been an exceptionally challenging and productive year for the NRC. The NRC staff has done an outstanding job over the past year under what have been, at times, challenging circumstances. The Commission

never loses sight of the fact that our effectiveness as a safety and security regulator depends first and foremost on the staff's hard work and dedication.

Even with the pressures of the past year, the NRC once again scored among the top tier of Federal agencies in the 2011 Best Places to Work in the Federal Government rankings, conducted by the Partnership for Public Service. The NRC scored number one in all four major indices, including leadership and knowledge management, results-oriented performance culture, talent management, and job satisfaction. These rankings were determined through an analysis of the 2011 Federal Employment Viewpoint Survey conducted by the Office of Personnel Management.

At the agency, we anticipated that this year would be busy, but several unexpected issues - most notably, the Fukushima Dai-ichi nuclear emergency in Japan - raised substantial new challenges. Added to that, a spate of multiple natural disasters, including flooding in the Midwest in June; the earthquake on the East Coast in August; as well as hurricanes and tornadoes, created additional pressures. These natural disasters required close coordination with states, federal agencies and licensees, and involved the efforts and expertise of numerous staff at NRC's headquarters and regional offices.

During the past fiscal year, we have performed thousands of hours of inspections at nuclear power plants and materials sites. We have taken hundreds of enforcement actions, reviewed more than a thousand licensing actions and tasks, and issued a number of proposed and final rules. We also issued a final Safety Culture Policy Statement, establishing for the first time the Commission's expectations for individuals and organizations involved in NRC-regulated activities to establish and maintain a positive safety culture proportionate to the safety and security significance of their activities.

While many plants have performed very well this year, there are two plants in Column Four, on a five-column scale, of the Reactor Oversight Process Action Matrix after experiencing issues that the NRC views as safety significant. There are also two plants in Column Three,



which indicates declining performance. The NRC has conducted a greater number of special inspections in the past year - 21 to date - than at any point in recent memory.

These developments, of course, are concerning for the specific plants involved, but as a regulator, we must be on guard to the possibility that they could be indicative of broader issues for the industry. Also, there are currently two units in extended shutdowns, one, Fort Calhoun, due to circumstances related to external events and the other, Crystal River, due to problems resulting from maintenance activities. Additionally, two units at the North Anna plant, in Virginia, were in extended shutdown this year due to the East Coast earthquake in August. Neither the Crystal River nor North Anna extended shutdowns were the result of declining licensee performance, and, in its current assessment of industry trends, the NRC staff has not identified any statistically significant adverse trends.

During the past year, we completed the safety and environmental reviews of the first two new reactor combined license applications for the Vogtle site in Georgia and the Summer site in South Carolina, and held mandatory hearings on both applications. We expect to make decisions on those applications within the next several weeks. We issued the final safety evaluation reports for the AP1000 and ESBWR design certifications, and issued eight reactor license renewals. We successfully completed the review and approval of two pilot applications for transitioning to National Fire Protection Association (NFPA) 805, a risk-informed, performance-based standard for fire protection at nuclear power plants, and worked with stakeholders to establish a submittal and review schedule for 29 anticipated transition applications.

We issued three new uranium recovery licenses, authorized the restart of one uranium recovery facility, and issued the license for the AREVA Eagle Rock centrifuge enrichment facility to be built in Idaho, the first such license approval issued in almost 5 years. And, in line with our responsibilities to ensure the safety and security of nuclear materials, we continued implementation of the License Tracking System and the National Source Tracking System. We

also issued a final policy on the protection of sealed radiation sources containing cesium-137 chloride, which are used in blood irradiation, bio-medical and industrial research, and calibration of instrumentation and radiation measuring instruments.

We also continued to focus on moving forward and resolving long-standing safety issues such as; Generic Safety Issue (GSI)-191, concerning the potential for the blockage of boiling water reactors' suction strainers and pressurized water reactors' containment sump screens, due to debris accumulation; and GI-199, the updates to seismic hazard estimates for the Central and Eastern United States.

The NRC staff also completed the orderly close out of the Yucca Mountain high-level waste repository licensing program and the Department of Energy's license application. As part of this process, the staff conducted a comprehensive effort to collect and capture knowledge to ensure that the agency's many years of technical work are preserved. This included documenting the agency's review and other knowledge about the program through three technical evaluation reports, over 40 other topical reports, as well as videotaped interviews of technical staff.

Cybersecurity is a serious concern for all agencies across the Federal government. In Fiscal Year 2011, we approved cybersecurity plans for all nuclear power plants and established an implementation plan to have all plants at a high level of cyber protection by the end of Fiscal Year 2012.

Approximately 30 NUREGs - reports or brochures on regulatory decisions, research, investigations and other technical and administrative information - were published on a wide variety of topics, such as degradation of core internals due to neutron irradiation and groundwater contamination. We sponsored the 23<sup>rd</sup> annual Regulatory Information Conference for government, nuclear industry, international agencies, and other stakeholders to meet and discuss nuclear safety and security topics and significant regulatory actions. More than 3,000



individuals registered for the March 2011 conference. We also hosted the first Integrated Regulatory Review Service mission to the United States to assess our regulatory infrastructure against international safety standards and good practices. The mission was coordinated by the International Atomic Energy Agency and concluded that the NRC has a well-established national policy and strategy for nuclear safety.

Transparency and openness are part of our formal NRC Organizational Values, and they are integral guiding principles in everything we do, both internally and externally. After the challenges we have faced over the past year, and the bright spotlight that has been shined on nuclear regulation, nuclear safety, and nuclear power plants by the Congress, the media and the public, the NRC continues to be accessible and open, and to make sure that all of our stakeholders understand what we are doing and why we are doing it.

The NRC has held many public meetings throughout the past year, noticing more than 1,030 public meetings in Washington, D.C., and around the country, addressing a full range of NRC issues. During fiscal year 2011, my colleagues and I held 38 public Commission meetings, 10 closed commission meetings, and 14 sessions to set the Commission agenda and issued 92 staff requirements memoranda (SRMs) on substantive Commission voting matters. This was 30 more SRMs than we completed in Fiscal Year 2010. And of the 381 requests submitted to the NRC for information under the Freedom of Information Act, we have closed out 338.

The NRC redesigned the agency's public website to improve navigation, content and accessibility, and substantially improved our web-based document management system to enable the public to more easily and quickly access all public documents. And, the agency has successfully begun to utilize new social media tools - including a public blog, Twitter and YouTube accounts - to enhance our outreach efforts.

As we have worked to fulfill our responsibilities for our safety and security mission, we have also been working to increase our effectiveness and efficiency as an agency. We have more efficiently executed the appropriations that Congress has given us by successfully working to reduce our carryover funds this year.

Construction of our new third headquarters building, Three White Flint North, is on schedule for opening in late 2012. One of the valuable lessons we learned after Three Mile Island was the importance of being co-located. The new building will allow headquarters staff to once again work in one central location to better support the agency's critical health and safety mission.

None of the agency's many achievements during the past year could have happened without support from the entire NRC team—those working on the financing issues, the legal aspects, the personnel and administrative support, the technical side, and more. By no means does my testimony cover the full breadth of the agency's wide-ranging activities. But these accomplishments are indicative of a well-functioning agency with a strong focus on our mission, and the staff's steadfast efforts, day-in and day-out, to strengthen nuclear safety and security.

We have many important issues on our plate right now—both internally to strengthen our organization and externally to continue ensuring the safety and security of our nation's nuclear facilities and materials. We cannot predict with any certainty all the issues that might arise in the upcoming year. That makes it all the more important that we prudently manage the resources entrusted to us by the American people, take full advantage of all the talents and expertise that our diverse team brings to the table, and keep our focus—first and foremost—on our safety and security mission.

Chairman Boxer, Ranking Member Inhofe, Chairman Carper, Ranking Member Barrasso, and Members of the Committee, this concludes my formal testimony today. On behalf of the Commission, thank you for the opportunity to appear before you and your



continued interest in our work on these important issues. We look forward to continuing to work with you to advance the NRC's important safety mission. We would be pleased to respond to any questions you may have.