The Solution
Battelle engineers designed, developed, tested, and produced the new Tactical Air Initiated Launch (TAIL) system.

The TAIL system uses compressed air obtained from a diver’s standard SCUBA tank to drive a piston down its 2-inch-diameter barrel. The front of the piston acts as a sabot, holding a grappling hook attached to a line. At the end of its travel, the piston is brought to a stop and the grappling hook continues toward its target. When the piston stops, it traps the compressed air, which vents quietly through a diffuser. Containing the piston decreases the noise of launching the grappling hook. The piston can be removed to enable the TAIL to throw any object that fits into its barrel.

Using its maximum air pressure of 300 psi, the TAIL can fire a standard 2-pound titanium grappling hook towing a 6-millimeter Kevlar® line over an obstacle 100 feet high at a standoff of 60 feet.

Unlike its predecessor, the TAIL enables the operator to adjust the vertical range by reducing the air pressure used to launch the hook. The shoulder stock, trigger assembly, and forward grip match those of current Special Operations Forces weapons, enabling users to quickly become comfortable with the TAIL.

THE BENEFITS
The TAIL enables an operator to fire a grappling hook in a tactical environment without the noise or explosives safety issues associated with powder-driven units. The TAIL is lighter, quieter, more powerful, and more versatile than its predecessor, and is designed for ruggedness and easy maintenance.

The TAIL, in service with Naval Special Warfare forces, was featured on MythBusters “Superhero Hour” (episode 86) and the Military Channel “Rangers” episode.