

FOR IMMEDIATE RELEASE

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**New Toshiba and IRID Robot Will Inspect Interior of
Primary Containment Vessel at Fukushima Daiichi 3**

- *Small, radiation-hardened screw-driven submersible robot has a diameter of only 13cm.*
- *A resilient platform for visual inspection of damage status by camera*
- *Expected to inspect interior of Unit 3 primary containment vessel this summer*

TOKYO - Toshiba Corporation (Tokyo: 6502) and the International Research Institute for Nuclear Decommissioning (IRID) have developed a submersible robot (an underwater ROV), only 13cm in diameter, that is small enough and resilient enough to enter and inspect the damaged primary containment vessel (PCV) of Fukushima Daiichi Nuclear Power Station Unit 3. The robot will be deployed this summer, following training of operators.

An October 20, 2015 survey by Tokyo Electric Power Company found the PCV of Unit 3 flooded with coolant to a depth of about 6 meters. In determining how to best advance the plant's clean-up, fuel and other debris submerged in the coolant must be located and mapped. However, the penetration hole giving access to the PCV is only 14cm in diameter, limiting the size of any robot that can be deployed.

Toshiba and IRID have realized a small, radiation-hardened robot that has a diameter of only 13cm. At 30cm long it is also compact, but it provides a platform for front and rear facing video cameras and their LED lights. The robot is powered and remotely controlled via wire, and operators can control its progress through the coolant and the PCV with five thrusters, four rear mounted and front mounted. It will deliver a video feed that will clarify damage to the PCV interior and information on how best to retrieve fuel debris.

“We have already developed remotely operated robots for inspections at Fukushima,” said Goro Yanase, General Manager of Toshiba's Nuclear Energy Systems & Services Div. “In this case, we had to meet the specific challenges of limited access and flooding, in a highly radioactive environment. Working with IRID, we succeeded in developing a small robot with high level radiation resistance, and through its deployment we expect to get information that will support the advance of decommissioning.”

Hirohisa Kuwabara, General Manager, R&D Strategy Planning Department of IRID said “Manufacturers and utilities have used a number of robots at Fukushima Daiichi Nuclear

Power Station to inspect the distribution of fuel debris. IRID and Toshiba developed a small robot reminiscent of a scorpion to inspect the interior of the Unit 2 PCV in February this year. We will continue to develop technologies that contribute to the decommissioning of the plant.”

* ROV: Remotely Operated Vehicle

Underwater ROV



Overview of the Robot

Weight	Approx. 2kg
External dimensions	Approx. 13cm (diameter) × 30cm (length)
Power supply	Wire-supplied
Equipment	Two cameras Front LED lights (10W x 4) Rear LED lights (10W x 2)
Radiation resistance	Approx. 200 Sv

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About Toshiba

Toshiba Corporation, a Fortune Global 500 company, channels world-class capabilities in advanced electronic and electrical product and systems into three focus business fields: **Energy** that sustains everyday life, that is cleaner and safer; **Infrastructure** that sustains quality of life; and **Storage** that sustains the advanced information society. Guided by the

principles of The Basic Commitment of the Toshiba Group, “Committed to People, Committed to the Future”, Toshiba promotes global operations and is contributing to the realization of a world where generations to come can live better lives.

Founded in Tokyo in 1875, today’s Toshiba is at the heart of a global network of 551 consolidated companies employing 188,000 people worldwide, with annual sales surpassing 5.6 trillion yen (US\$50 billion). (As of March 31, 2016.)

To find out more about Toshiba, visit www.toshiba.co.jp/index.htm

About IRID:

International Research Institute for Nuclear Decommissioning (IRID) was established on August 1, 2013 as an organization to develop nuclear power plant decommissioning technologies efficiently based on collective wisdom from Japan and abroad, composed of 18 member corporations such as electric companies, plant manufacturers and research institutes.

Now IRID carries out research and development of the technologies required for the decommissioning of the Fukushima Daiichi NPS as a matter of urgency and enhances the collaboration with the international and national relevant organizations as well as promotes human resource development for the research and development.

To find out more about IRID, visit <http://irid.or.jp/en/>