



CHAIRMAN

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

September 14, 2011

The Honorable Jeff Sessions  
United States Senate  
Washington, DC 20510

Dear Senator Sessions:

At a recent hearing before the U.S. Senate Committee on Environment and Public Works, you asked for information about the Nuclear Regulatory Commission's response to the nuclear disaster at Fukushima and you asked about reports associated with the agency's activities. I agreed to provide you with information in a format you would find helpful, and I trust this letter and the enclosed summary will meet your information request.

The 1980 Reorganization Plan contains this provision:

Following the conclusion of the emergency, the Chairman, or the member of the Commission delegated the emergency functions under subsection (b), shall render a complete and timely report to the Commission on the actions taken during the emergency.

No particular *form* of report is described under that section and the legislative history of this provision notes the purpose of the "complete and timely report" would be to "*assist the Commission to formulate or reformulate policies and rules relative to emergencies in general or to particular or general problems that were presented by the specific emergency.*" I proposed to my Commission colleagues the creation of a staff task force to empower us to comprehensively focus on these issues. I took this additional collegial step because this significant event involves nuclear safety policy issues that the full Commission needs to review and decide. My Commission colleagues were a formal part of the decision to establish the task force and structure its work from the very beginning.

The task force was established by our five-member Commission and was approved by a unanimous vote of the full Commission. It issued a substantial report on July 12<sup>th</sup> that provides insights on the accident and the NRC's response. This report, which outlines 12 near-term safety recommendations for the Commission's consideration, far surpasses the requirements of the statutory provisions. The Japan Task Force product is a report to the Commission and provides the Commission and the public with maximum transparency regarding the emergency and the issues it raises regarding nuclear safety policy.

In addition to this approach, there was extensive real-time communication with the other members of the Commission during the course of the NRC's involvement with this event. That included written and oral updates to Commissioner Assistants multiple times each day, as well as daily calls, during which I briefed my Commission colleagues on the unfolding emergency and the NRC's response to it.

You have asked for the above information in a third format, separate from the task force report and the large number of individual status updates produced by the NRC. Therefore, I am providing an additional summary detailing this information, which is enclosed. Please let me know if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Greg Jaczko', with a long horizontal flourish extending to the right.

Gregory B. Jaczko

Enclosure:  
As stated

cc: Senator Barbara Boxer  
Senator James Inhofe  
Commissioner Svinicki  
Commissioner Apostolakis  
Commissioner Magwood  
Commissioner Ostendorff

## **Summary of Chairman's Response to Japan Earthquake, Tsunami and Nuclear Emergency**

The following constitutes a summary of actions taken in response to the emergency in Japan. An overview of the communications to my Commission colleagues during this time period is included at the end of the narrative summary.

On Friday, March 11, when the earthquake and tsunami struck, the NRC's headquarters Operations Center began operating on a 24-hour basis to monitor and analyze events at the nuclear power plants in Japan. At the request of the Japanese government, and through the United States Agency for International Development (USAID), the NRC sent a team of its technical experts to provide on-the-ground support, and we maintained continual contact with them. And, within the United States, the NRC worked closely with other Federal agencies as part of our government's response to the situation.

I traveled to Japan over the weekend of March 26-27 to convey a message of support and cooperation to our Japanese counterparts and to assess the current situation. During the time I was there, I also met with senior Japanese government and TEPCO officials, and consulted with our NRC team of experts who were in Japan as part of our assistance effort.

The decision to recommend a 50-mile radius evacuation of U.S. citizens near the Fukushima Daiichi site 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.

The NRC began to systematically and methodically evaluate the lessons being learned at Fukushima Daiichi as they might apply to the safety of reactors in the United States 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, enabled the NRC to take prompt oversight action.

Enclosure

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 were expected to 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 were also required to provide information on how they will keep their strategies and plans updated to reflect changing conditions. This information enables the agency to determine whether additional actions to ensure compliance or other improvements are necessary.

The Commission has undertaken a systematic and methodical review of our nuclear safety program. On March 21, the Commission established a senior-level Task Force, made up of some of the agency's most experienced and expert staff. Collectively, the Task Force members have more than 135 years of regulatory experience. They were asked to conduct a short-term review, to assist the Commission 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 took a defense-in-depth approach focused on prevention, mitigation, and emergency response. They examined 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 relied on information and analysis from the NRC Operations Center, the NRC's site team in Japan, and dozens of other agency experts. They also called on experts from throughout the federal government, including the Federal Emergency Management Agency, which engaged the Task Force in discussions of offsite emergency preparedness and provided insights on the U.S. National Response Framework; the Institute of Nuclear Power Operations, which shared information on the industry's post-Fukushima actions; and other groups and individuals who shared their views with the Task Force.

The time constraints of the short-term review understandably placed limitations on the extent of stakeholder involvement, but in line with the NRC commitment to openness and transparency, three public meetings – at the 30-day, 60-day and 90-day mark – were held by the Commission, and the final short-term Task Force Report and recommendations were provided to the Commission on July 12, and made public on July 13.

The longer-term review report will also be made publicly available. During the longer-term review, the public, licensees, public interest groups and other key stakeholders will have extensive opportunities for input. In addition, the report emerging from the longer-term review will be reviewed by the Advisory Committee on Reactor Safety.

Our safety review 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 have recently completed 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.

In considering the Task Force recommendations, the Commission must move forward with the urgency called for by these real safety issues. Although the Task Force did not find imminent risk to public health and safety, they did identify significant concerns with specific issues and what they described as the NRC's "patchwork of regulatory requirements and other safety initiatives," and they recommended improving the agency's regulatory framework. As stated in the Task Force report, "...an accident involving core damage and uncontrolled release of radioactive material to the environment, even one without significant health consequences, is inherently unacceptable." Fukushima clearly demonstrated that extraordinary circumstances can challenge plants in unexpected ways, and we must commit to a strong and timely response. The American public expects no less.

#### Communicating with the Commission

Throughout the two months of the emergency in Japan, I ensured my colleagues on the Commission were kept updated on events as they unfolded. These updates were in the form of briefings by me, occurring once per day in the first week after the earthquake, and on an ad hoc

basis after March 18th. Commissioner's staff also received briefings from the Executive Team working in the NRC Operations center. In addition, each office received written status reports from our Operations center at regular intervals.

**Between Friday, March 11<sup>th</sup>, when the earthquake and tsunami occurred, and May 16<sup>th</sup>, when the NRC exited monitoring mode, Commission offices participated in approximately 65 briefing calls and received more than 100 written status updates.**

#### First 24 Hours of NRC Response

At 9:46 am on Friday March 11<sup>th</sup> the NRC Operations Center entered monitoring mode in response to the events in Japan.

At 10:09 am on 3/11/2011 - 23 minutes after entering monitoring mode, the NRC Operations Center sent an email to announce the change in status to monitoring mode. All Commission offices received this announcement.

At 1:04 pm on 3/11/2011 - 3 hours and 18 minutes after entering monitoring mode, the first briefing of the Commissioner's Assistants was conducted by the Executive Team (ET) working at the Operations Center.

**In the first twenty-four hours after entering monitoring mode, the Commissioner's Assistants were briefed by the ET four times.**

#### Discussions with Commission, Meetings and Hearings (March 11<sup>th</sup> through May 16<sup>th</sup>)

Friday March 11<sup>th</sup>, Individual meeting with Commissioner Apostolakis

Saturday March 12<sup>th</sup>, 3:00 pm, Non-Sunshine Act Discussion (NSAD) Briefing call with Commission

Sunday March 13<sup>th</sup>, 4:00 pm, NSAD Briefing call with Commission

Monday March 14<sup>th</sup>, 4:30 pm, NSAD Briefing call with Commission

Tuesday March 15<sup>th</sup>, 7:30 pm, NSAD Briefing call with Commission

Wednesday March 16<sup>th</sup>

    Testimony before House Joint Subcommittees of Energy and Commerce Committee

    Public Briefing of Senate Environment and Public Works Committee

Thursday March 17<sup>th</sup>, 4:00 pm, NSAD Briefing call with Commission

Friday March 18<sup>th</sup>, 10:00 am, NSAD Briefing call with Commission

Sunday March 20<sup>th</sup>, Phone call with Commissioner Ostendorff

Monday March 21<sup>st</sup>

    Commission Meeting – Briefing on NRC Response to Recent Nuclear Events in Japan

    Individual meeting with Commissioner Ostendorff

Wednesday March 23<sup>rd</sup>, Individual meeting with Commissioner Svinicki

Thursday March 24<sup>th</sup>, Individual meeting with Commissioner Apostolakis

Friday March 25<sup>th</sup>, Individual meeting with Commissioner Apostolakis

Saturday March 26<sup>th</sup>

    Phone Call with Commissioner Magwood

    6:40 pm, NSAD Briefing Call with Commission

Wednesday March 30<sup>th</sup>

9:00 am NSAD Briefing Call with Commission (2 Commissioners participated)  
Testimony before Senate Appropriations Committee, Energy and Water Subcommittee  
Individual meeting with Commissioner Svinicki

Thursday March 31<sup>st</sup>

9:00 am NSAD Briefing Call with Commission (1 Commissioner participated)  
Testimony before House Appropriations Committee, Energy and Water Subcommittee  
Closed Commission Meeting: Discussion of Adjudicatory Issues  
Individual meeting with Commissioner Ostendorff

Thursday April 7<sup>th</sup> –

NSAD Briefing Call with Commission scheduled, Commission decided to cancel  
Individual meeting with Commissioner Ostendorff

Tuesday, April 12<sup>th</sup>

Testimony before Senate Environment and Public Works Committee and Clean Air and  
Nuclear Safety Subcommittee

Thursday, April 28<sup>th</sup>

Commission Meeting – Briefing on the Status of NRC Response to Events in Japan and  
Briefing on Station Blackout (open and closed portions)

Tuesday, May 3<sup>rd</sup>

Commission Meeting – Information Briefing on Emergency Preparedness

Wednesday, May 4<sup>th</sup>

Testimony before House Committee on Energy and Commerce Subcommittees on  
Energy and Power, and Environment and the Economy

Thursday, May 12<sup>th</sup>

Commission Meeting – Briefing on the Progress of the Task Force Review (30-day  
status) of NRC Processes and Regulations Following the Events in Japan

#### Commissioner's Assistant Phone Calls

After receiving three briefings in approximately the first 12 hours after entering monitoring mode, beginning on Saturday March 12<sup>th</sup>, Commissioners Assistants (CAs) agreed to an every-8-hour briefing schedule.

On Tuesday March 15<sup>th</sup>, CAs decided to move to every-12-hour briefings.

On Thursday March 31<sup>st</sup>, per the recommendation of CAs, the briefings became once daily.

On Sunday April 10<sup>th</sup>, CAs decided to go to twice-a-week briefings, Tues/Thurs schedule.

**As of May 16<sup>th</sup>, there had been approximately 65 briefings from the Executive Team to Commissioners Assistants.**

Written Status Updates from Headquarters Operations Officer (HOO)

Date:	# of Reports Generated:
3/11	3
3/12	8
3/13	4
3/14	4
3/15	4
3/16	3
3/17	3

Beginning on March 18<sup>th</sup>, decreased to twice-daily production of Status Update reports.

On Monday April 11<sup>th</sup>, decreased to once-daily production of Status Update reports.

On Friday April 22<sup>nd</sup>, decreased to once-daily production of Status Update reports, Mondays – Fridays.

**As of May 16<sup>th</sup>, when the NRC exited monitoring mode, the Commission had received more than 100 written status updates. In addition, the Commission received other written information, and had access to the internal website where all of these reports were being maintained.**