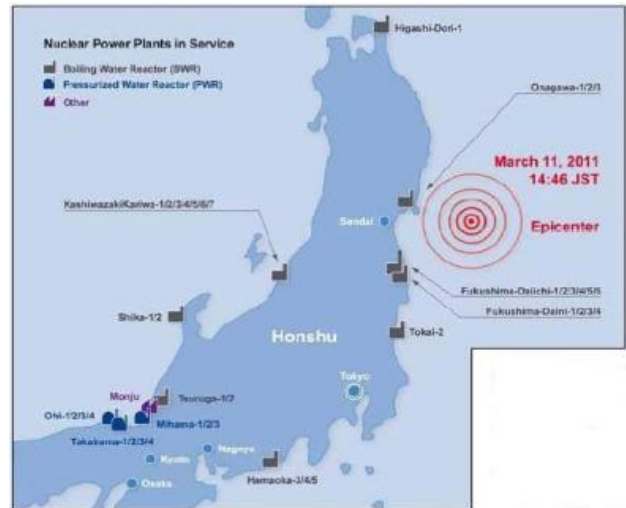


Summary of March 2011 Japan Events and NRC Response

The Nuclear Emergency at Fukushima – Daichi

On Friday, March 11, 2011, a 9.0-magnitude earthquake struck Japan about 231 miles (372 kilometers) northeast of Tokyo off the coast of Honshu Island. The earthquake led to the automatic shutdown of 11 reactors at four sites (Onagawa, Fukushima—Dai-ichi, Fukushima Dai-ni and Tokai) along the northeast coast. Diesel generators provided power until about 40 minutes later, when a tsunami, estimated to have exceeded 45 feet (14 meters) in height, appeared to have caused the loss of all power to the six Fukushima Dai-ichi reactors. These six reactors have received the majority of the Nuclear Regulatory Commission’s attention.



Three Fukushima Dai-ichi reactors (Units 1-3) were in operation at the time of the earthquake and three (Units 4-6) were shut down for routine refueling and maintenance. As a result of the earthquake, the three operating units automatically shut down as designed. Emergency diesel generators started at all six units, providing power to critical cooling systems. The first large tsunami wave, however, inundated the site and was followed by multiple additional waves, resulting in extensive damage to site facilities including the diesel generators.

Only Unit 6 retained one functional diesel generator, which was used to keep both Units 5 and 6 in a safe, cooled shutdown condition. However, due to lack of diesel generators and offsite power to pump water into Units 1 through 4 to cool the nuclear fuel, as well as the hydrogen gas explosions inside the units, some of the nuclear fuel melted and led to radiation releases. In the absence of early response of offsite assistance, which appears to have been hampered by the devastation in the area, among other factors, each unit eventually lost its cooling capability. Sources of water were finally brought in to cool the reactors and work continues to stabilize these plants.



NRC in Action

On Friday morning, shortly after the earthquake and tsunami occurred, the NRC started monitoring the situation. Later that afternoon, the NRC activated and staffed its Emergency Operations Center at headquarters in Rockville, Maryland, to closely monitor the Japan events and assess the potential impact on U.S. nuclear plants and materials, particularly those on the West Coast, and in Hawaii, Alaska, and U. S. Territories in the Pacific. The agency began interactions with its Japanese regulatory counterparts and dispatched two experts to Japan to help at the U.S. Embassy in Tokyo. By Monday, March 14, the agency had dispatched a total of 11 NRC staff to provide technical support to the American Embassy and the Japanese government. The NRC was there to assist the Japanese government and respond to requests from its Japanese regulatory counterparts. The agency also provided support to the U. S. ambassador and the U.S. government assistance effort.

On Wednesday, March 16, the NRC collaborated with other U. S. government agencies and through the U.S. Ambassador in Japan advised American citizens to evacuate within a 50-mile range around the Fukushima plant. The 50-mile evacuation recommendation was made in the interest of protecting the health and safety of U.S. citizens in Japan based on the information available at that time. The agency alerted its licensees to the events in Japan and sought to assist them in considering the ramifications of a similar event for their facilities and to take site-specific actions, as appropriate. The [NRC issued instructions](#) to its inspectors 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.

Post Event Activities

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 the U.S. nuclear power plants. Not long after the emergency began, the NRC established a task force of senior NRC experts to determine lessons learned from the accident and to initiate a review of NRC regulations to determine if additional measures needed to be taken immediately to ensure the safety of nuclear power plants in the United States. The task force issued its [report](#) on July 12, 2011, which concluded that there was no imminent risk from continued operation and licensing activities. The Task Force also concluded that enhancements to safety and emergency preparedness are warranted and made a dozen recommendations for Commission consideration. The Commission is currently considering both, short-term and longer-term actions to ensure nuclear plant safety in the United States.

For more information on NRC's actions, visit the NRC website and the [Japan Nuclear Accident – NRC Actions](#) Web page.

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