

Japanese nuclear reactor in peril

Steven Mufson, *Washington Post*, 3-11-11

Japanese authorities and the U.S. military on Saturday were racing to find ways to deliver new backup generators or batteries to a nuclear power reactor whose cooling facilities have been crippled by a loss of power caused by the deadly earthquake and tsunami that hit Japan Friday afternoon.

The reactor, owned by Tokyo Electric Power Co., is now drawing on battery power that may last only a few hours. Without electricity, the reactor will not be able to pump water to cool its hot reactor core, possibly leading to a meltdown or some other release of radioactive material.

Japanese authorities ordered the evacuation of about 3,000 residents within a 1.9-mile radius of the Fukushima Daiichi nuclear power plant, and told people within a 16.2-mile radius to remain indoors, according to the Web site of International Atomic Energy Agency's Incident and Emergency Center.

The cooling problem affects the second of six reactors at the plant, located on the east coast of Japan about 200 miles north of Tokyo and south of the heavily damaged town of Sendai.

Separately, Tokyo Electric said it had decided to vent gas from another unit to relieve pressure that had increased 50 percent in the reactor containment vessel. The company said on its Web site that the pressure increase was "assumed to be due to leakage of reactor coolant." It remained unclear where the leak was. The company said it did not believe there was leakage of reactor coolant in the containment vessel "at this moment," but

There were also reports of elevated radiation levels inside the control room of that reactor unit, which was built 40 years ago.

Altogether, 11 Japanese nuclear reactors shut down automatically, as they are designed to do in case of an earthquake. Japan has 55 nuclear plants and two more under construction.

"There's a basic cooling system that requires power, which they don't have," said Glenn McCullough, former chairman of the Tennessee Valley Authority, referring to the unit in need of generators. McCullough, who has been keeping track of the situation in Japan, said that after the tsunami, water had gotten into the diesel generators that would normally have provided backup power.

"The danger is the very thermally hot reactor cores at the plant must be continuously cooled for 24 to 48 hours," said Kevin Kamps, a specialist in nuclear waste at Beyond Nuclear, a group devoted to highlighting the perils of nuclear power. "Without any electricity, the pumps won't be able to pump water through the hot reactor cores to cool them."

In a statement that confused nuclear experts, Secretary of State Hillary Rodham Clinton said Friday morning that U.S. Air Force planes in Japan had delivered "coolant" to a nuclear power plant affected by the quake. Nuclear reactors do not use special coolants, only large amounts of pumped water.

"They have very high engineering standards, but one of their plants came under a lot of stress with the earthquake and didn't have enough coolant," she said, "and so Air Force planes were able to deliver that." It remained unclear what the Air Force had delivered.

Just hours after the quake, Japan's Nuclear and Industrial Safety Agency (NISA) declared a heightened state of alert at the Fukushima Daiichi plant, according to the IAEA. NISA said that no release of radiation has been detected.

The evacuation comes after NISA said Friday that a fire broke out at the Onagawa nuclear power plant but was later extinguished.

The plant is about 45 miles north of the city of Sendai, which was badly damaged by the quake and tsunami. Sendai is the population center nearest the epicenter of the quake, and Japan's Kyodo News agency said that from 200 to 300 bodies had been found so far near the city.

The three reactors at the Onagawa site remained closed.

The key buildings in the Onagawa plant are about 15 meters above sea level, according to the Web site of Tohoku Electric Power, owner of the plant. The company said that was about twice the height of the previous highest tsunami.

Japanese authorities told the IAEA that that the Onagawa, Fukushima-Daini and Tokai nuclear power plants shut down automatically, and no radiation release has been detected. The plants have multiple nuclear reactors.

The IAEA said it is seeking details on Fukushima Daiichi and other nuclear power plants and research reactors, including information on off-site and on-site electrical power supplies, cooling systems and the condition of the reactor buildings. Nuclear fuel requires continued cooling even after a plant is shut down, the IAEA noted.

"This is the most challenging seismic event on record, so it is a severe test," said McCullough. "Clearly the Japanese government is taking this very seriously."