

Swimming robot probes Fukushima reactor to find melted fuel

July 19 2017, by Mari Yamaguchi



This image captured by an underwater robot provided by International Research Institute for Nuclear Decommissioning shows a part of a control rod drive of Unit 3 at Fukushima Dai-ichi nuclear plant in Okuma town, northeastern Japan Wednesday, July 19, 2017. The underwater robot has captured images and other data inside Japan's crippled nuclear plant on its first day of work. The robot is on a mission to study damage and find fuel that experts say has melted and mostly fallen to the bottom of a chamber and has been submerged by highly radioactive water. (International Research Institute for Nuclear Decommissioning via AP)

An underwater robot entered a badly damaged reactor at Japan's crippled Fukushima nuclear plant Wednesday, capturing images of the harsh impact of its meltdown, including key structures that were torn and knocked out of place.

Plant operator Tokyo Electric Power Co. said the robot, nicknamed "the Little Sunfish," successfully completed the day's work inside the primary containment vessel of the Unit 3 reactor at Fukushima, which was destroyed by a massive March 2011 earthquake and tsunami.

TEPCO spokesman Takahiro Kimoto praised the work, saying the robot captured views of the underwater damage that had not been previously seen. However, the images contained no obvious sign of the melted nuclear fuel that researchers hope to locate, he said.

The robot was left inside the reactor near a structure called the pedestal, and is expected to go deeper inside for a fuller investigation Friday in hopes of finding the melted fuel.

"The damage to the structures was caused by the melted fuel or its heat," Kimoto told a late-night news conference held nine hours after the probe ended its exploration earlier in the day.

The robot, about the size of a loaf of bread, is equipped with lights, maneuvers with five propellers and collects data with two cameras and a dosimeter. It is controlled remotely by a group of four operators.



This image captured by an underwater robot provided by International Research Institute for Nuclear Decommissioning shows a part of equipment housing a control rod drive system of Unit 3 at Fukushima Dai-ichi nuclear plant in Okuma town, northeastern Japan Wednesday, July 19, 2017. The underwater robot has captured images and other data inside Japan's crippled nuclear plant on its first day of work. The robot is on a mission to study damage and find fuel that experts say has melted and mostly fallen to the bottom of a chamber and has been submerged by highly radioactive water. (International Research Institute for Nuclear Decommissioning via AP)

The robot was co-developed by Toshiba Corp., the electronics and energy company charged with helping clean up the plant, and the International Research Institute for Nuclear Decommissioning, a government-funded consortium.

It was on a mission to study the damage and find the fuel that experts say has melted, breached the core and mostly fallen to the bottom of the

primary containment chamber, where it has been submerged by highly radioactive water as deep as 6 meters (20 feet).

The robot discovered that a grate platform that is supposed to be below the reactor core was missing and apparently was knocked down by melted fuel and other materials that fell from above, and that parts of a safety system called a control rod drive were also missing.

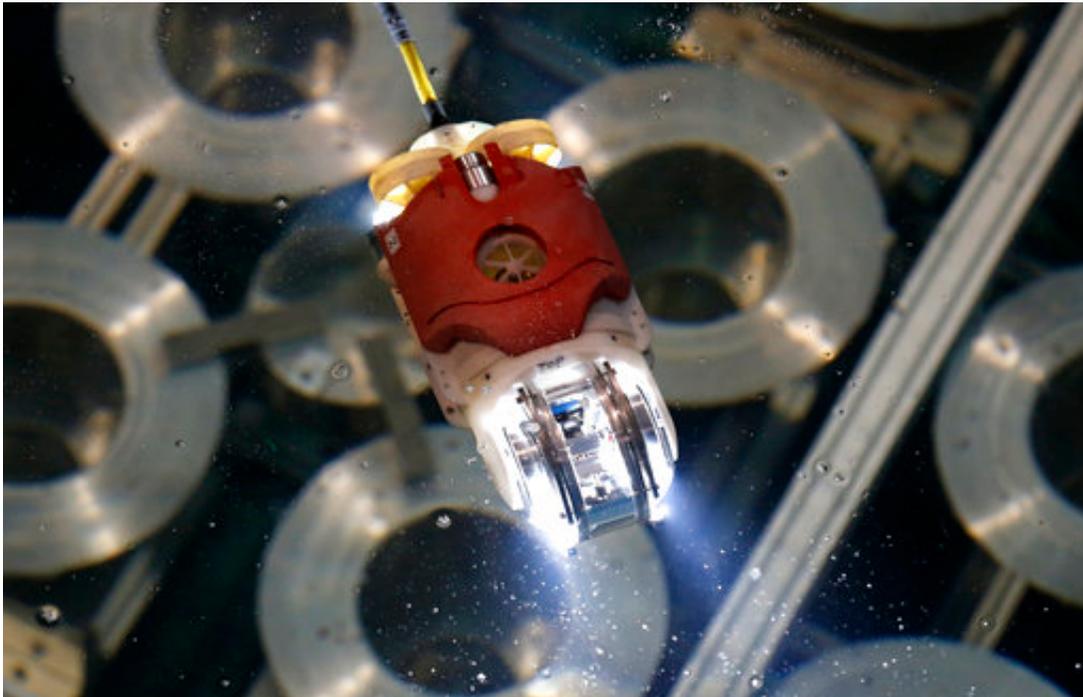


This image captured by an underwater robot provided by International Research Institute for Nuclear Decommissioning shows a damaged platform inside of Unit 3 primary containment chamber at Fukushima Dai-ichi nuclear plant in Okuma town, northeastern Japan Wednesday, July 19, 2017. The underwater robot has captured images and other data inside Japan's crippled nuclear plant on its first day of work. The robot is on a mission to study damage and find fuel that experts say has melted and mostly fallen to the bottom of a chamber and has been submerged by highly radioactive water. (International Research Institute for Nuclear Decommissioning via AP)

Remote-controlled robots are key to the decades-long decommissioning of the damaged plant, but super-high levels of radiation and structural damage have hampered earlier probes at two other reactors at the plant.

Japanese officials say they want to determine preliminary methods for removing the melted nuclear fuel this summer and start work in 2021.

Scientists need to know the fuel's exact location and understand the structural damage in each of the three wrecked reactors to work out the safest and most efficient way to remove the fuel.



In this June 15, 2017, file photo, newly developed robot for underwater investigation at the Fukushima's damaged reactor, moves in the water at a Toshiba Corp. test facility in Yokosuka, near Tokyo. The underwater robot on Wednesday, July 19, 2017, captured images and other data inside Japan's crippled Fukushima nuclear plant on its first day of work. The robot is on a mission to study damage and find fuel that experts say has melted and mostly fallen to the bottom of a chamber and has been submerged by highly radioactive

water. (AP Photo/Shuji Kajiyama, File)



Tokyo Electric Power Co. (TEPCO) spokesman Takahiro Kimoto speaks during a press conference while showing video image taken by an underwater robot into Fukushima nuclear plant to search for melted fuel, at the TEPCO headquarters in Tokyo Wednesday, July 19, 2017. The underwater robot captured images and other data inside Japan's crippled Fukushima nuclear plant on its first day of work. The robot is on a mission to study damage and find fuel that experts say has melted and mostly fallen to the bottom of a chamber and has been submerged by highly radioactive water. (AP Photo/Eugene Hoshiko)



In this May 28, 2012 aerial file photo, reactors of the tsunami-stricken Fukushima Dai-ichi nuclear power plant stand in Okuma, Fukushima Prefecture, northeastern Japan. An underwater robot on Wednesday, July 19, 2017, captured images and other data inside Japan's crippled Fukushima nuclear plant on its first day of work. The robot is on a mission to study damage and find fuel that experts say has melted and mostly fallen to the bottom of a chamber and has been submerged by highly radioactive water. (AP Photo/Tom Curley, File)

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