

May 26, 2011

The Honorable Robert Menendez  
United States Senate  
Washington, D.C. 20510

Dear Senator Menendez:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your letter of March 16, 2011, which raised several concerns regarding commercial nuclear power plants in New Jersey and surrounding states.

The NRC has well established design criteria and standards that are used as the basis for construction of all commercial nuclear power plants in the U.S. These include ensuring the ability to withstand environmental hazards, such as earthquakes and flooding, without loss of capacity to perform their safety functions. Specifically, the NRC requires that safety-related structures, systems, and components be designed to take into account the most severe natural phenomena historically reported for the site and surrounding area.

With regard to earthquakes in particular, U.S. nuclear power plants are designed and built to withstand the ground-shaking level that is appropriate for its location, given the possible earthquake sources that may affect the site. NRC regulations refer to this as the safe shutdown earthquake (SSE), which is generally defined as the maximum ground motion seismic response that the plant must be able to withstand, safely shut down, and be maintained in a safely shut down condition. Comparable to seismic analysis, nuclear power plant flood protection design also extends to all safety-related systems, structures, and components, and focuses on any failure that could prevent safe shutdown of the plant or result in an uncontrolled release of significant radioactivity.

Regarding the nuclear stations in New Jersey, the Oyster Creek site is located inland from the ocean, behind a barrier island; the ground elevation in the immediate vicinity of the plant is approximately 23 feet above sea level, which is above the maximum predicted hurricane-induced flood surge level. The Salem and Hope Creek sites are constructed on an artificial island roughly 40 miles from the mouth of the Delaware Bay and are located 11-13 feet above sea level, with flood protection features designed to protect safety-related structures, systems, and components against flooding surges up to 31 feet above sea level.

As you noted in your letter, the Japanese boiling water reactors (BWRs) are similar in design to some U.S. facilities, including the Hope Creek and Oyster Creek facilities in New Jersey. However, beginning in the late 1980s, the NRC initiated a BWR Mark I containment improvement program to address some of the concerns that existed due to the small containment volume of the design. In addition, the NRC established a number of additional requirements on U.S. nuclear reactors to ensure safety during severe natural disasters. These include a requirement that emergency diesel generator fuel oil storage tanks be sheltered in a safety-related structure or underground in order to withstand earthquakes, tornados, and

flooding events, and the development of emergency procedures to mitigate severe accidents. NRC regulations also require all U.S. nuclear power plants to cope with a loss of all alternating current (AC) power (i.e., station blackout) in the event of a loss of normal onsite and off-site power sources. NRC regulations specify the length of time that a plant needs to have backup battery power following a station blackout or require an alternate AC source separate from normal on-site and off-site power sources to assure that the core is cooled and containment integrity and other vital functions are maintained. The length of time for the backup power requirement is site-specific, based on the evaluation of the plant's estimated recovery time of normal AC power sources.

Regarding alternate AC sources for the nuclear stations in New Jersey, Salem Units 1 and 2 have three emergency diesel generators for each unit, as well as access to gas turbine generator of significant size. Hope Creek has four diesel generators and access to this same large gas turbine generator. Oyster Creek has two onsite diesel generators as well as two gas turbines that were installed on the property across the intake canal, which can provide electricity in the event of a station blackout. In addition, all of these stations have batteries to supply uninterruptable backup power to critical instrumentation and control systems. The Indian Point Station, located north of New Jersey, is a two-unit facility that has three emergency diesel generators for each unit, as well as an additional diesel generator at each unit to cope with fire damage and/or station blackout.

While the NRC provides assistance in Japan, I want to assure you that the NRC continues to make our domestic responsibilities for licensing and oversight of the U.S. licensees our top priority. On March 23, 2011, the Commission directed the establishment of a task force to conduct a methodical and systematic review of our processes and regulations to determine whether the agency should make additional improvements to our regulatory system. This activity will have both near-term and longer-term components. With our near-term evaluation of the relevance of recent Japanese events to the U.S. nuclear reactor fleet underway, we are continuing to gather the information necessary for us to take a longer, more thorough look at the events in Japan and their lessons for us. Based on these efforts, we will take all appropriate actions necessary to ensure the continuing safety of the American public.

Sincerely,

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Gregory B. Jaczko