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Japan official faults nuke design, defends secrecy

YURI KAGEYAMA, Associated Press

TOKYO (AP) — The government official who outlined Japan's worst-case scenario for the unfolding nuclear disaster last March defended how his study, warning that millions of people might have to flee, was kept secret.

Authorities would have had as much as a week or two to expand the evacuation zone if the worst-case scenario had started to unfold, said Shunsuke Kondo, who heads the Japan Atomic Energy Commission that helps set government nuclear policy.

But he also acknowledged that the design for the Fukushima Dai-ichi nuclear power plant had been faulty and he had not expected the "Chernobyl-style disaster" that occurred.

Kondo was commissioned by then-Prime Minister Naoto Kan to write the worst-case scenario on what might happen after the March 11 tsunami crippled the plant and caused three reactors to melt down.

But fearing widespread panic, officials kept secret the 15-page document he delivered March 25. It was obtained by The Associated Press last month.

The document said evacuation zones possibly would have to be expanded, including the Tokyo area with a population of 35 million people, if massive radiation began to leak from the plant, 230 kilometers (140 miles) from the capital.

Workers ultimately were able to bring the reactors under control.

But at the time, just two weeks after the disaster, it was unclear whether emergency measures would succeed, and an aftershock or another tsunami could have set off explosions and leaks at the crippled plant.

Kondo, 69, a former engineering professor at the prestigious University of Tokyo, said the government responded properly to his scenario, which he prefers be called "contingency," instead of "worst-case."

"Thinking of contingencies is Common Sense Crisis Management 101," said Kondo, while noting the secrecy decision was not his but politicians'.

"Implementing cost-effective measures was the proper response," he told The Associated Press at his office in a rare interview.

Nearly a year after the disaster, the probability of the nuclear crisis spiraling out of control was tiny, according to Kondo, a stately looking man with white hair and sharp eyes.

The only task left undone from his scenario is relatively minor — covering the pools of spent nuclear fuel rods sitting next to each reactor at Fukushima Dai-ichi, he said.

Spent fuel rods are still highly radioactive. Hydrogen explosions blew apart two of six containment buildings at Fukushima.

Kondo's scenario had warned the radiation equivalent of two reactor cores might leak if the spent fuel started to burn.

Now, the rods are immersed in water and are stable.

Kondo, a longtime advocate of atomic technology as clean energy, acknowledged the design of Fukushima Dai-ichi had been faulty.

It failed in crucial "venting," to release pressure and prevent explosions, spreading radiation into the environment in what Kondo likened to the 1986 Chernobyl disaster.

Kondo had erroneously expected problems at a Japan plant to be like the Three Mile Island accident, where radiation leakage was limited.

"That was our biggest mistake," he said.

Decades will now be needed before Fukushima Dai-ichi can be fully decommissioned.

Authorities evacuated 59,000 residents within 20 kilometers (12 miles) of the Fukushima plant. Thousands more left other towns later.

Kondo still has sleepless nights.

"I can't sleep when I think of all those people who had to evacuate, all those mothers worried for their children," he said.

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### We Almost Lost Tokyo

Bad as it was, the Fukushima nuclear power plant crisis could have been much worse. According to a 15- page report delivered to then Prime Minister Naoto Kan on March 25, two weeks after the massive earthquake and resulting tsunami in northeast Japan, the resulting meltdowns could have forced the evacuation of Tokyo.

The report was made public in early January by Japan's minister for Fukushima recovery, Goshi Hosono. In it the government had drawn up a contingency plan that envisioned the possibility of having to evacuate much of Tokyo, the world's largest city, and everyone else within a 250-km radius of the damaged Fukushima Daiichi nuclear plant.

The plan was prepared after the March 11, earthquake and tsunami set in motion circumstances leading to fuel meltdown at three of the reactors and fears of exposed radioactive fuel stored at a fourth unit. It was prepared by Shunsuke Kondo, chairman of the Japan Atomic Energy Commission. Hosono, then a special advisor to premier Naoto Kan, asked for the plan at Kan's request.

The contingency plan envisioned a 170-km-radius mandatory evacuation zone from the stricken plant and a 250-km voluntary zone which would have brought the disaster to Tokyo's doorstep. The report said that high radiation levels might have extended beyond 250-km, and people beyond that limit might have to evacuate.

In fact, the government held fast to the evacuation regime imposed in the early days. It ordered full evacuation of an area 20-km around the plant site and voluntary evacuation up to 30 km. Tokyo is about 250 miles away from the plant site (depending on how one defines "Tokyo"). The government maintained in public then that Tokyo was safe and urged people and businesses to stay.

Nevertheless, several foreign governments, led by France, advised their citizens to leave Tokyo. More than 30 legations moved temporarily to Osaka, and many other expatriates also left on their

own accord. Japanese called them “*fly-jin*” a play on the word for foreigner, *gaijin*. The U.S. did not go so far as to move its embassy but announced a 50-mile, 80-km evacuation zone for Americans.

Hosono said in January that the report submitted on March 25 was not revealed to the public because of concern about spreading panic. Such a report if made public would he caused “excessive and unnecessary worry,” Hosono said. But Kan later talked freely about his fears for Japan in interviews he made immediately after he resigned in September.

“It was a crucial moment when I wasn’t sure whether Japan could function as a state,” he said. Since departing office, Kan has reinvented himself as a kind of global anti-nuclear power activist. “I think we should create a world where people do not need to depend on nuclear power,” he said while attending the World Economic Forum in Davos, Switzerland. He also inspected alternative energy providers in Spain and Germany.

There were several points in the early days of the crisis when things could have really spun out of control. One scenario envisioned the melting of the 1,535 fuel assemblies contained in the spent fuel pool at Unit-4. That is the equivalent of two full reactor cores as Unit-4 was shut down for refueling when the earthquake struck. The roof had been blown off in a hydrogen explosion leaving no barrier between the pool and the atmosphere.

Another imponderable in the immediate wake of the tsunami was whether workers could have opened the vents on Unit-1 to relieve steam pressure building up. That meant releasing some radiation into the atmosphere. But not to vent steam to relieve pressure buildup might have led to further explosions severely cracking the containment and resulting in uncontrolled released of radiation.

It was no simple matter to open the vent on Unit 1. The workers were hampered by high radiation dose rates, lack of lighting, lack of contingency plans and equipment needed to vent in the event of power blackout and indecision by the utility head office. The vents were successfully opened about 24 hours after the earthquake struck. By then much of the fuel was exposed and melting.

The government and utility feared more hydrogen explosions and more release of radiation might cause the workers to flee and suspend recovery efforts entirely. In one worst case, the authorities estimated that the areas within the 170 km mandatory zone would have been contaminated with 1,480 kilo becquerels of radiation per square meter. As a last resort, the

government would have smothered damaged reactors with tons of sand dropped from aircraft or helicopters.

Eventually, after much trouble, the vents were opened relieving pressure. It was too late to prevent a hydrogen explosion caused by the chemical reaction of steam and exposed fuel, but the damage was mainly confined to the building superstructure and not to the containment vessel itself.

There was much initial anxiety over the condition of the pools in all four plants, especially Unit-4, sparking frantic water drops by helicopters and then the use ground-based water sprayers to keep the fuel assemblies under water. Later it was evident that the fears were exaggerated. The pools were mostly undamaged and cooling is now working properly.

However, it is probably no coincidence that the new 40-year road map to recovery, announced in mid-December, places the priority on removing fuel from the Unit-4 pool, well ahead of dealing with the “fuel debris” or melted fuel, an operation that won’t even begin for another decade, according to the latest planning document.

Although the most serious worries have abated, the severely damaged reactors remain in a precarious state officially described as the “equivalent of a cold shutdown’.” It means that the remains of the fuel are below, in most cases well below, 100 degrees C. But it is dependent a jury-rigged cooling system, which is suffering from leaking frozen pipes in the cold weather that has gripped Japan.

POSTED BY TODD CROWELL AT [6:31 PM](#)