

At Japanese nuclear plant, controversial treated water release just the beginning of decommissioning

August 27 2023, by Mari Yamaguchi



In this image made from video, South Korean lawmakers from left, Kang Eun-mi, Woo Wonshik and Yang Jung-suk, hold placards which reads "Withdraw the discharge of the wastewater from Fukushima nuclear power plant into the ocean" during a protest in Iwaki, Fukushima prefecture, Sunday, Aug. 27, 2023. South Korean lawmakers attended a protest in Iwaki in Fukushima prefecture against the release of treated radioactive wastewater from the region's crippled nuclear plant into the ocean. Credit: AP Photo

At a small section of the Fukushima Daiichi nuclear plant's central control room in northeastern Japan, the treated water transfer switch is on. A graph on a computer monitor nearby shows a steady decrease of water levels as treated radioactive wastewater is diluted and released into the Pacific Ocean.

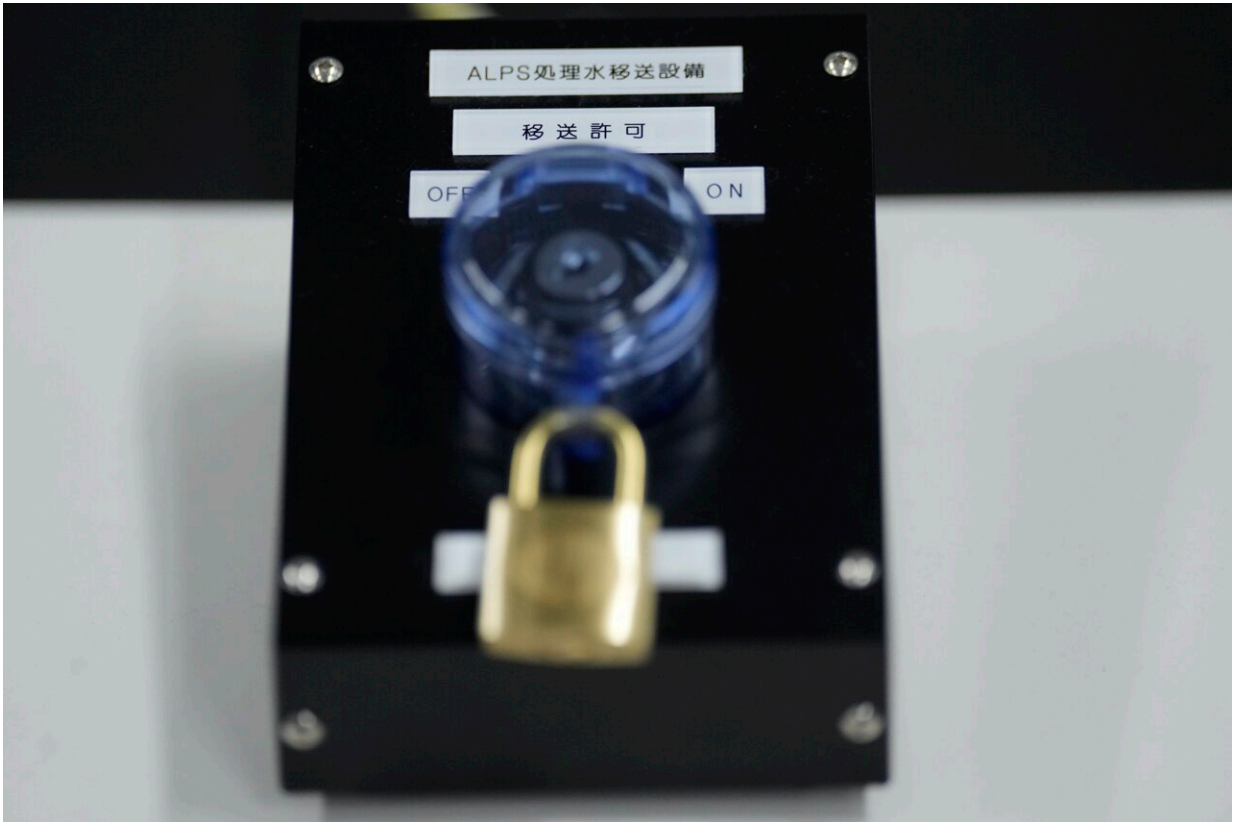
In the coastal area of the plant, two seawater pumps are in action, gushing torrents of seawater through sky blue pipes into the big header where the treated water, which comes down through a much thinner black pipe from the hilltop tanks, gets diluted by hundreds of times before the release.

The sound of the treated and diluted radioactive water flowing into an underground secondary pool was heard from beneath the ground during Sunday's first plant tour for media, including The Associated Press, since the controversial release began.

"The best way to eliminate the [contaminated water](#) is to remove the melted fuel debris," said Tokyo Electric Power Company Holdings spokesperson Kenichi Takahara, who escorted Sunday's media tour for the foreign press.

But Takahara said the scarcity of information from inside the reactors makes planning and development of the necessary robotic technology and a facility for the melted fuel removal extremely difficult.

"Removal of the melted fuel debris is not like we can just take it out and be finished," he said.



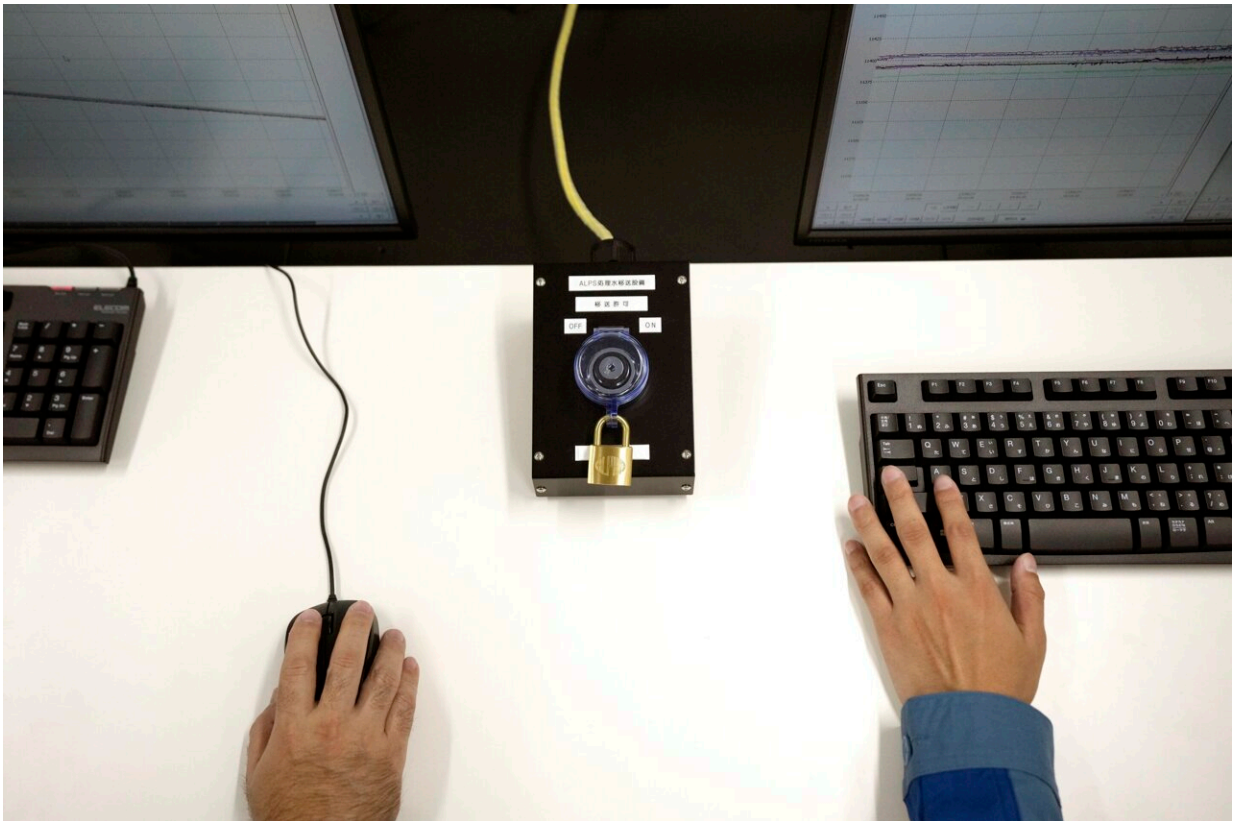
This photo taken during tour of the treated water dilution and discharge facility for foreign media shows the treated water transfer switch at the central monitoring room, part of the facility for the releasing treated radioactive water to sea from the Fukushima Daiichi nuclear power plant, operated by Tokyo Electric Power Company Holdings (TEPCO), in Okuma town, northeastern Japan, Sunday, Aug. 27, 2023. Credit: AP Photo/Eugene Hoshiko, Pool

The projected decades-long release of treated water has been strongly opposed by fishing groups and criticized by neighboring countries. China immediately banned imports of seafood from Japan in response. In Seoul, thousands of South Koreans rallied over the weekend to condemn the release, demanding Japan to keep it in tanks.

For the wrecked Fukushima Daiichi, managing the ever-growing volume

of radioactive wastewater held in more than 1,000 tanks has been a safety risk and a burden since the meltdown in March 2011. Its release marks a milestone for the decommissioning of the plant, which is expected to take decades.

But it is just the beginning of the challenges ahead, such as the removal of the fatally radioactive melted fuel debris that remains in the three damaged reactors, a daunting task if ever accomplished.



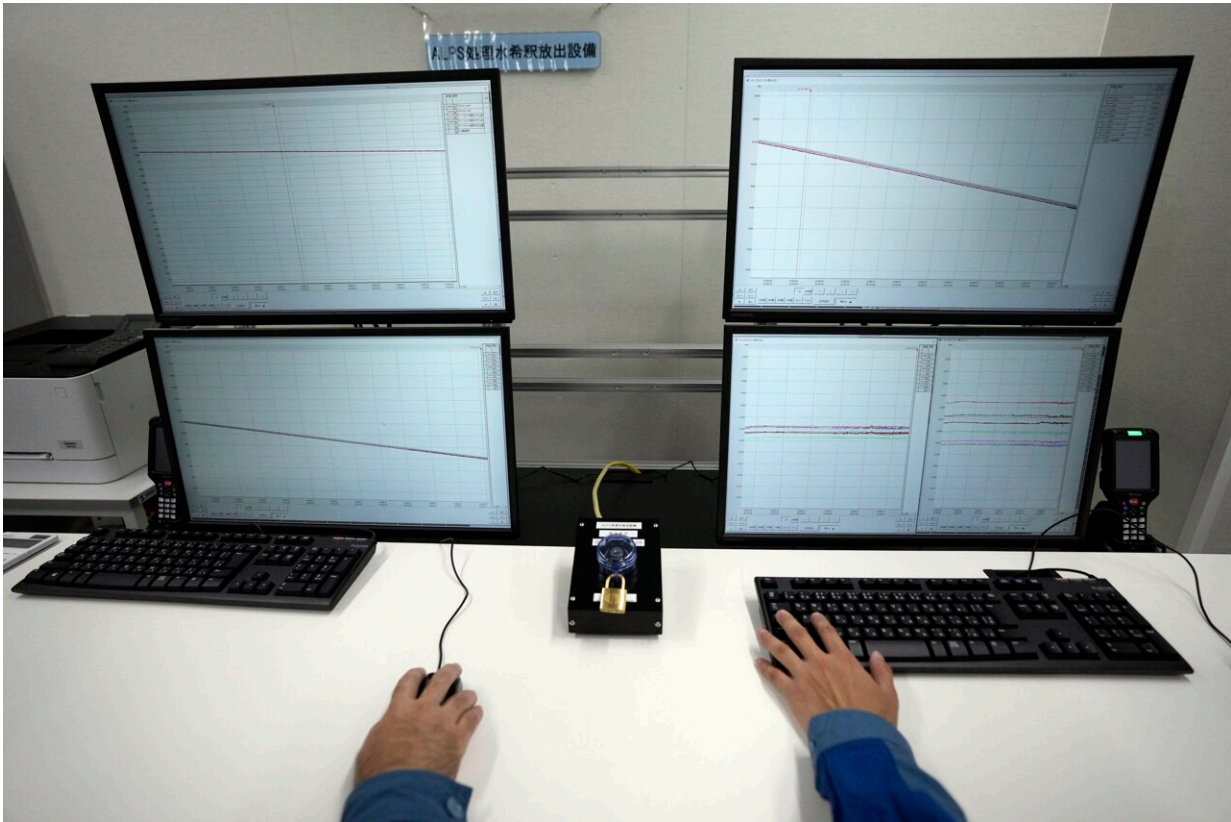
This photo taken during tour of a treated water dilution and discharge facility for foreign media shows staff work at the central monitoring room, part of the facility for the releasing treated radioactive water to sea from the Fukushima Daiichi nuclear power plant, operated by Tokyo Electric Power Company Holdings (TEPCO), in Okuma town, northeastern Japan, Sunday, Aug. 27, 2023. Credit: AP Photo/Eugene Hoshiko, Pool

The operator, Tokyo Electric Power Company Holdings, started releasing the first batch of 7,800 tons in 10 of the group B tanks, which contain some of the least radioactive treated water at the plant.

They say the water is treated and diluted to levels that are safer than international standards, and so far, test results by TEPCO and [government agencies](#) found radioactivity in seawater and fish samples taken after the release were below detectable levels.

The Japanese government and TEPCO say releasing the water is an unavoidable step in the decommissioning of the plant.

The March 2011 earthquake and tsunami destroyed the plant's cooling systems, causing three reactors to melt. Highly contaminated cooling water applied to the damaged reactors has leaked continuously to building basements and mixed with groundwater. The water is collected and partly recycled as cooling water after treatment, with the rest stored in around 1,000 tanks, which are already filled to 98% of their 1.37 million-ton capacity.



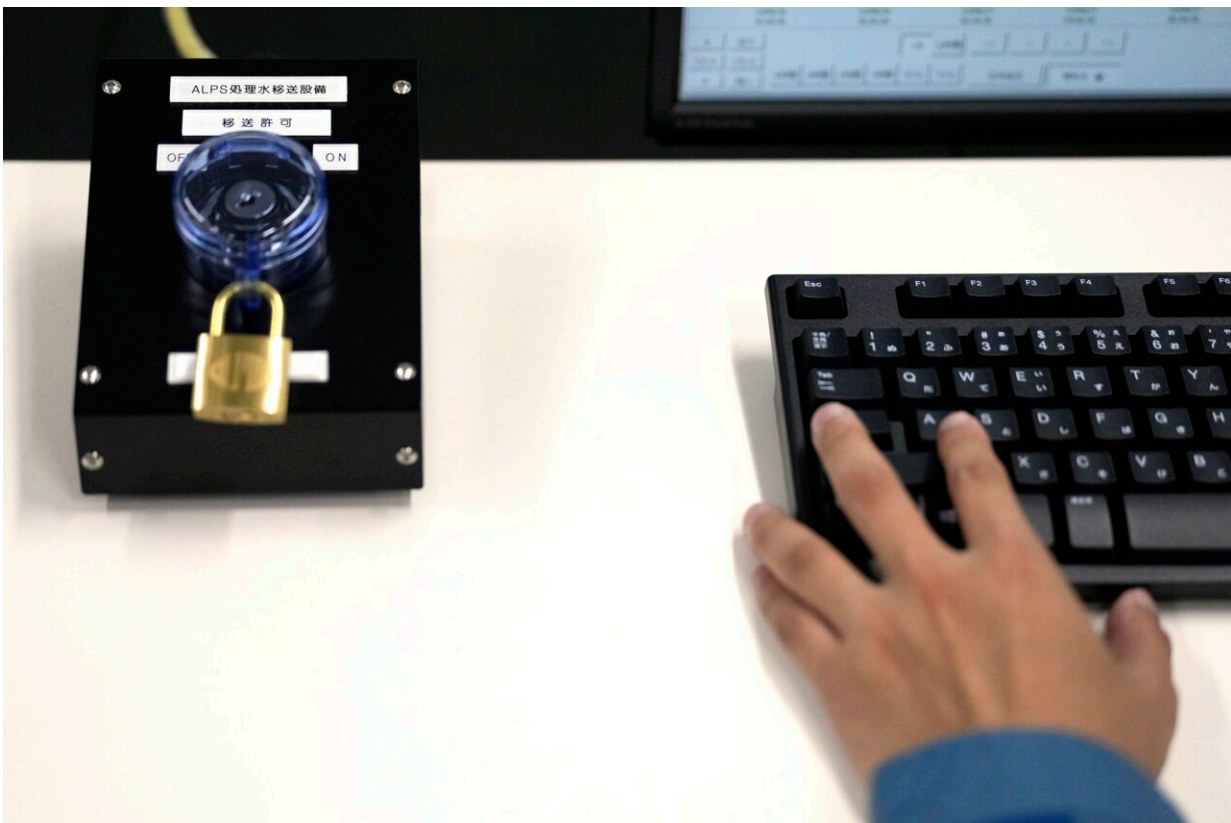
This photo taken during the tour of the treated water dilution and discharge facility for foreign media shows staff work at the central monitoring room, part of the facility for the releasing treated radioactive water to sea from the Fukushima Daiichi nuclear power plant, operated by Tokyo Electric Power Company Holdings (TEPCO), in Okuma town, northeastern Japan, Sunday, Aug. 27, 2023. Credit: AP Photo/Eugene Hoshiko, Pool

The release, which started at the daily pace of 460 tons, is moving slowly. TEPCO says it plans to release 31,200 tons of treated water by the end of March 2024, which would empty only 10 tanks out of 1,000 because of the continued production of the [radioactive water](#).

The pace will later pick up and about 1/3 of the tanks will be removed over the next 10 years, freeing up space for the plant's decommissioning,

said TEPCO executive Junichi Matsumoto, who is in charge of the treated water release. He says the water would be released gradually over the span of 30 years. But as long as the melted fuel stays in the reactors, it requires cooling [water](#) under the current prospect.

About 880 tons of radioactive melted nuclear fuel remain inside the reactors. Robotic probes have provided some information but the status of the melted debris remains largely unknown, and the amount could be even larger, says Takahara, the TEPCO spokesman.



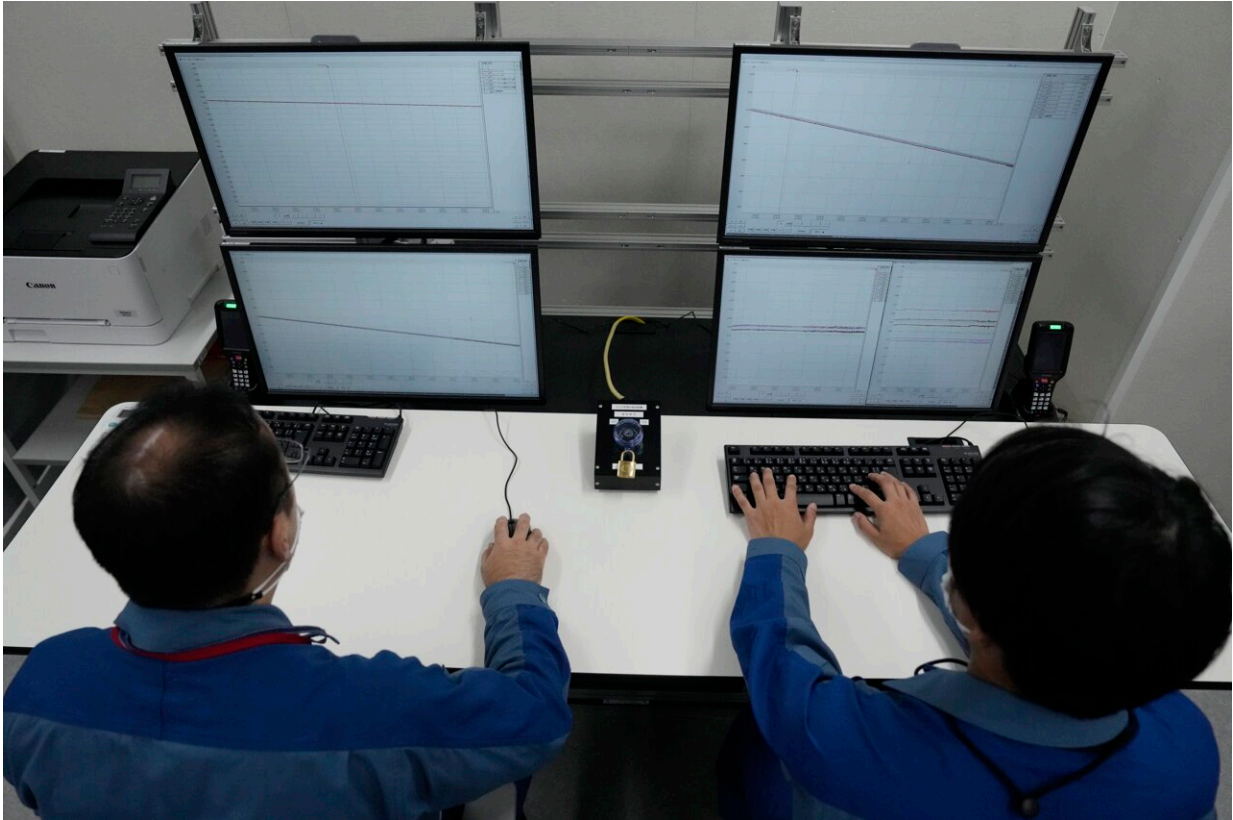
This photo taken during the tour of the treated water dilution and discharge facility for foreign media shows a staff works at the central monitoring room, part of the facility for the releasing treated radioactive water to sea from the Fukushima Daiichi nuclear power plant, operated by Tokyo Electric Power Company Holdings, (TEPCO), in Okuma town, northeastern Japan, Sunday,

Aug. 27, 2023. Credit: AP Photo/Eugene Hoshiko, Pool

Trial removal of melted debris using a giant remote-controlled robotic arm is set to begin in Unit 2 later this year after a nearly two-year delay, though it will be a very small amount, Takahara said.

Spent fuel removal from the Unit 1 reactor's cooling pool is set to start in 2027 after a 10-year delay. The reactor top is still covered with debris from the explosion 12 years ago and needs to be cleaned up after putting a protective cover to contain radioactive dust.

Inside the worst-hit Unit 1, most of its reactor core melted and fell to the bottom of the primary containment chamber and possibly farther into the concrete basement. A robotic probe sent inside the Unit 1 primary containment chamber has found that its pedestal—the main supporting structure directly under its core- was extensively damaged.



This photo taken during the tour of the treated water dilution and discharge facility for foreign media shows staff work at the central monitoring room, part of the facility for the releasing treated radioactive water to sea from the Fukushima Daiichi nuclear power plant, operated by Tokyo Electric Power Company Holdings (TEPCO), in Okuma town, northeastern Japan, Sunday, Aug. 27, 2023. Credit: AP Photo/Eugene Hoshiko, Pool



This photo taken during the tour of the treated water dilution and discharge facility for foreign media shows TEPCO official Kenichi Takahara explains about a facility to take samples of treated radioactive wastewater after dilution for testing before release, part of the facility for the releasing treated radioactive water to sea from the Fukushima Daiichi nuclear power plant, operated by Tokyo Electric Power Company Holdings (TEPCO), in Futaba town, northeastern Japan, Sunday, Aug. 27, 2023. Credit: AP Photo/Eugene Hoshiko, Pool



This photo taken during the tour of the treated water dilution and discharge facility for foreign media shows a journalist looks at the water sampling rack, part of the facility for the releasing treated radioactive water to sea from the Fukushima Daiichi nuclear power plant, operated by Tokyo Electric Power Company Holdings (TEPCO), in Futaba town, northeastern Japan, Sunday, Aug. 27, 2023. Credit: AP Photo/Eugene Hoshiko, Pool



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This photo taken during the tour of the treated water dilution and discharge facility for foreign media shows TEPCO official Kenichi Takahara explains to the media on the discharge tunnel, part of the facility for the releasing treated radioactive water to sea from the Fukushima Daiichi nuclear power plant, operated by Tokyo Electric Power Company Holdings (TEPCO), in Futaba town, northeastern Japan, Sunday, Aug. 27, 2023. Credit: AP Photo/Eugene Hoshiko, Pool

Most of its thick concrete exterior was missing, exposing the internal steel reinforcement, prompting the nuclear regulators to request TEPCO to make risk assessment.

The government has stuck to its initial 30-to-40 year target for completing the decommissioning, without defining what that means.

An overly ambitious schedule could result in unnecessary radiation exposures for plant workers and excess environmental damage. Some experts say it would be impossible to remove all the melted fuel debris by 2051 and would take 50-100 years, if achieved at all.

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Citation: At Japanese nuclear plant, controversial treated water release just the beginning of decommissioning (2023, August 27) retrieved 3 May 2024 from <https://phys.org/news/2023-08-japanese-nuclear-controversial-decommissioning.html>

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