

Possible melted fuel seen for first time at Fukushima plant

21 July 2017, by Mari Yamaguchi



This image captured by an underwater robot provided by International Research Institute for Nuclear Decommissioning shows lava-like lumps believed to contain melted fuel inside the Unit 3 reactor at Fukushima Dai-ichi nuclear plant in Okuma town, northeastern Japan, Friday, July 21, 2017. Plant operator Tokyo Electric Power Co. said the robot found the objects Friday on its second mission inside the primary containment vessel of the Unit 3 reactor at Fukushima, which was destroyed by a massive earthquake and tsunami. Experts believe the fuel melted and much of it fell to the chamber's bottom and is now submerged by radioactive water. (International Research Institute for Nuclear Decommissioning via AP)

An underwater robot captured images of solidified lava-like rocks Friday inside a damaged reactor at Japan's crippled Fukushima nuclear plant, spotting for the first time what is believed to be nuclear fuel that melted six years ago.

Plant operator Tokyo Electric Power Co. said the robot found large amounts of lava-like debris apparently containing fuel that had flowed out of the core into the primary containment vessel of the Unit 3 reactor at Fukushima. The plant was destroyed by a massive earthquake and tsunami in March 2011.

Cameras mounted on the robot showed extensive damage caused by the core meltdown, with fuel debris mixed with broken reactor parts, suggesting the difficult challenges ahead in the decades-long decommissioning of the destroyed plant.

Experts have said the fuel melted and much of it fell to the chamber's bottom and is now covered by radioactive water as deep as 6 meters (20 feet). The fuel, during meltdown, also likely melted its casing and other metal structures inside the reactor, forming rocks as it cooled.

TEPCO spokesman Takahiro Kimoto said it was the first time a robot camera has captured what is believed to be the melted fuel.

"That debris has apparently fallen from somewhere higher above. We believe it is highly likely to be melted fuel or something mixed with it," Kimoto said. He said it would take time to analyze which portions of the rocks were fuel.



Tokyo Electric Power Co. (TEPCO) shows an image captured by an underwater robot inside the Unit 3 reactor at Fukushima nuclear plant during a press conference at the TEPCO headquarters in Tokyo Friday, July 21, 2017. The plant operator said the robot found the objects on its second mission Friday inside the primary containment

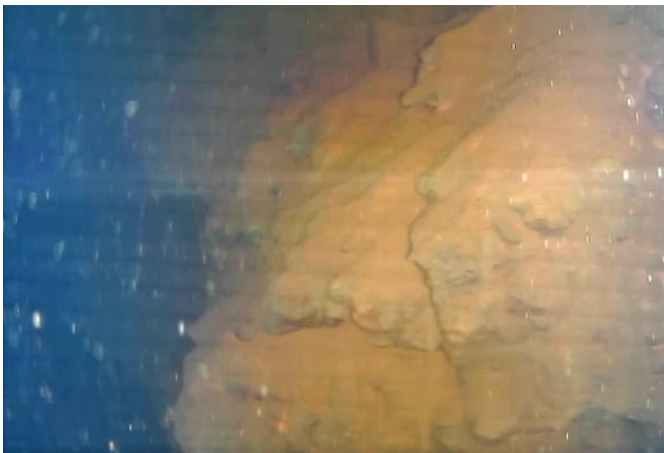
vessel of the reactor at the plant destroyed in the march 2011 earthquake and tsunami. Experts say the melted fuel has mostly fallen to the chamber's bottom and submerged by radioactive water. (AP Photo/Eugene Hoshiko)

In an earlier survey Wednesday, the robot found severe damage in the vessel, including key structures that were broken and knocked out of place.

The robot, nicknamed "the Little Sunfish," on Friday went inside a structure called the pedestal for a closer look. TEPCO plans to send the robot farther down on Saturday in hopes of finding more melted fuel and debris.

Experts have said the melted fuel is most likely to have landed inside the pedestal after breaching the core.

Kimoto said the robot probe in its two missions has captured a great deal of useful information and images showing the damage inside the reactor, which will help experts eventually determine a way to remove the melted fuel, a process expected to begin sometime after the 2020 Tokyo Olympics.



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"It's still just the beginning of the (decades-long) decommissioning. There is still a long way to go, including developing the necessary technology," he said. "But it's a big step forward."

Locating and analyzing the fuel debris and damage in each of the three wrecked reactors is crucial for decommissioning the plant. The search for melted fuel in the two other reactors has so far been unsuccessful because of damage and extremely high radiation levels.

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

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