National Security Technology Center

The National Security Technology Center was established in 2005 to support safeguards and security and the Department of Homeland Security. NSTC develops, demonstrates and deploys security technologies and products at the Y-12 National Security Complex for use at Y-12 and at other government agencies. NSTC also can tap into the expertise and technology at Y-12 to turn just about any technology into reality—from concept to implementation.

NSTC innovations, such as the Infrared Tactical Sensor, are being developed and tested at Y-12 for other government agencies.

CURRENT APPLICATIONS

Chemical Agent Detector/Interrogator

This gun-like tool is an example of innovative technology—a true breakthrough for law enforcement. It detects ammonia; hydrogen sulfide; alcohol, toluene, xylene and other volatile organic vapors; Freon; propane; methane; typical combustible gas; gasoline and diesel exhaust; carbon dioxide; and ether. Easy to assemble, this device is rugged and reliable and has a powered sampling system. It is a cost-effective technology.

Hydraulic-Powered Bolt End Cutter

This high-power hydraulic tool can generate up to 5 tons of force on the cutting jaw. Actuated by an electric trigger placed ergonomically on the handle, the longer the momentary trigger is held open, the higher the force it will generate (up to 5 tons). This feature allows the tool to use only the minimum amount of power required to cut a bolt. The system automatically resets itself, and the cutting jaw returns to the open position when the trigger is released.

Improvised Explosive Device Detection Software

Currently in conceptual development, this software tool will predict the most likely locations for an IED detonation in a selected area. It combines elements essential to efficient analysis of diverse IED data and elements necessary for the concise presentation of probability of detonation based on user-defined scenarios and objectives. Prediction of highest probability detonation locations is superior to attempting to defeat IEDs because neutralization approaches must constantly adapt to accommodate new IED technology.

Metal Detector/SysChip™

SysChip™ technology reduces the physical size of the metal detector's electronic circuitry to a 40 pin Dual In-line Package (DIP) size of approximately 2 × 5/8 in. with a configuration to match a 40 pin Integrated Circuit (IC) socket. The NSTC research team is currently developing more advanced models for

The Chemical Agent Detector/Interrogator can detect more than 20 gases and is easy to assemble, rugged and reliable.

use in detecting gases and radiation, and other versions are being designed. (SysChip is a Trade Mark of BWXT Y-12 L.L.C., Oak Ridge, Tennessee.)

Propelled Tactical Imaging System

This 8- × 6 in. wireless conceptual device has a wide-angle color video imaging system and can be propelled for short-distance travel. It contains three camera/transmitter systems and can transmit to an outside source. It flies quietly, lands gently and is a valuable tool for urban-area combat and surveillance.

Solar Tactical Imaging System

Currently in design, this small (about 8- × 2 in.), lightweight, wireless surveillance and inspection tool can be carried by a person or fixed in location, using a retractable stand. The STIS is powered by a self-contained, fully retractable solar panel and also can use batteries as an alternative power source. The STIS provides a high-resolution color video image and has exceptional sensitivity for use in low-light-level conditions. The self-contained transmitter, with selectable frequency, enables multiple STIS units to be monitored remotely, providing excellent video surveillance of an extended area of interest.

Infrared Tactical Sensor

Currently in the packaging stage, ITS is activated when being scanned by Infrared light frequency common to night vision systems or tactical targeting systems. This robust, sensitive and rugged Infrared sensor is the size of a shirt button and actually can be sewn onto clothing or attached to equipment to sense above-natural levels of Infrared light, which are invisible to the naked eye. ITS is watertight, small, extremely lightweight and rugged.

Banshee

Currently in the packaging stage, Banshee is a non-lethal sonic pump that generates high-intensity sound waves in an effective, small and rugged system. Used for crowd dispersal and to generate intense temporary discomfort for an adversary, Banshee is a valuable tool for law enforcement, military personnel and security forces. Its sonic circuitry can generate up to 140 dB of sound intensity at adjustable frequencies between 15 HZ and 35 kHZ (ultrasound). Encased in a specially designed rubber ball, Banshee consists of electronic circuitry, a transducer and a power supply.

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YGG 05-0452R1