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U.S. Calls Radiation 'Extremely High;' Sees Japan Nuclear Crisis Worsening

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WASHINGTON — The chairman of the United States [Nuclear Regulatory Commission](#) gave a far bleaker appraisal on Wednesday of the threat posed by Japan's nuclear crisis than the Japanese government had offered. He said American officials believed that the damage to at least one crippled reactor was much more serious than Tokyo had acknowledged, and he advised Americans to stay much farther away from the plant than the perimeter established by Japanese authorities.

The announcement opened a new and ominous chapter in the five-day-long effort by Japanese engineers to bring the six side-by-side reactors under control after their cooling systems were knocked out by an earthquake and a tsunami last Friday. It also suggested a serious split between Washington and its closest Asian ally at an especially delicate moment.

The Congressional testimony by Gregory Jaczko, the chairman of the commission, was the first time the Obama administration had given its own assessment of the condition of the plant, apparently mixing information it had received from Japan with data it had collected independently.

Mr. Jaczko's most startling assertion was that there was now little or no water in the pool storing spent nuclear fuel at the No. 4 reactor of the Fukushima Daiichi Nuclear Power Station, leaving fuel rods stored there exposed and bleeding radiation into the atmosphere.

As a result, he said, "We believe that radiation levels are extremely high, which could possibly impact the ability to take corrective measures."

His statement was quickly but not definitively rebutted by officials of Tokyo Electric Power, the Daiichi's plant's operator, and Japan's nuclear regulatory agency.

"We can't get inside to check, but we've been carefully watching the building's environs, and there has not been any particular problem," Hajime Motojuku, a spokesman for Tokyo Electric, said Thursday morning in Japan.

Later Thursday, a spokesman for Japan's Nuclear and Industrial Safety Agency, Yoshitaka Nagayama, was more equivocal, saying, "Because we have been unable to go the scene, we cannot confirm whether there is water left or not in the spent fuel pool at Reactor No. 4."

At the same time, officials did raise concern about two other reactors where spent fuel rods were stored, Nos. 5 and 6, saying they had experienced a slight rise in temperature.

On Wednesday night, Mr. Jaczko reiterated his earlier statement and added that commission representatives in Tokyo had confirmed that the pool at No. 4 was empty. He said Tokyo Electric and other officials in Japan had confirmed that, and also stressed that high radiation fields were going to make it very difficult to continue having people work at the plant.

If the American analysis is accurate and emergency crews at the plant have been unable to keep the spent fuel at that inoperative reactor properly cooled — it needs to remain covered with water at all times — radiation levels could make it difficult not only to fix the problem at reactor No. 4, but to keep servicing any of the other problem reactors at the plant. In the worst case, experts say, workers could be forced to vacate the plant altogether, and the fuel rods in reactors and spent fuel pools would be left to meltdown, leading to much larger releases of radioactive materials.

While radiation levels at the plant have varied tremendously, Mr. Jaczko said that the peak levels reported there "would be lethal within a fairly short period of time." He added that another spent fuel pool, at Reactor No. 3, might also be losing water and could soon be in the same condition.

On Thursday morning, Japan's Self-Defense Forces started dumping water from a helicopter on reactor No. 3, making several passes. They planned to do the same for No. 4 sometime Thursday. Tokyo Electric was also working busily to complete a high power line to the plant to restore the electricity needed to run the cooling systems, according to a senior nuclear industry executive.

On Wednesday, the American Embassy in Tokyo, on advice from the Nuclear Regulatory Commission, told Americans to evacuate a radius of "approximately 50 miles" from the Fukushima plant.

The advice to Americans in Japan represents a graver assessment of the risk in the immediate vicinity of Daiichi than the warnings made by the Japanese themselves, who have told everyone within 20 kilometers, about 12 miles, to evacuate, and those 20 to 30 kilometers to take shelter. While maps of the plume of radiation being given off by the plant

show that an elongated cloud will stretch across the Pacific, American officials said it would be so dissipated by the time it reached the West Coast of the United States that it would not pose a health threat.

“We would recommend an evacuation to a much larger radius than has currently been provided by Japan,” Mr. Jaczko said. That assessment seems bound to embarrass, if not anger, Japanese officials, suggesting they have miscalculated the danger or deliberately played down the risks.

Late Wednesday night, after [President Obama](#) spoke with Prime Minister [Naoto Kan](#), the State Department announced what it described as a “voluntary” evacuation of dependents of American government personnel in northeastern Japan, down to Tokyo and Yokohama. The undersecretary of state for administration, Patrick Kennedy, said that no one would be ordered to leave the country, and embassy staff and military officials would be expected to stay and perform their jobs. But the government is providing charter flights for dependents who want to leave.

In the same call with reporters, Daniel B. Poneman, the deputy secretary of energy, said the United States was also providing sophisticated nuclear detection devices. Some are flown aboard American aircraft. “We are dealing with this as a day to day, minute to minute situation,” he said.

It was not immediately clear how many people live within the zone around the plant that American officials believed should be evacuated. But the zone gets far closer to the city of Sendai, with its population of one million, which took the brunt of the earthquake last week.

At a hearing on Wednesday, Senator [Barbara Boxer](#), chairman of the Senate Environment and Public Works Committee, pointed out that 50 miles could take in a huge number of people; San Onofre, in her home state, California, has seven million people living within that radius, she said.

American officials who have been dealing with their Japanese counterparts report that the country’s political and bureaucratic leadership has appeared frozen in place, unwilling to communicate clearly about the scope of the problem and, in some cases, unwilling to accept outside assistance. Two American officials said they believed that the Japanese government itself was not getting a clear picture from the Tokyo Electric Power Company.

“Everything in their system is built to build consensus slowly,” said one American official who would not be quoted by name because of the delicacy of discussions with Japan. “And everything in this crisis is about moving quickly. It’s not working.”

United States Air Force officials announced Wednesday that a Global Hawk remotely piloted surveillance plane would be sent on missions over Japan to help the government assess damage from the earthquake and the tsunami. A Pentagon official said the **drone** was expected to fly over the stricken nuclear plant.

American officials were careful to offer no public comparisons to past nuclear accidents when discussing the Fukushima disaster. But clearly the crisis in Japan already far outstrips what happened at Three Mile Island in Pennsylvania, where very little radiation escaped a crippled reactor. The effort now is to keep the Japanese crisis, involving at least three reactors that had been in active use before the quake, and three others that were inactive but had storage pools for spent fuel, from escalating to the levels of the worst nuclear disaster in history: Chernobyl.

Though the plant's reactors shut down automatically when the quake struck on Friday, the subsequent tsunami wiped out the backup electronic pumping and cooling system necessary to keep the fuel rods in the reactors and the storage pools for spent nuclear fuel covered with cool water.

The spent fuel pools can be even more dangerous than the active fuel rods, as they are not contained in thick steel containers like the reactor core. As they are exposed to air, the zirconium metal cladding on the rods can catch fire, and a deadly mix of radioactive elements can spew into the atmosphere. The most concern surrounds Cesium-137, which has a half-life of 30 years and can get into food supplies or be inhaled.

Mr. Jaczko (pronounced YAZZ-koe) said radiation levels might make it impossible to continue what he called the "backup backup" cooling functions that have so far helped check the fuel melting inside the reactors. Those efforts consist of using fire hoses to dump water on overheated fuel and then letting the radioactive steam vent into the atmosphere.

Those emergency measures, carried out by a small squad of workers and firefighters, represent Japan's central effort to forestall a full-blown fuel meltdown that would lead to much higher releases of radioactive material into the air.

Mr. Jaczko's testimony, the most extended comments by a senior American official on Japan's nuclear disaster, described what amounts to an agonizing choice for Japanese authorities: keep sending workers into an increasingly contaminated area in a last-ditch effort to cover nuclear fuel with water, or do more to protect the workers but risk letting the pools boil away — and thus risk a broader meltdown.

According to Tokyo Electric's data, the spent fuel pool at the No. 4 reactor contains 548 fuel assemblies that were in use at the reactor until last November, when they were move to the storage pool on the site. That means that the fuel rods were only recently taken out of active use and that their potential to burn and release radioactivity is higher than spent fuel in storage for a longer period.

Experts say workers at the plant probably could not approach a fuel pool that was dry, because radiation levels would be too high. In a normally operating pool, the water not only provides cooling but also shields workers from gamma radiation.

Earlier in the day, Japanese authorities announced a different escalation of the crisis at Daiichi when they said that a second reactor unit at the plant, No. 3, might have suffered damage to its primary containment structure and appeared to be releasing radioactive steam.

David E. Sanger and Matthew L. Wald reported from Washington, and Hiroko Tabuchi from Tokyo. Keith Bradsher contributed reporting from Hong Kong.