Critical Incident Technology Program:
BUILT ON PARTNERSHIPS

No matter what the critical incident, first responders face similar problems: less than total response coordination across jurisdictions and among agencies, lack of training, and equipment deficiencies.

No matter what the critical incident, efficient and effective response requires partnerships—partnerships among agencies at critical incident sites as well as partnerships for providing training, developing new technologies, and exploring ways to prevent terrorist and other criminal acts.

No matter what the critical incident, without a unified, coordinated response that uses advanced equipment and technologies, lives will be lost, time will be wasted, and resources will be underutilized.

In 1997, the National Institute of Justice (NIJ), through its Office of Science and Technology (OS&T), initiated a critical incident technology program to develop solutions relating to agency coordination, personnel training, and equipment and technology development. This program is a collaborative effort among Federal, State, and local public safety agencies.

This multidisciplinary, multiagency approach extends NIJ's objective of preparing law enforcement and public safety communities to respond to terrorist incidents by building on existing capabilities for handling other emergencies.

"What is important to understand about NIJ's critical incident technology program is that we don't just look at the needs of law enforcement, we focus on problems common to all public safety agencies," says Chris Tillery, the Senior Program Manager for NIJ's Critical Incident Technology Program.

"Coordinating a combined response among agencies from multiple jurisdictions is difficult during any critical incident, whether it's a terrorist attack, a natural disaster, or an industrial accident. But through these partnerships, NIJ identifies gaps in existing technology efforts and leverages its $10 million annual investment with investments from other agencies that total hundreds of millions of dollars. Since its inception in 1997, this collaborative effort has already produced a number of new technologies. Some already are in use, and some are still in the testing stage."

Biohazard and Chemical Defense

- The Office of Law Enforcement Standards (OLES) at the National Institute of Standards and Technology coordinates the development of standards for chemical and biological protective equipment for responders. OLES, which is funded by NIJ, collaborates with the Technical Support Working Group (TSWG), a joint effort of the

Departments of Defense, State, Justice, and Energy; the FBI's National Domestic Preparedness Office; the National Fire Protection Association, a nonprofit organization; the Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health; and the Office of Justice Programs' Office for Domestic Preparedness, among others. In June 2000, OLES produced the first in a series of guides relating to biohazard and chemical defense. The remaining guides were placed on the Internet, in draft, in October 2001 in response to the events of September 11.

- TSWG and the FBI are collaborating with NIJ on an assessment of potential chemical and biological threats. This study includes both a historical analysis of chemical and biological incidents and a scientific assessment of the physical properties of chemical and biological agents to determine the true threat they pose. Sandia National Laboratories (SNL) also is developing a model to assess the vulnerability of the country's chemical production infrastructure.

- The Whitehead Institute for Biomedical Research and Nanogen, Inc., have received NIJ funding to develop portable forensic DNA analysis devices. These units would be able to type and subtype bacterial strains quickly, thus allowing for rapid and accurate medical treatment and possible identification of the origins of a biohazard substance.

- Through the Joint (Justice-Defense) Program Steering Group (JPSG), NIJ, Argonne National Laboratory, SNL, and the Washington (D.C.) Metropolitan Area Transit Authority are developing a prototype real-time early warning chemical detection and emergency alarm system for subways.

- In cooperation with TSWG, NIJ is sponsoring the development of a low-cost device that would warn wearers about exposure to biological and chemical hazards. The monitor would alert users in enough time to allow them to put on an escape mask. Prototype evaluations, including an assessment by the U.S. Army Soldier and Biological Chemical Command, currently are under way.

- Through JPSG, NIJ is working with TSWG to develop a protective mask that would give first responders time to exit a hazardous area, alert the proper officials, and stop others from entering the area. The mask, which is intended for use in situations where authorities receive little or no warning, needs to be lightweight, easily carried and used, and inexpensive. It also could be used to protect victims during evacuation.

Communications and Interoperability

- NIJ's AGILE program addresses communications interoperability and information sharing issues that result when agencies from multiple jurisdictions respond to a critical incident. Both short-term and long-term interoperability solutions are being developed for wireless telecommunications and information sharing technology based on three major program elements: (1) standards; (2) research, development, test, and evaluation; and (3) outreach. Through this approach, AGILE aims to raise the awareness of interoperability issues and disseminate short-term solutions, lessons learned, and best practices so that policymakers and public safety leaders can make informed, cost-effective decisions.

- INFOTECH uses existing systems and networks to promote information sharing among law enforcement agencies. It is fully operational in two Florida county sheriffs' offices and is in the implementation stages in California, Oregon, and Virginia. The system, created in cooperation with the U.S. Navy Space and Naval Warfare Systems Center (SPAWAR) in Charleston, South Carolina, expands on technology originally developed by the U.S. Department of Defense's Defense Advanced Research Projects Agency.

- NIJ is in the initial stages of implementing a testbed to identify technology gaps and evaluate commercially available critical incident management software. The testbed is being developed in collaboration with Camber Associates, the District of Columbia's Emergency Management Agency, the Institute for Security Technology Studies at Dartmouth College, and SPAWAR–Charleston.

Explosives Detection and Remediation

- Operation America is an advanced training opportunity for bomb technicians. This event features examples of the latest techniques that a bomber could use to construct a complex, hard-to-defeat device. Techniques include advanced initiation sequences, antidefeat mechanisms, and booby traps. Personnel from SNL demonstrate the latest technology and approaches to render safe such advanced devices.

- An interactive training CD–ROM has been developed for bomb technicians. This individual instruction serves as refresher training for the basic bomb technician course taught at the FBI's Hazardous Devices School (HDS). The CD is currently under review by HDS.

- Bomb squads can obtain a virtual library of information previously published by the FBI in three bulletin series: *Bomb Technician, Investigator,* and *General Information.* Three CDs provide instant access to information that could prove valuable during a bomb response call or an investigation. The CDs are available from the FBI Bomb Data Center.

- Recommendations from prototype testing by the Kansas-Missouri Bomb Technician Working Group are being incorporated into the design of a small, portable, inexpensive device that could safely disable large fuel-fertilizer bombs such as the one that destroyed the Murrah Federal Building in Oklahoma City. The Naval Surface Warfare Center's Indian Head Division is developing the technology.

- NIJ, through TSWG, conducted a study to identify practitioner requirements for bomb robots. A solicitation for development of a robot that would meet these requirements was released in 2001.

Security

- NIJ, the Federal Aviation Administration's (FAA's) Aviation Security Research and Development Division, and a focus group within the Biometrics for Improving Aviation Security Working Group are addressing concerns about the use of biometrics to improve civil aviation security. Face-recognition technology, which compares a person's face with images stored in a database, is of particular

interest. This technology could verify access for airline crew and airport personnel. It also could identify individuals who are on a watch list. This technology could possibly be integrated with weapons detection portals to improve screening of passengers and employees.

- A portable system developed by Raytheon Company uses low-power radar to locate and track multiple individuals through walls. The system, which is a modification of a commercial motion detector, can distinguish people through concrete or brick walls up to 8 inches thick at a range of more than 75 feet. A prototype should be ready for evaluation in Fiscal Year 2002. The Air Force Research Laboratory also is participating in the project.

Weapons Detection

- With funding from NIJ, the U.S. Department of Energy's Idaho Environmental and Engineering Laboratory has developed a walk-through weapons detection portal that detects anomalies in the Earth's magnetic field caused by ferro-magnetic material commonly found in weapons. This device does not pick up ordinary objects such as jewelry and keys, which allows many people to be scanned rapidly. It presently is in use in the Bannock County, Idaho, courthouse and in a New York City high school. The FAA has a portal under evaluation. The portal was commercialized in 2000 by Quantum Magnetics and Milestone Technologies as the SecureScan 2000.

- Through a grant from NIJ, Trex Enterprises has demonstrated a portable system to detect concealed weapons in crowds. The device uses a passive millimeter wave imager to pick up differences in heat energy between a person's body and objects the person is carrying. These objects appear as distinct images on a real-time video. NIJ is working with the FAA to explore the possibility of placing this technology, along with the weapons detection portal, into the Nation's airports.

Other Initiatives

- The NIJ-funded Center for Civil Force Protection offers assistance to State and local law enforcement agencies and other public safety agencies on combating terrorism and responding to other critical incidents. Information and assistance are available in such areas as architectural safety, biometrics, bomb suits, and vulnerability analyses.

Other NIJ partners in the Critical Incident Technology Program include the Centers for Disease Control and Prevention, Eastern Kentucky University, the InterAgency Board for Equipment Standardization and InterOperability, the Oklahoma City National Memorial Institute for the Prevention of Terrorism, and the OJP Office for Domestic Preparedness.

For additional information, visit the NLECTC Virtual Library page on JUSTNET at www.justnet.org.

Counterterrorism Institutes

There are terrorist entities inside and outside of our Nation that, for whatever reasons, would try to harm America's citizens, security, and prosperity. To respond effectively to terrorist attacks and identify, investigate, and pursue the attackers, substantial research, technology development, and organizational efforts are required.

Two resources of information and research available to State and local law enforcement are the Institute for Security Technology Studies and the Oklahoma City National Memorial Institute for the Prevention of Terrorism, both sponsored by the National Institute of Justice (NIJ).

Institute for Security Technology Studies

The Institute for Security Technology Studies at New Hampshire's Dartmouth College focuses its research, development, and assessment efforts on countering terrorist attacks on websites and other Internet components and protecting the integrity of infrastructure systems such as networks. Funded under a grant from NIJ's Office of Science and Technology, the Institute and its core research program assess threats against the Nation's electronic information infrastructure technologies and systems. This core program evaluates potential techniques and technologies designed to prevent cyberattacks and maintain infrastructure integrity. By assessing current developments in the field, the Institute also helps define a national research agenda on cyberterrorism.

Oklahoma City National Memorial Institute for the Prevention of Terrorism

The efforts of the Oklahoma City National Memorial Institute for the Prevention of Terrorism (MIPT) target the activities of first responders. MIPT, also funded under a grant from NIJ, sponsors research on equipment, training, and procedures aimed at helping police officers, firefighters, emergency medical technicians, and others who are first on the scene of a terrorist incident. Originally incorporated as a nonprofit organization in the aftermath of the 1995 bombing of the Murrah Federal Building, MIPT's mission is to prevent acts of terrorism and subsequent suffering throughout the Nation. MIPT's five core program areas are research and development, outreach and education, training, response coordination, and lessons learned.

Although both institutes have their areas of specialization, they also conduct and sponsor research into other aspects of counterterrorism. To find out more about the Institute for Security Technology Studies, visit www.ists.dartmouth.edu or contact Paul Gnon at 603–646–0700. For more information on the Oklahoma City National Memorial Institute for the Prevention of Terrorism, visit www.mipt.org or contact Brian Houghton at 405–278–6313.

4th Annual

Technologies for Public Safety in Critical Incident Response

Conference and Exposition

May 6–8, 2002

**Hyatt Regency and Albuquerque Convention Center
Albuquerque, New Mexico**

Public safety emergencies, including those posed by terrorist threats and actions, require not only coordinated efforts by first responders but also the best tools and technologies available for a safe, effective, and efficient response.

This conference, sponsored by the Office of Science and Technology at the National Institute of Justice, will highlight the latest tools and technologies for responding to such critical incidents as terrorist threats and acts, major industrial accidents, natural disasters, and threats to school safety and security. Intended for law enforcement, fire, emergency management, and other first-responder personnel, the conference will include:

- Federal technology demonstrations.
- An exposition of state-of-the-art technologies.
- A tour of and demonstrations at Sandia National Laboratories.
- A report on domestic chemical-biological threat assessment.

In addition, a 1-day Critical Incident Managers' Symposium designed for emergency management personnel and other first responders will deal with crisis response to hazardous incidents, particularly bioterrorism. Four integrated sessions will focus on organizational and coordination issues, emergency manager requirements, current and in-development technologies, and identification of unaddressed requirements.

For additional details, conference registration, and hotel information, contact Jen Telander, 888–475–1919 or jtelander@ctc.org.