

**DETECTION, UNCOVERING, RECOVERY, TRANSPORTATION
AND DESTRUCTION OF OLD CHEMICAL WEAPONS DISCOVERED
IN THE SEA KANDA, JAPAN**

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ABSTRACT

Chemical weapons from World War II were found on the sea bottom in the Port of Kanda, in Kyushu, the western part of Japan in 2000. Most of these explosives are 15 kg Red bombs, which contain the chemical DC/DA (Clark I/II) and a mixture of TNT and naphthalene as buster. A few of the explosives are 50 kg Yellow bombs containing a mixture of mustard (HD) and Lewisite (L) as chemical agent and picric acid as burster. Some of these bombs are found on the surface of the sea floor but many of them are found in the thick layer of the bottom mud. The Government of Japan decided to recover and destroy these chemical bombs and hence the Kanda Port Project started.

Kobe Steel, Ltd., which was awarded the project in 2003, has previous experience with chemical weapons destruction from the Lake Kussharo Project (26 50 kg Yellow bombs) and the Samukawa Project (about 800 glass bottles filled with chemical agents and more than 8,000 m³ of soil contaminated by chemical agents) and has developed a chemical weapons destruction system utilizing controlled detonation technology, called DAVINCHTM. This has been applied to the Kanda Weapon Destruction Facility (KWDF).

Beside the destruction technology, many new technologies were developed and employed for the special case of under water recovery of the chemical bombs from the sea. Such technologies include a high precision magnetometer detection technology to detect and locate the chemical bombs, an anti-chemical diving system for divers who uncover the bombs in the bottom mud, a submerged X-ray system to determine whether a bomb is fused or not before lifting the bombs from the sea bottom and double walled containers to keep the bombs

pressurized as on the sea bottom to avoid the leakage of the chemicals.

The operation of KWDF has been carried out in operation Phases I, II and III in 2004, 2005 and 2006, respectively and more than 1,000 chemical bombs have been recovered and destroyed successfully.

These technologies and the record of the operation are to be reported in this presentation.