New threats emerge at Japanese nuclear plants

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The Japanese government has ordered the Chubu Electric Power Co. to close its Hamaoko Nuclear Power Plant, which is located in Shizuoka Prefecture, some 200 kilometres (120 miles) southwest of Tokyo. The plant has been at the centre of long-running protests and safety warnings from experts.

Professor Katushiko Ishibashi, who served on the Japanese government's panel on the safety of nuclear reactors, has described Hamaoko as the most dangerous nuclear plant in the world.

Hamaoko is an old plant that was built to withstand an 8.5 magnitude earthquake and a tsunami of 8 metres. It stands on two major fault lines close to the sea. Fukushima was hit by a magnitude 9 quake and a 14-15 metre tsunami (40-45 feet). Seismologists have predicted that there is an 87 percent chance that the area around Hamaoko will be hit by a major earthquake in the next 30 years.

If a radiation leak were to occur at Hamaoko, as it has done at Fukushima, the entire population of Tokyo—some 28 million people—would have to be evacuated. A further 2.5 million commute daily into the city from surrounding areas. More than 30 million people would lose their homes and livelihoods in the event of a nuclear incident at Hamaoko.

The repercussions would reach far beyond the Tokyo area and beyond Japan. As one of the three major financial centres of the world, along with London and New York, an evacuation of Tokyo would have a devastating impact on the entire global economy. Major banks and financial institutions and the stock exchange would be disrupted.

Hamaoko figures in cables dating from 2006-2007 that have just been released by WikiLeaks. A cable from March 2006 reports on a court case in which Hokuriku Electric Power Company was ordered to shut down one its reactors at the Shika Nuclear Power plant after local residents in Kanazawa district complained that the reactor was not capable of withstanding a serious earthquake.

The Japanese government expressed surprise at the ruling. The Japanese Nuclear and Industrial Safety Agency's Director-General Kenkichi Hirose told the press, "I've never thought that a court would order the cessation of the plant's operation".

The US ambassador pointed out there had been a number of similar lawsuits in the past. The cable cited the case of the Hamaoko Nuclear Power Plant. What was surprising, said the ambassador, was that the plaintiffs had won in the Shika case. This had only happened once before in the case of the fast-breeder reactor at Monju.

Despite the fact that the plaintiffs had won their case, neither the government nor the power company saw any reason to shut down the Shika reactor. They pointed out that this was only a civil case and insisted that their safety procedures were sound.

The Japanese authorities took a similar attitude to the Monju ruling. This fast-breeder reactor was closed after a serious accident in 1995. It was later discovered that the Japan Power Reactor and Nuclear Fuel Corporation (PNC) that ran the plant had faked a video of the accident to downplay its effects and prevented plant workers from speaking out about the incident. Campaigners won a court order to prevent the plant from reopening. But in May 2010 the government allowed the reactor to be restarted.

In 2007, the US embassy reported on a leak at TEPCO's Kashiwazaki-Kariwa plant following an earthquake and fire. Initially TEPCO claimed that there had been no leak of radioactive material into the environment. Hours later they admitted that there had been a leak. But the company and NISA denied that it exceeded legal limits.

The US embassy noted that Kashiwazaki-Kariwa is the largest nuclear power plant in the world. It was shut down for almost two years following the quake. Earlier the facility had been shut down after it was revealed that records relating to nuclear fuel had been deliberately falsified in 2002.

The cables make it clear that the US government was well aware of the danger that earthquakes posed to Japan's nuclear facilities. But despite the evidence of serious safety concerns at Japan's nuclear reactors, most of the cables relate to the threat of terrorism. The US was most concerned that some of the security staff at the reactors were not armed.

In January 2006 the US embassy commented on the first ever on-site anti-terrorism drill. It was centred on the Mihama Nuclear Power Plant. US diplomats had clearly monitored the drill carefully and noted that it "went very smoothly". But, they complained, "The drill was a bit too scripted and perfect". Subsequent cables continue to sound warnings about the threat to Japan's nuclear facilities from North Korea and Al Qaeda.

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The threat from earthquakes seldom figures in cables, and the possible threat of a tsunami not at all.

The fact that the Japanese government is insisting on the closure of Hamaoko as summer approaches, and the demand for electricity to power air conditioning units will increase, suggests that the threat is very severe indeed. Shares in Chubu Electric and other utility companies immediately fell on the news.

Yoshinori Nagano, a senior strategist at Daiwa Asset Management, warned that Hamaoko might not be the only plant facing closure. “This news is triggering uncertainty”, he said, “not just about Chubu Electric but the whole utility sector. Investors are concerned that on the back of this news other reactors currently under inspection may not resume operations soon”.

In a separate incident Japan Atomic Power reported what was described as a “tiny” radioactive leak at its Tsuruga Nuclear Plant. A previous leak at the plant was covered up in 1981. The company’s record and continuing concerns about the poor safety culture in the Japanese nuclear industry must cast doubt on the reassuring tone of the press releases.

As long ago as 1995, Jinzaburo Takagi, an associate professor at Tokyo Metropolitan University, warned in a paper published by the Physical Society of Japan that the risk of earthquakes and tsunamis was being underestimated by the nuclear industry.

Basing himself on data from the Kobe or Great Hanshin earthquake that year, Tagaki accused the government of “refusing to consider emergency measures in the event of an earthquake because they assume nuclear power plants will not break down in an earthquake and have stopped taking further steps at all”.

In further evidence of the lax attitude to safety, workers at Fukushima have only just begun to receive regular health checks. Some 800 workers employed directly by the plant’s owner TEPCO, its affiliates and contractors have been working to stabilise the reactors for nearly two months. Thirty workers have been exposed to more than 100 millisieverts of cumulative radiation. But only three workers who were exposed to exceptionally high levels of radiation after working in contaminated water in building 3 have been medically examined since the crisis began.

The revelation about the lack of medical care came as workers were sent back into building 1 for the first time since 11 March. Twelve engineers worked in shifts of 10 minutes for about an hour. The intention is to re-establish the reactor’s cooling system.

Shortly after it was announced that workers had been sent into the plant, TEPCO admitted that the radiation levels in building 1 were 700 millisieverts per hour. This was far higher that had been anticipated on the basis of earlier readings taken by robots.

The source of the high levels of radiation is not known. Video of the inside of the plant taken by the robots confirmed that there were no water leaks.

The threat is not confined to those on site. The effect of opening up building 1 was to release large amounts of radioactivity into the atmosphere.

The full extent of the environmental contamination is a cause for concern and access to data on the subject is increasingly being restricted. The US Environmental Protection Agency (EPA) has ended the special monitoring of milk and water that it began after the Fukushima accident. The Japanese authorities have denied permission to the Greenpeace vessel Rainbow Warrior to enter Japan’s territorial waters to take samples of seawater.

Arnie Gundersen of Fairewinds Associates in the US, a nuclear engineer who served as an expert witness in the investigation of the Three Mile Island accident, has warned that while the major leak allowing contaminated water to enter the sea has been plugged other leaks continue. Ground water contamination is continuing and it appears to be moving northwards in the water table. Fukushima, Gundersen predicts, may well prove to be the worst example of ground water contamination in nuclear history.

In a recent video Gundersen noted that radioactivity has been detected in sewage sludge from the Fukushima area, suggesting that contamination from groundwater or rainwater runoff is now extensive. Some of this sludge has been incorporated into cinder blocks that are used as building material and have been shipped out of the area, widening the possible zone of contamination.

Gundersen argues that the Japanese were lucky because the wind was blowing out toward the sea at the time of the major atmospheric leaks. Had the wind been blowing inland an exclusion zone stretching across the entire island would have been necessary. But he points out this has resulted in the danger of wider ocean contamination.

“What you’ve done”, Gundersen said, “is that you haven’t eliminated the cancers, you’ve spread them out in a worldwide population. It may be harder to determine whose cancer is a Fukushima cancer and whose is not, but it hasn’t reduced the number of cancers”.

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