Program Executive Office
Assembled Chemical Weapons Alternatives

DAVINCH (Detonation of Ammunition in a Vacuum-Integrated Chamber) Overview

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The Program Executive Office, Assembled Chemical Weapons Alternatives, or PEO ACWA, program is currently exploring the use of explosive destruction technologies (EDT) to augment chosen technologies for destroying the chemical weapons stockpiles at the Pueblo Chemical Depot in Colorado and the Blue Grass Army Depot in Kentucky.

The DAVINCH destroys chemical weapons by using detonation technology. The use of vacuum reduces noise, vibration and blast pressure.

What is an EDT?

EDTs use explosive charges or heat to destroy chemical weapons and do not require disassembly of the munitions. There are several types of EDTs, one of which is the DAVINCH (Detonation of Ammunition in a Vacuum-Integrated Chamber).

What is the DAVINCH (Detonation of Ammunition in a Vacuum-Integrated Chamber)?

The DAVINCH comprises a double-walled steel vacuum detonation chamber and an off-gas system. Donor explosives within the near-vacuum chamber are used to detonate and destroy chemical munitions. Applications of the DAVINCH include destruction of recovered chemical munitions in both Kanda Port, Japan and Poelkapelle, Belgium.

How does it work?

Chemical munitions are placed in the DAVINCH detonation chamber where they are surrounded by donor explosives. The detonation of these donor explosives shatters the munitions, and the shock and heat of the explosion destroys the chemical agent and energetics. Off gasses produced by the detonation are treated by a cold plasma oxidizer, which converts carbon monoxide to carbon dioxide.

The DAVINCH produces a small amount of liquid waste from the off-gas condensate and rinsate used to clean the vessel, which is treated and disposed of in accordance with applicable state and federal regulations. Additionally, the scrap metal removed from the chamber is recycled.

The DAVINCH was developed by Kobe Steel, Ltd. of Kobe, Japan.

For additional information on EDTs, including the DAVINCH, and their application, please refer to the National Research Council's report *Assessment of Explosive Destruction Technologies for Specific Munitions at the Blue Grass and Pueblo Chemical Agent-Destruction Pilot Plants*, which is available at www.nap.edu.

For more information about PEO ACWA, visit www.peoacwa.army.mil.

A Partnership for Safe Chemical Weapons Destruction

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