



Air Force Develops Friend vs. Foe Identification System

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1/24/2008 - WRIGHT-PATTERSON AIR FORCE BASE, Ohio (AFPN) -- Air Force Research Laboratory officials here recently have developed a technology that helps identify friendly forces during combat exercises.

Working with Lumitex Inc. of Strongsville, Ohio, members of AFRL's Materials and Manufacturing Directorate developed and fielded the Target Recognition Operator Notification, or TRON, system which has the potential to save lives and increase combat effectiveness.

"Responding to established needs, the Materials and Manufacturing Directorate partnered with Lumitex Inc. to further develop methods established by the Army," said 1st Lt. TJ Turner, the lead engineer for combat support technology. "Lumitex Inc. produced a fiber-optic cloth that Materials and Manufacturing Directorate researchers realized could be used to develop a more accurate system of identification."

The directorate acquired the fiber-optic cloth and worked closely with Lumitex Inc. and user groups to create the TRON system and produced 108 prototypes in a period of six

months. The directorate used funds from their company grade officers' initiative program, which provides lieutenants and captains the opportunity to receive funding to work on a special project outside their core technology area.

TRON is comprised of Lumitex Incorporated's patented thin and flexible fiber-optic-woven cloth cut to military specifications. The sheets of the fiber-optic cloth are laminated into layers and can be formed into lighting devices of multiple shapes and sizes. The woven nature of the cloth emits light in a controlled way creating a uniform light-emitting surface, Lieutenant Turner said.

Officials said they expect the technology to be inexpensive and rapidly transferable to the field. It has a long battery life, running 200 hours on two AA batteries, and weighs less than 3 ounces. The system can be worn under the clothes, on outer tactical vests, on an arm or mounted to a helmet.

"The TRON I system was first tested at the Team Patriot exercise at Volk Field, Wis.," Lieutenant Turner said. "Feedback from Army aviation units showed that the system clearly allowed them to identify friendly forces on the ground. Design changes were also suggested by Army and Air Force personnel, which will lead to the future development of TRON.



1st Lt. TJ Turner is shown wearing Target Recognition Operator Notification I on his left shoulder in January near Bagram Air Base, Afghanistan. Air Force Research Laboratory officials partnered with the civilian industry to develop the identification system to save lives and enhance combat effectiveness. Lieutenant Turner is a member of the 455th Expeditionary Mission Support Group. (U.S. Air Force photo)



1st Lt. TJ Turner is shown through night-vision goggles holding Target Recognition Operator Notification III (left) and TRON I in January near Bagram Air Base, Afghanistan. Air Force Research Laboratory officials partnered with the civilian industry to develop the identification system to save lives and enhance combat effectiveness. Lieutenant Turner is a member of the 455th Expeditionary Mission Support Group. (U.S. Air Force photo)



The improved system includes a better electronics package, modified flash rates, and a new case design."

After the initial TRON evaluation, Air Force Special Operations Command members requested that larger units be made to identify friendly positions during close-air-support operations. This system, known as TRON III, is made of the same fiber optic cloth but has six times the brightness of TRON I. It hooks into a vehicle's power supply, so there is no need for an external power supply. It is brightly colored for daytime recognition as well. This prototype was developed as a joint effort between the Materials and Manufacturing Directorate, which decided on the specifications, and Lumitex Inc., which built the system. TRON III was developed and put in the field for testing three months after the need was established.

"Currently, TRON I and III are being used in deployed locations, and were used at Red Flag, a joint air operation exercise held at Nellis Air Force Base, (Nev.)," Lieutenant Turner said. "In real world conditions, TRON I was used to successfully mark and cordon an unused improvised explosive device, enabling a bomb disposal team to come in and quickly identify and destroy it. It has also been used in over 40 close-air support missions. TRON III has been used for at least two successful close-air support missions."



A military vehicle marked with Target Recognition Operator Notification I (small strip in the center) and TRON III is shown through night-vision goggles in January near Bagram Air Base, Afghanistan. The identification technology was developed by Air Force Research Laboratory officials in collaboration with the civilian industry to support joint warfighters. (U.S. Air Force photo)

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