

TEPCO videos: Sans equipment, staff, Fukushima crisis spun out of control

September 05, 2012

4

THE ASAHI SHIMBUN

Operators could have prevented two meltdowns at the Fukushima No. 1 nuclear power plant last year if the site had more powerful emergency equipment and if supervisors had been able to more directly command workers, according to an analysis of staff teleconference videos by The Asahi Shimbun.

Plant operator Tokyo Electric Power Co. was late in obtaining additional fire engines, crews and fuel, and at one point ran short of essential supplies because it apparently lacked the ready cash with which to buy them, according to the videos released by the company, which show conversations between plant staff and managers in Tokyo as the reactors overheated.

In one case, fire engines summoned to the plant instead drove to another, 10 kilometers away. About 18 hours after TEPCO officials decided to dispatch those vehicles, one official explained: "It was pitch-black. Drivers could not confirm if they were on the right road so they turned back."

On March 11, 2011, a 9.0-magnitude earthquake and tsunami knocked out cooling systems at the plant, causing reactors 1, 2 and 3 to overheat and their fuel rods to collapse in a molten heap inside the reactor pressure vessels.

Operators could only act by opening main steam safety relief valves to release the pressure and let fire engines spray water inside.

Those valves required power from 10 12-volt automotive batteries connected in series. But on the morning of March 13 there were insufficient batteries at the plant.

Then on March 14 water was the problem. Although the plant stands on Japan's Pacific shore, it had no fire engines capable of pumping water over the 10-meter elevation from the ocean. Instead, engineers cooled reactors 1 and 3 by pumping pools of seawater left by the tsunami. The pools shrank, and at 1:10 a.m. on March 14, water pumping ceased.

The No. 2 reactor was left overheating for longer because engineers were unable to find a water source to begin cooling work.

The videos show TEPCO depended upon an affiliate to provide crews for fire engines and other heavy machinery. Crisis management was hampered by the inability to give direct orders to those staff.

At 7:30 a.m. on March 13, senior crisis managers at TEPCO headquarters decided to dispatch fire engines from conventional thermal power plants in the Tokyo metropolitan area, roughly 200 kilometers away.

But TEPCO was unable to marshal the crews directly because they worked for Nanmei Kosan, a TEPCO affiliate responsible for fire engines at its power plants.

The delay continued early the next morning.

Fire trucks from one plant drove to the wrong location, reaching the comparatively undamaged Fukushima No. 2 power plant instead of the crisis-hit No. 1 plant. At 3:01 a.m. on March 14, a TEPCO official at company headquarters said the driver had been unable to navigate at night.

TEPCO executive Sakae Muto shot back: "I understand passenger cars had no problem getting there." Muto, an executive vice president, was among managers gathered at the government's nuclear disaster control center in the vicinity of the No. 1 plant.

Then, at 3:05 a.m., a member of the control center staff reported a problem with the Nanmei Kosan crews.

"They are getting nervous, worried that radiation levels are extremely high," he said, and urged managers to ease the crews' concerns.

"Officials at TEPCO headquarters should explain that the work does not involve risk," he said. "But I think it important, too, that our most senior managers talk directly to the company and kindly ask for cooperation."

At 3:15 a.m., the TEPCO headquarters told the site: "You, too, should begin a polite discussion with Nanmei Kosan. We are in the middle of doing so with its main office."

Two minutes later, the headquarters added: "Nanmei Kosan has awoken its employees and is telling them, 'Get going now! Don't look, just do it.'"

At 3:22 p.m. on March 14, an official at the TEPCO headquarters asked Masao Yoshida, plant chief, if the site needed additional fire engine operators, saying four at the Hirono thermal plant were available.

"Yes, we need them very much," Yoshida replied in a forced tone of voice.

Four employees of Nanso Service, a Nanmei Kosan subsidiary, came to the rescue.

Yoshida later said TEPCO had no choice but to ask for help.

"We cannot even handle fire engine pumps without Nanmei Kosan," he said on the afternoon of March 14.

TEPCO was facing a crisis in getting the necessary equipment and goods to the plant.

On the morning of March 13, TEPCO began discussing whether it needed to establish a logistics base.

The government's Nuclear and Industrial Safety Agency briefed it about radiation and told TEPCO to prepare to send extra vehicles and staff into the precautionary exclusion zone.

One possible site for a base was J-Village, a soccer training facility in Naraha, about 9 kilometers south of the plant.

But this was adjacent to the Fukushima No. 2 plant, which suffered a partial power loss after the tsunami, and, at that time, a precautionary exclusion zone stretched beyond the soccer center.

TEPCO videos: Sans equipment, staff, Fukushima crisis spun out of control - AJW by The Asahi Shimbun

They finally settled on the Onahama coal center, a TEPCO storage base within Onahama port, 60 km from the No. 1 plant.

At 10:15 a.m. on March 13, it was reported that 800 liters of gasoline were on their way to the coal center.

But a problem arose. TEPCO could not secure trucks and drivers to transport the fuel any farther because of fears over radiation.

The fuel reached Onahama, and there it stayed.

Confusion continued on March 14, when at 8:50 p.m., it was reported that the plant had still received no gasoline.

“Wasn’t it arranged that gasoline would be delivered to the plant?” asked Akio Takahashi, a senior official at TEPCO headquarters, in a surprised tone.

An official at headquarters in charge of transport said 17 barrels with a 200-liter capacity had been fixed for delivery. But he said the gasoline was still sitting in Onahama.

Takahashi pressed for details and the official replied: “I will find out.”

TEPCO headquarters reported the gasoline barrels were stuck in Onahama because no trucks were available to transport the gasoline.

“It has not left yet,” an official said. “We were told there were no trucks, but we will get it there.”

Still the other main transport problem persisted: getting water to the overheated reactors.

TEPCO turned to Japan's Self-Defense Forces.

But on March 13, the SDF stayed out of the plant. “SDF members headed to the plant with water yesterday (March 12) at our request, but they returned after seeing the explosion,” explained a TEPCO official at 9:15 a.m., referring to a hydrogen explosion at the No. 1 reactor building. “They received high radiation doses after being exposed to radioactivity and contamination.”

At 1:25 p.m., TEPCO headquarters reported that the SDF informed it of conditions it must meet if it wanted troops to help at either plant. TEPCO employees would have to come to the nearby government response center, to brief the troops and let them judge what gear and equipment to take.

By March 14, the situation at the No. 1 plant had not improved.

TEPCO received a report that seven SDF tankers, carrying 35 tons of water in all, arrived at the plant at 10:57 a.m.

Four minutes later, a hydrogen explosion ripped apart the No. 3 reactor building. Four SDF members were injured.

At 1:41 a.m. on March 14, a TEPCO headquarters official handling contact with government ministries and agencies began speaking with these words: “We’ve got something urgent.”

It was about NISA’s repeated instruction to inject water into the No. 2 reactor.

TEPCO videos: Sans equipment, staff, Fukushima crisis spun out of control - AJW by The Asahi Shimbun

Water injection there was under way early on March 14 because the core cooling system, called the isolation cooling system, had pumps that could function without batteries.

But the pumps might soon shut down.

NISA officials wanted TEPCO to switch as soon as possible to the injection of water from outside sources.

There arose a serious obstacle to letting that happen: There was little seawater available nearby in pools, and the fire engine pumps at the plant were incapable of pumping seawater from the ocean because they had insufficient power to lift water over the 10-meter elevation from sea level.

So operators used what seawater was available in pools left by the tsunami, and at 3 a.m. on March 14, Muto and Yoshida discussed ways of pumping it from the ocean below.

“Can’t we, for example, lift seawater by putting many fire engines in a line?” Muto suggested.

Work to do that got under way at 9:05 a.m. on March 14 when large fire engines from thermal plants in the metropolitan area arrived and were connected in series.

(This article was compiled from reports by Toshihiro Okuyama, Takashi Sugimoto and Hideaki Kimura.)

THE ASAHI SHIMBUN