

## Improving Law Enforcement

Of all the research NIJ has added to its portfolio over the years, the body of work on policing may be the largest. Community-oriented policing. Use of force. Pursuit management. Less-lethal technology. Police use of discretion. NIJ-sponsored research and development have contributed to a better understanding of these and other topics.

During 2004, NIJ expanded two areas of study that directly affect the quality of law enforcement: interoperability (interagency communications) and the impact of human factors on policing.

Another important area of NIJ research involves protecting the safety of law enforcement personnel through development of lighter, more comfortable body armor and standards for its performance. Bullet-resistant vests have saved more than 2,800 officers' lives over the past 30 years.

### Interoperability

One of NIJ's most prominent research missions involves finding ways for multiple public safety agencies to communicate with one another during a critical incident, such as a high-speed pursuit, natural disaster, or terrorist attack. Police, fire, medical, and other personnel at the scene and across jurisdictions often cannot talk to all parties because their radios are incompatible. First responders must share information instantly and effortlessly or lives can be lost. They need interoperability.

Before interoperability was recognized at the national level as a critical public safety concern, NIJ's AGILE program already had laid the foundation for developing interoperability policy and standards through its support for technology research that is now universally recognized.<sup>9</sup> With this foundation in place, the agency's interoperability activities have moved into the realm of practice—identifying, adopting, and developing practical communications solutions that include open architecture standards for voice, data, image, and video systems.

<sup>9</sup> Founded by NIJ in 1998, AGILE stands for Advanced Generation of Interoperability for Law Enforcement.

In 2004, the U.S. Department of Homeland Security reenergized the SAFECOM program to become the primary coordinator for all of the Federal Government's interoperability programs.<sup>10</sup> As a result, NIJ shifted to a primary focus on interoperability for law enforcement and renamed AGILE "CommTech." CommTech will continue to sponsor interoperability research and evaluation, standards development, and outreach to help policymakers and public safety leaders make informed, cost-effective decisions.<sup>11</sup>

In September 2004, NIJ's Office of Science and Technology (OST) and the U.S. Department of Homeland Security's Science and Technology Directorate sponsored their first annual joint conference, "Technologies for Public Safety in Critical Incident Response," held in New Orleans, Louisiana. The conference allowed first responders, industry leaders, academicians, and elected Federal, State, and local officials to exchange ideas concerning common critical incident technology needs. The 2005 conference is scheduled for October 31–November 2, 2005, in San Diego, California.

OST also cosponsors the Capital Wireless Integrated Network (CapWIN), the first integrated, multi-State public safety wireless network in the Nation. CapWIN connects public safety personnel from more than 35 agencies in the Washington, DC, metropolitan area through a messaging switch located in Alexandria, Virginia. System testing and expansion to laptops and PDA's are ongoing.

#### For more information

- NIJ's National Law Enforcement and Corrections Technology Center (NLECTC) provides CommTech and other interoperability support and information. See the CommTech Web site at <http://www.nlectc.org/agile/justnet.html>.
- "'Why Can't We Talk?' When Lives are at Stake," fact sheet and video available online at <http://www.justnet.org/assistance/interopfactsheet.html>.
- "A CapWIN-Win Solution," *TechBeat*, Winter 2004, available at <http://www.justnet.org/techbeat/winter2004/CapWinWint04.pdf>.

<sup>10</sup> SAFECOM is the Federal umbrella program that helps local, tribal, State, and Federal public safety agencies improve public safety response through interoperable wireless communications. Prior to 2004, NIJ's AGILE program had played a primary role in coordinating the public safety community's interoperability policies. For more information, see <http://www.safecomprogram.gov>.

<sup>11</sup> NIJ's Office of Law Enforcement Standards formed partnerships in 2004 with several agencies and organizations to develop open architecture standards for public safety communication systems. See [http://www.eeel.nist.gov/oles/public\\_safety.html](http://www.eeel.nist.gov/oles/public_safety.html) for more information.

Darrel W. Stephens  
 Chief of Police,  
 Charlotte-Mecklenburg,  
 North Carolina

“The art and science of policing has improved enormously over the past 35 years because of the research the National Institute of Justice has encouraged and supported. The result is a safer America.”

### Human factors

NIJ’s research on police behavior over the past several decades includes examinations of how officers use discretion and force, how they work with the community to solve entrenched crime problems, and how they and their families handle the stress of police work. In 2004, NIJ expanded this research base to include the impact of fatigue on human performance and the role of intuitive behaviors or “gut responses.”

**Fatigue.** It is well-established that long work hours have negative effects on a person’s general health, the tendency to have a driving accident or an on-the-job injury, and cognitive performance. Many workers whose activities affect public safety—for example, airline pilots, truck drivers, and nurses—must abide by working hour standards and restrictions designed to prevent excess fatigue. Police officers do not.

The research is a long way from fully explaining how officer fatigue affects police work, but it is clear that law enforcement suffers when officers are fatigued due to overtime, shift work, court appearances, and the emotional and physical demands of the job. About a third of police officers work 20 or more hours of overtime per month and more than half “moonlight” at other jobs.<sup>12</sup>

**Intuition.** Experienced officers sometimes intuitively react to danger signals before they are consciously aware of them. Police intuition also plays an important role in directing suspicion, guiding investigations, and interrogating. Intuitive judgments are made more quickly than formal decisionmaking and are influenced by social context, expectations, and attitudes.

NIJ is forming a research agenda to explore police decisionmaking and how it can be improved. In 2004, the agency put together a multidisciplinary collaboration with the FBI, the American Psychological Association, the Affect and Biobehavioral Regulation Program at the National Institute of Mental Health, and the National Institute for Occupational Safety and Health at the Centers for Disease Control and Prevention. A conference on police intuition was held in June.

<sup>12</sup> Vila, B., and D.J. Kenny, *Tired Cops: The Importance of Managing Police Fatigue*, Flemington, NJ: Police Executive Research Forum, 2000.

*The U.S. Department of Justice sponsored a 1-day national summit on body armor in March 2004. Attendees included representatives from Federal, State, tribal, and local law enforcement; law enforcement associations; manufacturers of bullet-resistant fabric and equipment; and standards and testing organizations. Participants discussed the NIJ testing and standards program—whether it should remain voluntary, the ongoing testing of Zylon®-based vests, and other matters.*

#### For more information

- Vila, B., and D.J. Kenney, "Tired Cops: The Prevalence and Potential Consequences of Police Fatigue," *NIJ Journal* 248 (March 2002): 16–21, available at <http://www.ncjrs.org/pdffiles1/jr000248d.pdf>.
- "The Nature and Influence of Intuition in Law Enforcement: Integration of Theory and Practice," conference sponsored by NIJ and the FBI Training Academy in Arlington, Virginia, June 2004. The agenda and readings are available from the American Psychological Association Web site at <http://www.apa.org/ppo/issues/intuition.html>.

#### Protecting law enforcement personnel

NIJ has sponsored several initiatives in recent years supporting technology and training to improve the safety and survivability of law enforcement personnel.

**Body armor.** More than 2,800 police officers' lives have been saved by body armor since the mid-1970's, when NIJ began testing and developing performance standards for ballistic- and stab-resistant body armor. Most police departments only purchase vests that are certified as meeting NIJ standards.

After a reported failure of an NIJ-compliant vest in 2003, the U.S. Department of Justice launched an initiative to assess body armor reliability and certification. NIJ was tasked to evaluate Zylon®-based bullet-resistant vests and released a report in March 2004 and a supplemental report in December.<sup>13</sup> Although the cause of the vest failure remains undetermined, testing is still ongoing. Preliminary findings from the second phase of testing are anticipated in 2005.<sup>14</sup>

**Training manuals and equipment guides.** NIJ supports research into law enforcement equipment and technology and develops training manuals and guides to ensure public and officer safety. After 9-11, the agency published several guides for the selection of personal protective and other equipment for emergency first responders.<sup>15</sup>

<sup>13</sup> *Status Report to the Attorney General on Body Armor Safety Initiative Testing and Activities*, Washington, DC: U.S. Department of Justice, National Institute of Justice, March 11, 2004 (NCJ 204534), and Supplement I to the report, December 27, 2004 (NCJ 207605). Both are available at <http://www.ojp.usdoj.gov/nij/pubs-sum/207605.htm>.

<sup>14</sup> The first phase of testing revealed promising data about ballistic-resistant materials' degradation over time that could lead to improved performance testing methodology.

<sup>15</sup> These guides can be downloaded from [http://nij.ncjrs.org/publications/pubs\\_db.asp](http://nij.ncjrs.org/publications/pubs_db.asp). Click on "Search NIJ Publications" and select "Officer Protection" for a complete listing.

In 2004, NIJ released a report on impact munitions—less-lethal devices used to subdue potentially dangerous individuals and to disperse unruly crowds. Impact munitions can help law enforcement officers resolve potentially violent encounters without using deadly force. These devices can compromise officer or public safety, however, if they are not applied properly. NIJ researchers surveyed 106 agencies about 373 incidents in which 969 projectiles were fired. More than 90 percent of the incidents were resolved without lethal force.

Another report released in 2004, *Department of Defense Nonlethal Weapons and Equipment Review: A Research Guide for Civil Law Enforcement and Corrections*, provides a detailed equipment review of the department's nonlethal weapons program and currently used nonlethal technologies. Five categories of nonlethal technologies are reviewed: chemicals, electrical devices, blunt impact munitions, directed energy, and miscellaneous or hybrid systems.

**Defeating bomb threats.** Current methods to confirm or deny the presence of a bomb or "improvised explosive device" (IED) place officers or bomb-disposal technicians at risk and are expensive and cumbersome to deploy. Since 1999, NIJ has supported research into the use of robot technology to disarm explosive devices. The agency recently published a summary evaluation comparing the Vanguard Robot's performance to that of other bomb-disposal robots. The Vanguard has many features required by law enforcement (such as affordability) and has performed better than comparable systems on tasks commonly encountered by technicians. However, it did not satisfy the requirements for speed and mission duration. Evaluators suggested enhancements that would increase Vanguard's benefits to practitioners, and the manufacturer modified it accordingly. NIJ is funding an evaluation of the new model.

In October 2004, NIJ formally solicited concept papers for developing new tools and technologies that law enforcement personnel could use to defeat an IED threat, specifically in three areas of concern: confirming the presence of a vehi-

cle bomb, neutralizing a vehicle bomb, and disposing of a bomb. For example, law enforcement needs cost-effective, portable means to confirm or deny that a bomb is inside a vehicle without endangering officers, such as a handheld device that can detect an IED from 300 meters away or that is conveyed by a small robot. The solicitation closed in December 2004, and the agency is reviewing proposed concepts.<sup>16</sup>

#### For more information

- Information on body armor testing and evaluation is available from NLECTC at <http://www.justnet.org/testing/justnet.html>. The U.S. Department of Justice's Body Armor Safety Initiative is described at <http://vests.ojp.gov/index.jsp>.
- Hubbs, K., and D. Klinger, *Impact Munitions Use: Types, Targets, Effects, Research for Practice*, Washington, DC: U.S. Department of Justice, National Institute of Justice, October 2004 (NCJ 206089), available at <http://www.ncjrs.org/pdffiles1/nij/206089.pdf>.<sup>17</sup>
- *Department of Defense Nonlethal Weapons and Equipment Review: A Research Guide for Civil Law Enforcement and Corrections*, Special Report, Washington, DC: U.S. Department of Justice, National Institute of Justice, October 2004 (NCJ 205293), available at <http://www.ncjrs.org/pdffiles1/nij/205293.pdf>.
- *Vanguard Robot Assessment, In Short—Toward Criminal Justice Solutions*, Washington, DC: U.S. Department of Justice, National Institute of Justice, July 2004 (NCJ 204637), available at <http://www.ncjrs.org/pdffiles1/nij/204637.pdf>.

<sup>16</sup> The solicitation is posted at <http://www.ncjrs.org/pdffiles1/nij/sl000680.pdf>.

<sup>17</sup> The full grant report, "Impact Munitions Data Base of Use and Effects," February 2004 (NCJ 204433), is available at <http://www.ncjrs.org/pdffiles1/nij/grants/204433.pdf>.