2.1.2.1 Donovan Blast Chamber

To view a video of an open detonation operation, double click on the image above.

The Donovan Blast Chamber is used to perform controlled thermal treatment of PEP in a room-size blast chamber. The explosion chamber consists of an elongated double-walled steel explosion chamber anchored by bolts to a reinforced concrete foundation. In the preferred design, the inside dimensions of the chamber are eight feet high, six feet wide and fifty feet long. The reinforced concrete foundation is preferably at least four feet thick. The chamber is equipped with a double-walled access door for charging batches of explosives and a double-walled vent door for discharging the products of detonation. The double-walls of the chamber, access door and vent door are filled with a granular shock-damping material such as silica sand and the floor of the chamber is covered with a shock-damping bed such as pea gravel. Within the chamber, plastic polymer film bags containing water are suspended from steel wires over the explosive material. Detailed drawings and design specifications for the unit are available in United States Patent No. 5,613,453. Additional information can also be found at http://www.demil.net

Exterior view of the Donovan Blast Chamber.

Materials to be treated are placed in the unit through the access door and onto the granular bed. The suspended plastic bags contain an amount of water that approximates the weight of the explosive. An electrical blasting cap is attached to the igniter lead wires. The access and vent doors are interlocked with the electrical igniter to block ignition unless both doors are positively shut. When the doors are opened after a detonation, a vent fan is activated and the gaseous products of detonation are drawn through the vent door opening and discharged to a scrubber system or baghouse. The Donovan Chamber can be utilized to safely detonate explosive charges in a wide variety of sizes, ranging from two to fifteen pounds NEW. A smaller transportable version of the chamber called the T-10 can be used

to treat up to 10 pounds NEW per shot. Stack tests have been conducted at units located at the Massachusetts Military Reservation and Blue Grass Army Depot. Performance data from these tests were outlined in *Pollutant Emission Factors for a Transportable Detonation System for Destroying UXO*.

2.1.2.2 Blast Containment Structure

The Army Corps of Engineers, Engineering and Support Center in Huntsville, Alabama has developed a blast containment structure which is designed to capture all significant blast pressures for a total NEW of up to six pounds of TNT. The unit is also designed to capture all fragments from cased munitions including 57-mm and 75-mm recoilless rifle shells, 75-mm howitzer and 60-mm and 81-mm mortars. The container consists of a steel cylinder, six feet tall and three and one-half feet in diameter, with elliptical top and bottom caps. The top cap is

Interior view of the floor of a Donovan Blast Chamber.