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FROM THE
DIRECTOR OF
THE JOY LUCK CLUB

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Reactor Core Was Severely Damaged, U.S. Official Says

By **DAVID E. SANGER** and **DAVID JOLLY**

WASHINGTON — Energy Secretary **Steven Chu** said Friday that roughly 70 percent of the core of one reactor at the crippled Fukushima nuclear plant in **Japan** had suffered severe damage.

His assessment of the damage to Reactor No. 1 was the most specific yet from an American official on how close the plant came to a full meltdown after it was hit by a severe earthquake and massive tsunami on March 11.

Japanese officials have spoken of “partial meltdown” at some of the stricken reactors. But they have been less than specific, especially on the question of how close No. 1 — the most badly damaged reactor — came to a full meltdown.

Mr. Chu, a Nobel laureate in physics, suggested that the worst moments of the crisis appeared to be receding, saying that the best information the United States had received from the Japanese authorities indicated that water was once again covering the cores of the stricken reactors and that pools of spent fuel atop the reactor buildings were “now under control.”

In addition to the severe damage at Reactor No. 1, the Energy Department said that Reactor No. 2 had suffered a 33 percent meltdown. Mr. Chu cautioned that the figures were “more of a calculation” because radiation levels inside the plant had been too high for workers to get inside, and sensors were unreliable.

He called the nuclear crisis in Japan “a cascade of events” that led to multiple failures of backup systems. He told reporters at a breakfast that while officials were reviewing the accident to see if American nuclear plants needed significant changes, he did not want to overreact or rush into changes whose effects might not be fully understood.

“First and foremost, we are trying to make sure that fuller damage is not done,” he said.

Questioned about the long-term effects of Japan's effort to "feed and bleed" the reactors — pouring in cooling water, then releasing it as steam into the atmosphere — he said there was an effort now under way to "minimize the release" of radioactivity into the air.

"They're trying to reach a steady state," he said, in which cooling could take place with minimal radioactive releases into the atmosphere.

Meanwhile, Japan and the United States combined efforts on Friday in a final search for thousands of people still missing after the earthquake and tsunami. The three-day effort will be the last big sweep before officials in Tokyo shift their focus to a daunting national reconstruction effort.

In the largest rescue mission ever carried out in Japan, 18,000 Japanese searchers have been joined by 7,000 American sailors and [Marines](#), in an operation using 120 helicopters and reconnaissance aircraft and 65 ships to scour a coastal area from the northern tip of Iwate Prefecture to the southern end of Fukushima Prefecture.

"Until now," said Minako Sawamura, a spokeswoman for the Japanese military in Sendai, "the search has focused on finding survivors on land. But the tsunami carried many people with it when it washed back out to sea. So we're making an effort, including from the air, to find those people." The National Policy Agency still lists 16,464 as missing, and the number of dead at 11,620.

In a symbolic gesture to show the changing emphasis in Tokyo, Yukio Edano, the chief cabinet secretary, showed up for a news conference Friday morning dressed in normal business attire, the first time since the disaster struck that he had not appeared in one of the blue work jackets officials have worn to indicate the seriousness of the situation.

"We want to show that the government is looking to the future, considering the reconstruction plans," Mr. Edano said.

Japanese nonetheless remain concerned by the drama at the Fukushima Daiichi Nuclear Power Station, 140 miles north of Tokyo. Since the quake and tsunami hit, the plant has sustained fires and explosions at several reactor buildings. Radiation leaks have included some into the sea near the plant. The operator of the plant, Tokyo Electric Power Company, said this week that four of the six reactors there would be scrapped.

Attempts to cool the reactors and spent-fuel pools, and efforts to answer the critical question of where the radiation leaks are coming from, are being hindered by highly radioactive water in turbine buildings attached to Reactors 1, 2, 3 and 4.

Junichi Matsumoto, a Tokyo Electric Power spokesman, said at an afternoon news conference that the pumping of the contaminated water was continuing successfully.

Tokyo Electric Power said late Thursday that the groundwater near the plant had also been contaminated. The company initially said the radiation was 10,000 times the normal level, then later questioned its own data. It did the same with a report that the level of iodine 131 in seawater near the plant had fallen below 2,000 times the statutory limit, compared with a level of more than 4,000 times the limit on Thursday.

On Friday, Hidehiko Nishiyama, deputy head of the Japanese Nuclear and Industrial Safety Agency, said at a news conference that the government had questions about the company's figures and had asked it to review the data.

Tokyo Electric officials said they would recalculate the figures after an error was discovered in a computer program. The company has several times issued radioactivity reports only to retract them after experts questioned their validity.

Questions about the credibility of the data have added to a sense that the authorities are uncertain about what is happening inside the reactors of the damaged power plant.

David E. Sanger reported from Washington, and David Jolly from Tokyo. Reporting was contributed by Makiko Inoue, Ken Ijichi, Moshe Komata and Chika Ohshima from Tokyo.