WRITTEN STATEMENT

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Chairman Boxer, Ranking Member Inhofe, Chairman Carper, Ranking Member Barrasso, and Members of the Committee, I appreciate the opportunity to appear before you to provide an update on the response of the United States Nuclear Regulatory Commission (NRC) to the nuclear emergency in Japan.

First, I would like to give you a brief summary of the current situation in Japan, and then I will move into our agency's response and our activities to ensure the continued safety of our domestic nuclear power plants in light of the tragedy in Japan.

At the current time, TEPCO and the Japanese government are still in the active accident mitigation phase of their activities at the Fukushima Daiichi site. Plant conditions are slowly stabilizing and the reactors and spent fuel pools do not appear to be changing in a way that creates additional concern at this time.

Some structural conditions have recently been identified that are receiving increased focus and attention, such as the Unit 4 spent fuel pool, which is being shored-up to strengthen

its resistance to earthquakes. Also, the approach that the Japanese are using to control cooling inside the reactor primary containment vessels requires constant monitoring and periodic adjustment.

There are radioactive release paths that are continuing at various degrees in the three reactors that were operating at the time of the event. The NRC staff's understanding of the plant conditions has been challenged by the availability and questionable reliability of plant instrumentation, which was badly damaged during the accident.

TEPCO has initiated a multi-phase effort and recovery plan. They are working to install reliable closed-loop cooling systems for the reactors and spent fuel pools, improve environmental conditions inside the plant, and install a treatment system to clean up contaminated water.

They are facing major challenges in their recovery activities, including high radiation fields and humidity levels inside the reactor buildings, large amounts of radioactive water in the turbine building basements, and a considerable amount of contaminated debris spread across the site.

In addition to structural and reactor safety issues, TEPCO faces a substantial challenge in what to do with the radioactive liquid material that is currently being held in tanks and various locations around the plant. The rainy season is underway, providing further complications. The immense cleanup challenge resulting from the tsunami itself only adds to the difficulties of dealing with a radioactive contamination area. Overall, the Japanese are making progress on addressing these issues and are moving forward.

As you know, the decision to recommend a 50-mile radius evacuation of U.S. citizens near the Fukushima Daiichi site in Japan has been a topic of much discussion. That decision was based on limited information and the best assessment of conditions as we understood them at the time. Four of the six plants at the site were facing extraordinary challenges, including hydrogen explosions and the possibility of overheating in a spent fuel pool containing a recent full core offload of fuel. In addition, radiation monitors were showing very high levels of radiation on the plant site, which would impede workers trying to stabilize the reactors.

Calculations performed by NRC experts indicated that EPA protective action dose guidelines could be exceeded at a distance of 50 miles from the site if the situation continued to deteriorate – as seemed possible - and a large-scale release occurred. These calculations were considerations for the NRC in making a prudent, conservative input for a travel advisory, to the White House and Department of State, to evacuate American citizens out to 50 miles from the affected nuclear site. We are continuing to review and re-evaluate the 50-mile recommendation.

The NRC is systematically and methodically evaluating the lessons being learned at Fukushima Daiichi as they might apply to the safety of reactors in the United States, and the adequacy of emergency planning guidance and policy will be an important part of our review.

In the United States, a 10-mile radius emergency planning zone (EPZ) is established around every power reactor, within which state, and local officials have detailed plans to determine appropriate measures to protect public health and safety in the event of a radiological release. A 50-mile radius ingestion pathway for emergency planning is also established to protect individuals from radiological material that could be ingested or concentrated in the food chain, if a major nuclear accident were to occur.

The 10-mile EPZ was based on research showing that the most significant impacts of an accident would be expected in the immediate vicinity of a plant and therefore the capability for prompt initial protective actions, such as evacuations or sheltering in place, should be focused there. The sizes of the established EPZs are not limits, but provide for an emergency planning framework that would allow expansion or contraction of response efforts based on actual and projected radiological conditions.

During a radiological event at a U.S. nuclear facility, the NRC resident inspectors—who are stationed at every nuclear power plant in the United States—and the plant staff would provide information to the NRC on conditions as they evolved. In addition, we have the capability to access "real time" plant parameters and radiation measurements during an event at a U.S. plant. The NRC would analyze release paths including meteorological conditions from a power reactor, and would provide input to appropriate state and local governments on our assessment results, as requested. We have measures and equipment in place to obtain information regarding the licensees that the NRC regulates.

At this time, the agency considers that the existing emergency preparedness framework and regulations provide reasonable assurance of adequate protection of public health and safety in the event of a radiological emergency at a U.S. power reactor facility. But if there are lessons from Japan that indicate we need to make improvements to our regulations, we will do so.

Since the events at Fukushima began to unfold in early March, the NRC has been working to understand the events in Japan and relay important information to our country's nuclear power plants. In communicating this information to licensees, we sought to assist them

in considering the ramifications of a similar event for their facilities and to take site-specific actions, as appropriate.

In addition to communicating information to licensees, the NRC also focused and enhanced our oversight on issues highlighted by our observations of the events at Fukushima. We issued instructions to our inspectors, calling for immediate, independent assessments of each plant's level of preparedness. The instructions covered Extensive Damage Mitigation Guidelines, station blackout, and seismic and flooding issues, as well as Severe Accident Management Guidelines. Our resident inspector program, which stations NRC inspectors at all operating U.S. nuclear plants, enables the NRC to take prompt oversight action.

As a follow-up to the Extensive Damage Mitigation Guidelines inspections and our other routine oversight activities, we issued a Bulletin on licensee mitigation strategies. In response to the Bulletin, plants will provide information on a broad range of issues, including whether they have the people and equipment in place to carry out their mitigation strategies. Licensees are also required to provide information on how they will keep their strategies and plans updated to reflect changing conditions. Once we receive this information, the agency will determine whether additional actions to ensure compliance or other improvements are necessary.

We have undertaken a systematic and methodical review of our nuclear safety program. To spearhead this effort, the Commission established a senior-level Task Force, made up of several of the agency's most experienced and expert staff. Their review will proceed on both a short- and a longer-term timeframe. The Task Force's efforts will assist the Commission as we work to better understand the events in Japan and determine the implications for domestic nuclear safety.

In line with our overall agency approach to nuclear safety, the Task Force is taking a defense-in-depth approach focused on prevention, mitigation, and emergency response. We are examining a broad range of issues, including seismic, flooding, and other natural hazards, how to maintain power during these types of events, how to mitigate the potential loss of power, and emergency preparedness. In working through these issues, the Task Force is relying on information and analysis from the NRC Operations Center and our site team in Japan, as well as dozens of other agency experts.

Although the time constraints of the short-term review have unfortunately placed limitations on the extent of stakeholder involvement, we are doing our best to be as open and transparent as possible. In addition to holding three public meetings on the progress of the short-term review, we also will make public the final reports for both the short- and longer-term reviews. During the longer-term review, we will engage the public, licensees, and other key stakeholders to a greater extent. In addition, the report emerging from the longer-term review will be reviewed by the Advisory Committee on Reactor Safety.

Our safety review remains at an early stage, but I'll briefly review a few of the important considerations we have identified. I'll do so by discussing them through the framework of our defense-in-depth philosophy and its tenets of prevention, mitigation, and emergency preparedness.

In terms of accident prevention, the NRC is examining a broad range of events and risks. Those include hazards specifically contemplated in the design basis and others beyond the design basis. Specifically, we are evaluating the requirements and safety margins for seismic and flooding events, and other external events that might inflict widespread damage to the plant and lead to an extended station blackout. Our review is not limited to the type of

seismic/tsunami event experienced by Japan. We are also looking at risks posed by other types of flooding (including dam failures and river flooding), fires, and combinations of different events.

In addition to prevention, we are reexamining effective mitigation strategies for severe accidents. The Fukushima event has highlighted the challenges of coping with long-term station blackout and underscored the importance of mitigating its consequences. In moving forward with this part of our review, we are guided by two main goals: (1) to prevent core damage and containment failure, and (2) to prevent spent fuel damage and mitigate releases. Among the considerations being examined are: (1) the effectiveness of containment venting strategies; (2) the fuel inventory of spent fuel pools; and (3) hydrogen control measures for the reactor building.

We are also examining a number of cross-cutting considerations related to a plant's ability to mitigate a long-term station blackout event. Our current approach is a robust, multi-layered framework. It includes regulatory requirements for emergency operating procedures to address design basis events, requirements under the station blackout rule for coping and recovering from beyond design basis events, guidelines for responding to extensive plant damage from fires or explosions, and voluntary guidelines for mitigating severe accidents. Because these various regulatory requirements and voluntary guidelines are not currently integrated, we are assessing whether changes should be made that might better ensure a seamless response to severe accidents.

As part of our review, the NRC is also examining implications for our approach to emergency preparedness. The Fukushima event has demonstrated the challenges in implementing emergency response plans in the context of widespread infrastructure damage, multi-unit events, and long-term station blackout. Although we will soon complete a revised

emergency preparedness rule, we are taking a fresh look at these issues to see if there are other possible improvements.

In line with our national approach to emergency preparedness, the NRC recognizes that this is a shared responsibility with other federal agencies, state and local authorities, and the private sector licensees. As we examine these issues more closely, we will work with those entities to ensure that we have a full appreciation of their roles and perspectives and make the best decisions for nuclear safety.

As I hope my testimony has made clear, the NRC has already taken a number of actions to ensure nuclear safety, in light of the Fukushima event. We recognize, however, that our work is far from done. We will continue to evaluate the results of the post-Fukushima inspections to determine if there are additional short-term actions we need to take. As we receive the information in response to the Bulletin on mitigating strategies, we will evaluate that information and take the appropriate actions.

The NRC remains committed to keeping the public and other stakeholders informed of our progress. Toward that end, the Commission held a public meeting on May 12 for the 30-day report from the Task Force, and held the second of three public meetings yesterday, on June 15, to begin to examine the findings of the short-term review. The third public meeting will be held on July 19, when the 90-day report will be presented. I am confident that the Task Force's near-term final report, which will be made publicly, will provide important recommendations and outline a strong vision for the longer-term review.

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. 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. Thank you.