

PROMETHEUS TRAP (8): Burning the midnight oil for a plan to drop water on a reactor

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Editor's note: This is the eighth part of a series that has run in the past under the overall title of The Prometheus Trap. This series deals with the different responses between Japan and the United States in dealing with the Fukushima nuclear accident of 2011 following the Great East Japan Earthquake. The series will appear on Mondays, Wednesdays and Fridays.

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In the middle of the night on March 15, four days after the Fukushima nuclear disaster broke out, Col. Masahiro Onishi of the Ground Self-Defense Force was working at the SDF's Camp Kasuminome in Sendai to craft a plan for a dangerous mission.

Onishi, who heads the GSDF's 1st Helicopter Brigade, was drawing up the plan by using a pencil and a close-ruled notebook.

The brigade is experienced in aerial firefighting operations using helicopters to extinguish wildfires. But this was no wildfire. Onishi had been ordered by a higher officer to map out a plan to use SDF helicopters to spray water over crippled reactors at the Fukushima No. 1 nuclear power plant in a desperate attempt to cool them.

Usually, the development of plans of operations is the responsibility of helicopter pilots and other personnel involved.

But there was not enough time for the usual planning process, with the mission set for the next day. Sufficient advance training was also impossible.

Onishi took on the task of planning the mission and let the crew members go to bed early. He knew he had to work all night long.

The basic idea was simple. What Onishi's squad was expected to do was to dump 7.5 tons of seawater on a reactor from a huge bucket suspended on a cable carried by a helicopter.

But water had to be dropped precisely on the target without exposing the crew to dangerously high levels of radiation. It was a tricky task.

It would be easier to strike the target if the helicopter carried out the task while hovering over the reactor at a low altitude. But that would expose the crew to high levels of radiation. The only option was to drop water from a moving helicopter.

Trying to work out the best possible plan to deliver water accurately to the reactor while protecting the safety of the crew, Onishi made many trial calculations in his notebook.

After hours of work, he finally solved the equation: dropping water from a helicopter flying 20 knots (about 37 kilometers per hour) at an altitude of 91 meters (about 300 feet).

He was confident that if the mission was carried out according to this plan, its objective would be achieved up to a point.

Assuming that the average level of radiation above the reactor was 60 millisieverts per hour, the crew's total radiation dose during the mission would be a sufficiently low 0.236 millisievert.

Onishi then used the data and his computer to create a document describing the plan he had worked out. He completed the document showing the procedure for helicopter operations to spray water on the reactor with an illustration for quick understanding of the scheme.

Then, he gathered equipment and materials to be installed into the helicopter to shield the interior from radiation.

Onishi joined the SDF after dropping out of Hokkaido University. He then entered the National Defense Academy to become a high-ranking officer.

Although he had actually climbed through the ranks and became a senior officer, Onishi had made a point of always paying attention to the burden shouldered by SDF personnel on the front lines.

In the early morning on March 16, Onishi distributed the document among the crew members assigned to the mission. Some of them looked fully prepared, while others were showing signs of uneasiness.

Onishi thought nobody would welcome such a task. He imagined what was going through the minds of his men.

At 4 p.m., the first helicopter to carry out the mission took off. But the level of radiation over the reactor was 247 millisieverts per hour at an altitude of some 30 meters (100 feet), higher than the maximum permitted for work at the plant. The mission was called off, to the great disappointment of policymakers at the prime minister's office and the Defense Ministry.

But it was not for nothing. The crew clearly saw the glittering surface of the water inside the spent fuel pool for the No. 4 reactor even though the U.S. military had warned that the water might have evaporated.

The top priority target of the water-spraying operation was switched to the No. 3 reactor.

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The previous installments of this series are available at:

(1) <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201301280006>

(2) <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201301300006>

(3) <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201302010004>

(4) <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201302040001>

(5) <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201302060007>

(6) <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201302080003>

(7) <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201302110006>

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