June 18, 2012

The Honorable Dianne Feinstein
Chairman, Subcommittee on Energy
and Water Development
United States Senate
Washington, D.C. 20510

Dear Chairman Feinstein:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your letter of April 26, 2012, requesting NRC's assessment of current conditions at the Fukushima Dai-ichi site. You expressed particular concern about the structural integrity of the damaged Unit 4 reactor building which houses the Unit 4 spent fuel pool (SFP), and made specific requests for information regarding the Unit 4 SFP.

By year end 2011, the Japanese government and the facility owner Tokyo Electric Power Company (TEPCO), completed initial site stabilization activities required prior to pursuing spent fuel removal and further site decommissioning. These initial efforts included establishing more stable cooling of SFPs, stabilizating of all reactors at the site in a state equivalent to cold shutdown, pursuing steady decreases in radiation levels, and establishing greater control over the release of radioactive material at the site.

Regarding your concern about the structural integrity of the Unit 4 reactor building, the building did suffer considerable damage from a hydrogen explosion at the site. As you indicated in your letter, the damage raised concerns regarding the stability of Unit 4 and, in particular, the stability of the Unit 4 SFP located at an elevation above ground level within the Unit 4 reactor building. The government of Japan was concerned that a collapse of the structure supporting the Unit 4 SFP could result in a loss of water inventory and additional release of radionuclides to the environment.

In the summer of 2011, the NRC discussed the seismic stability of the Unit 4 SFP with Japanese industry and government personnel. NRC staff in Japan met with representatives of TEPCO and the Japanese Nuclear Industrial and Safety Agency (NISA), and were told about TEPCO's plan to install additional support to further stabilize the Unit 4 SFP. NRC learned that TEPCO had performed the necessary calculations and analysis to conclude that the reactor building and SFP were structurally sound without reinforcement. To increase structural strength, TEPCO installed additional support beneath the Unit 4 SFP, thus providing additional margin to protect against future seismic events. By August 1, 2011, TEPCO had completed the installation of the additional support for the Unit 4 SFP. Based upon TEPCO's reported actions and the independent review and acceptance of these actions by the Japan Nuclear Energy Safety Organization (JNES) on behalf of NISA, the NRC believes that the stability of the Unit 4 SFP has been enhanced by the additional steel and concrete reinforcing features.

On April 27, 2012, the NRC received additional information from TEPCO regarding the stability of the Unit 4 reactor building and SFP. On February 7 and April 12, 2012, in response to concerns raised by interested Japanese stakeholders, TEPCO completed measurements within the Unit 4 reactor building at the elevation of the Unit 4 SFP and concluded that the building was level. TEPCO also provided additional, summary information from further analyses at the site and concluded that the Unit 4 reactor building is capable of withstanding a future seismic event with ground motion at the site equivalent to the earthquake that occurred on March 11, 2011.

Water level monitoring in the Fukushima SFPs, including Unit 4, employs the same technology used in U.S. boiling water reactors. The current instrumentation in Unit 4 is fully functional, effectively monitoring water levels, and alerting operators of any abnormal conditions in the pool, allowing for additional water to be provided to the SFP as needed. Earlier this year, remediation and decommissioning activities entered Phase 1 of a three-phase plan, in which personnel are preparing for the removal of the spent fuel.

In response to your inquiry as to whether the Unit 4 SFP could be unloaded sooner than the current timeline, the government of Japan and TEPCO have communicated their commitment to well-controlled and coordinated operations at the site in their approach to fuel removal and to final decommissioning. The Japanese authorities have made the safety of the public and of workers during all phases of remediation and decommissioning a priority, and operational procedures reflect that priority. Moreover, as lessons are learned throughout this process, we understand that opportunities may develop to improve the schedule. Additional challenges lay ahead for the Japanese, including the design, manufacture, installation, and safe operation of specialized equipment required for fuel removal. Recent discussions about the placement and operation of specialized cranes to be used for transferring spent fuel reflect the unique engineering and logistical challenges presented by spent fuel removal at the site. The work will require dedicated planning to effectively address the operational and safety challenges unique to these fuel transfer activities. Additional effort may also be required to evaluate and confirm fuel integrity; to remotely operate, handle, and inspect spent and potentially damaged fuel; and to repair equipment. Phase 2, spent fuel removal, planned to begin in 2013, targets a period of up to 10 years for completion. The NRC will continue to communicate with the Japanese authorities and to offer them assistance and expertise throughout their spent fuel removal and remediation efforts.

As for steps we would offer for consideration to enhance their ongoing efforts, the Japanese government is aware of the technical resources and assistance that are available from the NRC, as well as from the U.S. Department of Energy, other U.S. government partners, and the international community, including the International Atomic Energy Agency and the Nuclear Energy Agency. Through our counterparts at the U.S. Department of State, we continue to make available technical and logistical support to the Japanese.

Thank you for your interest in this matter. Please be assured that the NRC shares your interest in the safe and timely remediation and decommissioning of the Fukushima Dai-ichi site in Japan. Please contact me or Ms. Rebecca Schmidt, Director of the Office of Congressional Affairs, at (301) 415-1776, if you have any questions or would like to discuss this further.

Sincerely,

/RA/

Gregory B. Jaczko