

Japan lacks decommissioning experts for Fukushima

December 15 2013, by Yuri Kageyama



In this Wednesday, Sept. 25, 2013 photo released by the International Research Institute for Nuclear Decommissioning, members of International Expert Group (IEG) confer with a Tokyo Electric Power Co. official, center, as they inspect the decommissioning progress near the Unit 1 building at the crippled Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima prefecture, northeast of Tokyo, during the first IEG meeting held from Sept. 23 - 27. It took until August this year, nearly two and half years after the tsunami, for Japan to set up the International Research Institute for Nuclear Decommissioning, to bring together ideas, both inside and outside Japan, on Fukushima decommissioning and encourage communication. (AP Photo/The International

Research Institute for Nuclear Decommissioning)

Japan is incapable of safely decommissioning the devastated Fukushima nuclear plant alone and must stitch together an international team for the massive undertaking, experts say, but has made only halting progress in that direction.

Unlike the U.S. and some European countries, Japan has never decommissioned a full-fledged reactor. Now it must do so at the Fukushima Dai-Ichi plant. Three of its six reactors melted down after the 2011 earthquake and tsunami, making what is ordinarily a technically challenging operation even more complex.

The cloud over Japan's capacity to get the decades-long job done has further undermined the image of the nuclear industry with the public. Opinion surveys show a majority of Japanese are opposed to restarting 50 reactors that were put offline for safety and other checks in the aftermath of the disaster. Japan has been forced to import oil and gas to meet its power needs, burdening its already feeble economy.

"Even for the U.S. nuclear industry, such a cleanup and decommissioning would be a great challenge," said Akira Tokuhiko, a University of Idaho professor of mechanical and nuclear engineering who is among those calling for a larger international role at Fukushima.

Decommissioning a [nuclear power plant](#) normally involves first bringing the reactor cores to stable shutdown, and then eventually removing them for long-term storage. It is a process that takes years. Throughout, radiation levels and worker exposure must be monitored.

At Fukushima, there is the daunting challenge of taking out cores that

suffered meltdown, which is the most dangerous type of nuclear power accident. Their exact location within the reactor units isn't known and needs to be ascertained so their condition can be analyzed. That will require development of nimble robots capable of withstanding high radiation.

The lack of experts is worse at the regulatory level. The tally is zero.

Japan's Nuclear Regulation Authority has no one devoted to decommissioning, said spokesman Juntaro Yamada, though it has experts dealing with the ongoing removal of fuel rods from one of the Fukushima reactor units.

Its predecessor organization was criticized after the Fukushima disaster for being too close to the [nuclear industry](#), so the members chosen for the new agency launched last year don't have direct ties to the industry to ensure their objectivity.



In this Nov. 18, 2013 file photo released by Tokyo Electric Power Co. (TEPCO), workers try to remove radioactive fuel rods from the Unit 4 building at the crippled Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, northeastern Japan as TEPCO launched a crucial first step toward a full cleanup of the earthquake and tsunami-damaged plant. Japan is incapable of safely decommissioning the devastated Fukushima nuclear plant alone and must stitch together an international team for the massive undertaking, experts say, but has made only halting progress in that direction. (AP Photo/Tokyo Electric Power Co., File)

The government-funded Nuclear Energy Safety Organization, which is to be folded into the regulatory authority to beef up its expertise, has one expert on decommissioning, a person who studies overseas regulations on the process. The group mainly helps with routine nuclear plant inspections, but since the 2011 catastrophe has been involved with bringing the Fukushima plant under control.

In contrast, the U.S. Nuclear Regulatory Commission has 10 people devoted to decommissioning including four project managers, four health physicists, and a hydro-geologist. It says it has the equivalent of more than 200 years of experience in decommissioning and has overseen the termination of 11 power reactors and 13 research reactors.

France has decommissioned nine reactors, and its regulatory agency has seven decommissioning experts at the national level, and 10 more at the local level.

Lake Barrett, a retired nuclear engineer who took part in decommissioning Pennsylvania's Three Mile Island after the meltdown of its reactor core in 1979, was hired as a consultant by Fukushima operator Tokyo Electric Power Co. He visits about once a year or so to give advice, and is not assigned daily to the job.

The cleanup at Fukushima would be more difficult than Three Mile Island because the damage is more numerous, involving three reactors instead of one, and more serious because of the greater damage from the bigger explosions.

Barrett said one reason he wanted to help Fukushima was that Japanese engineers had helped out at Three Mile Island. He had asked about their whereabouts but got no answers. He fears they are all retired or working in other industries.

"The most challenging area is skilled nuclear engineers and managers that can plan, integrate and communicate effectively in Japanese," he said.

Japan's nuclear program started later than the U.S. and it has scrapped only a small test reactor. Five reactors are in various stages of decommissioning, including two experimental reactors and three

commercial ones.



In this Aug. 29, 2013 file photo, Japan's Nuclear Regulation Authority Chairman Shunichi Tanaka, second from left, listens to a reporter's question after a press conference in Tokyo in which he spoke about an overall impact of radiation-contaminated water leaks from the wrecked Fukushima Dai-ichi nuclear power plant. Aside from scant experience in decommissioning, Japan has zero experts on the process at the regulatory level. Japan's Nuclear Regulation Authority has no one devoted to decommissioning, said spokesman Juntaro Yamada, though it has experts dealing with the ongoing removal of fuel rods from one of the Fukushima reactor units. (AP Photo/Shizuo Kambayashi, File)

The furthest along is Tokai Power Station's No. 1 reactor, which is 15 years into a planned 22-year process. About 70 experts are working on the decommissioning, but the experience gained with Japan's oldest reactor is not directly transferable to Fukushima.

The decommissioning of two [reactors](#) similar to Fukushima's began in 2009 at Hamaoka nuclear power plant west of Tokyo, but it is in the early stages and is expected to take nearly 30 more years.

It took until August this year, nearly two and half years after the tsunami, for Japan to set up the International Research Institute for Nuclear Decommissioning, to bring together ideas, both inside and outside Japan, on Fukushima decommissioning and encourage communication.

Tokuhiro, who has more than 20 years in the nuclear design and safety fields, calls it a step in the right direction but too small, given the huge task at hand. The organization acknowledges much remains to be done, including responding to unprecedented challenges that will require the development of robotics and other new technology.



In this Jan. 14, 2013 file photo provided by the Nuclear Regulatory Commission, Allison Macfarlane, second from right, the chair of the Nuclear Regulatory Commission, listens to Richard St. Onge, director of Nuclear Regulatory Affairs for Southern Cal Edison, third from right, speak during a tour of the troubled San Onofre Nuclear Power Station in San Juan Capistrano, Calif. The NRC has 10 people devoted to decommissioning including four project managers, four health physicists, and a hydro-geologist. It says it has the equivalent of more than 200 years of experience in decommissioning and has overseen the termination of 11 power reactors and 13 research reactors. (AP Photo/Nuclear Regulatory Commission, File)

Tokuhiro is advocating the creation of an international team to help Japan, including those with experience at Three Mile Island and Chernobyl in the Ukraine.

"It is clear that this very large undertaking requires an international effort," he said. "It is in the spirit of a global nuclear energy partnership."

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