National Law Enforcement and Corrections Technology Center

TECH beat

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Dedicated to Reporting Developments in Technology for Law Enforcement, Corrections, and Forensic Sciences

30 Years, 3,000 Saves

On December 23, 1975, Seattle Police Department patrolman Raymond T. Johnson stood in the checkout line at a local market when a robbery suspect entered the store and brandished a weapon. Johnson lunged for the suspect's gun. In the violent struggle that ensued, the suspect emptied his .38-caliber pistol, striking Johnson in the left hand and twice in the chest before fleeing.[1] Officer Johnson survived with severe hand injuries, chest bruises, and a unique distinction—the first law enforcement officer saved in a field test of a new generation of soft body armor being conducted by the Office of Justice Programs' National Institute of Justice (NIJ).

Johnson was wearing body armor made with Kevlar®, an extraordinarily strong fabric developed by DuPont. NIJ, in partnership with the U.S. Army, had begun a program at the beginning of the 1970s to develop lightweight body armor woven from Kevlar. Field testing began in the summer of 1975, with 5,000 armors provided to 15 urban police departments. Less than 6 months later, Johnson was the first officer saved by one of the field test armors. In all, 17 other armor-wearing officers were saved during the 1-year field test.

Around the same time, NIJ developed a performance standard for body armor in collaboration with the National Institute of Standards and Technology (NIST) (then known as the National Bureau of Standards)[2], followed by a voluntary testing program. The standards and testing program, which exists to this day, enables body armor manufacturers to certify the performance and safety of new body armor.[3] The NIJ standard establishes minimum performance requirements for armor and the testing program tests armor against the standard.

Fast forward 28 years, to the night of June 23, 2003. Forest Hills, Pennsylvania, police Officer Edward Limbacher, wearing body armor constructed primarily of a fiber called Zylon®, threw open the side door of an unmarked Econoline van and stepped out to move in on a drug suspect. The suspect fired, striking Limbacher in the arm and abdomen with .40-caliber rounds, then ran. The shot to the abdomen penetrated the body armor Limbacher was wearing. He survived, but sustained severe injuries.[4]

The Forest Hills shooting was the first case ever reported to NIJ in which body armor compliant with the NIJ standard

(See 30 Years, 3,000 Saves, page 6)

The Eyes Have It

Biometric technologies—automated methods of recognizing a person from anatomical, physiological, or behavioral characteristics—are becoming increasingly useful, available, and affordable. Selecting the best technology for a particular situation, such as running a correctional facility, requires careful consideration of its purpose, accuracy, reliability, cost, and ease of implementation.

When the Jefferson County Sheriff's Office in Golden, Colorado, considered automating its tracking of jail inmates, practicality was a primary concern. As Special Duty Officer James Prichett explains, "In 2005, our jail had a capacity for 1,300 inmates and housed an average of 1,153. On a typical day, staff booked from 50 to 80 persons and handled the final release of approximately 50 inmates. Additionally, approximately 200 inmates were released daily from the facility with passes to work, seek employment, and pursue educational opportunities."

Prichett says the sheriff's office gave serious consideration to fingerprint readers and hand geometry scanners. Though somewhat cheaper, management found the cost of an iris scanning technology to be reasonable. Deciding factors were the unchanging pattern of a person's iris and the need for only basic training of staff to operate the equipment. For fingerprint submissions to the Colorado Bureau of Investigation and the FBI, he says, the jail has been using fingerprint readers for 10 years. Currently, ink prints are taken only of the right index finger of each inmate on the back of the initial booking card, which serves a backup verification purpose in case the iris scanning system goes down.

Since its installation at the jail in September 2001, the iris recognition system has reduced the staff time spent on identification and verification when inmates move in and out of the jail. A process that took several minutes now takes a few seconds,

(See The Eyes Have It, page 2)

(The Eyes Have It . . . cont. from page 1)

Prichett says, a factor that may well be of interest to other correctional facilities weighing the pros and cons of choosing a biometric system to improve the management of their inmate populations.

The iris is the colored part of the eye, but eye color is not part of the biometric, says Chris Miles, senior program manager at the Office of Justice Program's National Institute of Justice. The iris controls the amount of light that enters the eye through the pupil by means of its dilator and sphincter muscles. The tissue that forms the iris makes a complex pattern that appears to remain the same throughout one's life. No two irises are the same—not even in an individual's left and right eyes.

Iris recognition technology captures an image of the iris pattern with a camera, analyzes the digitized image mathematically, and compares the unique template to those in a database. The scanner does not touch the individual, and a high-quality camera can capture the image from up to a yard away.

Independent evaluations and deployment experience have proved iris recognition technology to be highly accurate and to produce few mismatches. Another advantage is that the iris is a well-protected internal organ, whereas fingerprint ridges can become worn or obscured, and fingerprint details of elderly and certain other individuals can be difficult to read. The major drawback is that no national criminal database of iris templates currently exists. For fingerprints, the FBI's Automated Fingerprint Identification System (AFIS) has been available for decades. Additionally, fingerprints, unlike irises, can be left behind at a crime scene.

The Jefferson County Sheriff's Office purchased its iris recognition system from a California company that supplies iris recognition technology to correctional institutions and to the U.S. Department of Defense for prisoner identification and processing in Afghanistan and Iraq. Prichett says that the software for the system was tailored for the procedures and operations specific to each location within the facility. "Training in how to operate the equipment and software was provided by the company as part of the package we purchased. We also receive periodic training when the software changes or when we receive upgrades to the system."

Iris scanning begins by having the subject look into a mirror mounted on a stationary or handheld device. With audio voice, the system gives the subject simple directions (e.g., come closer, step back) to achieve proper positioning of the iris, which usually takes just a few seconds. Behind the mirror, a high-resolution digital camera captures the iris image, and the system tells the operator that successful capture has occurred. The device then makes an encoded template and compares it with all iris templates stored in the database.

"Once the system captures the iris image, matches are made in less than 4 seconds," Prichett says. "Given a template match, indicating that the subject has been enrolled in the system, the operator may display on the device screen basic information about the inmate such as height, weight, date of birth, former address, and work-release facts. Once the system and our mainframe are integrated, perhaps within a year, information such as police record, gang affiliation, active warrants, photograph, and fingerprints will also be instantly available on the screen. If the subject is not already enrolled, the device prompts the operator to enter enrollment information."

The Jefferson County facility has five stations for processing inmates: booking, transportation, work-release outbound, work-release inbound, and final release.

- The booking station processes new arrivals, including iris scanning, ink and AFIS fingerprinting, and photographing. The inmate is made to wear a bracelet on which is printed the inmate's name, picture, date of birth, height, weight, and identification number; a barcode encapsulating this information also is printed on the bracelet. Each time an inmate is to be identified, a correctional officer compares the information on the bracelet with the results of an iris scan.
- The transportation station confirms the identification of inmates who leave the jail temporarily for court proceedings in other jurisdictions.
- The work-release outbound station is equipped with a stationary iris scanner. When an inmate leaves the jail, the system checks the validity of the inmate's pass and records the exit time. The inmate is required to telephone the station on arrival, and the officer on duty records the call in the system.
- The work-release inbound station is also equipped with a stationary iris scanner. Just before leaving the worksite, the inmate must telephone the station, and the officer on duty records the call in the system. When the inmate returns, the system records the arrival time.
- At the final-release station, the system verifies the identity of the inmate before the inmate leaves the jail. Prichett points out that "prior to the installation of iris scanning at the jail, officers reviewed the inmate photograph, manually compared new ink fingerprints with the stored fingerprints, and questioned the inmate, all of which made final release slower and more laborious."

No inmate has been wrongly released since reliance on iris biometrics began at the jail, and no mismatches have occurred, says Prichett. Under the former system, though, he recalls several cases of wrongful release. The new system demonstrates its utility in other ways too. For instance, he says that once or twice a month, iris scanning shows that a person arrested and brought to the jail has been arrested previously under another name.

Of the 300 staff who work at the jail, 130 operate the iris scanners from time to time. "Initially, staff were resistant to the new system, but everyone liked it after a month or so. We have trust in the system," says Prichett, although some inmates have been apprehensive. For example, concern has been expressed about the scanners causing damage, such as burning the eye, but a simple explanation that the process is like having one's picture taken typically overcomes any reluctance. Lack of cooperation is not a problem among inmates enrolled in the system; all know that no cooperation means no release of any kind. Every day, however, some of the new arrivals are uncooperative, a problem often attributable to the influence of recent alcohol or drug use. Prichett says that an hour or so of "cooling off" is all it takes to get the cooperation needed for enrollment.

Other features are available through computers connected to the iris database stored on the central server. In the upper right corner of the computer screen appears the total number of inmates who are in the charge of the jail. Also provided are the number of inmates in the work-release program, the number currently out on work release, and the number on work release who are late according to the return time set by the system. When an inmate is overdue, the system instantly alerts officers with a red flashing field. At any time, officers can click an icon and receive the list of individuals and the details about their release commitments and stipulations.

As mentioned previously, the jail uses both stationary and handheld devices. The handheld device is highly portable, powerful, and versatile. A single unit is a self-contained iris enrollment and recognition system that can store up to 200,000 iris images and operates in combination with network applications for identity recognition and tracking. Potential uses include verifying visitors' identities, making sure no inmate gets more than one lunch, and managing the dispensing of medications. Currently, the jail uses a handheld device, which is tethered to the system by a cable, only at the booking station. Jail administrators plan to obtain another handheld device to scan visitors.

According to Prichett, "Our experience at the jail is that iris scanning is fast, efficient, and accurate."

***The above article is based on a paper titled "Using Technology To Authenticate Individuals: A Case Study," published in the Winter/Spring 2006 edition of the West Virginia High Technology Consortium Foundation's* Journal of Innovation. *To view that article, visit* www.wvhtf.org/about/overview/publications/JOI_2006_v1_web.pdf.**

***Additional information about publications and resources relating to biometric technologies are available through the National Institute of Justice website at* www.ojp.usdoj.gov/nij/topics/biometrics/pubs.htm.**

INFO SHARING
Comes in from the Cold

Law enforcement and corrections practitioners in the continental United States might think they have little in common with their northern counterparts in Alaska, a State twice the size of Texas with a population of just over one-half-million, many of whom are clustered in isolated locations accessible only by boat or airplane. Yet they share the same type of technology-related communications issues: incompatible radio systems, databases with differing structure and content, and lack of information sharing channels.

In Alaska, law enforcement agencies have come up with a solution: a consortium of law enforcement agencies called the Alaska Law Enforcement Information Sharing System, or ALEISS (pronounced alias). Sponsored by the Office of Justice Programs' National Institute of Justice (NIJ) and its National Law Enforcement and Corrections Technology Center (NLECTC)–Northwest in Anchorage for its first 3 years of operation, ALEISS can serve as a model for other States.

"Even though this project is in Alaska, it has potential for use as a template in other regions," says Bruce Richter, deputy director of the Northwest Center. He notes other agencies could use commercially available software programs that are the same as or similar to those used by the almost 30 agencies that currently constitute ALEISS. According to Richter, NLECTC–Northwest and ALEISS are considering tying the software program used by ALEISS to separate regional information sharing projects already serving major law enforcement agencies along the West Coast to investigate drug trafficking and other criminal activity across regional boundaries.

ALEISS employs an off-the-shelf software, called CopLink, the prototypes of which were developed by the Artificial Intelligence Laboratory at the University of Arizona and the Tucson Police Department with funding from NIJ and the National Science Foundation. The software collects, consolidates, and shares information from existing law enforcement records management systems. Officers enter data into their own records management systems. These data are then uploaded daily employing a secure, Internet-based platform to link databases that otherwise could not communicate and allows authorized users to use various search strategies to look for links between ongoing investigations.

"It can save days or even weeks over tracking down leads by hand. It can search the interconnected databases in a matter of minutes and find connections between suspects and investigations that might not otherwise be apparent," Richter says.

Maxine Andrews, project manager for ALEISS at NLECTC–Northwest, says the software program provides an easy-to-use, intuitive Web-based interface that presents information in clearly labeled columns and tables and provides hypertext links to underlying data and documents. "Special features include the ability to flag an individual so that if new data are added, an alert (either an e-mail or a text message) goes out to interested parties," Andrews says. "If a police department is looking for a particular individual who has had prior police contact, the interested officer will be alerted. The program also has advanced firewalls, encrypted transmission, and secure dual-user access authentication."

These features, and the enthusiasm shown by the participating agencies, contributed to ALEISS winning the 2005 Excellence in Technology Award for Regional and Collaborative Systems from the International Association of Chiefs of Police. This award, which is open to local, tribal, State, provincial, Federal, and multijurisdictional efforts, recognizes superior achievement and innovation in the field of communication and information technology.

The Alaska Association of Chiefs of Police annually invites users to submit their ALEISS success stories and selects submissions for an award. The 2006 winners, Investigator Pearl Holston of the Fairbanks Police Department and Detective Kelly J. Turney of the Palmer Police Department, used ALEISS to help a task force break up a large multijurisdictional fraud and identity theft ring. As a result, 10 suspects who were responsible for between $300,000 and $500,000 in fraudulent charges and forged checks were indicted in 2 jurisdictions on charges such as forgery, theft, fraudulent use of an access device, and criminal impersonation. As a result of the investigation, Turney petitioned the Palmer Police Department and its chief to join ALEISS. In turn, all department officers and dispatchers received program training.

"It's been great for us," Fairbanks Deputy Chief Brad Johnson says, noting his officers are using the software program more extensively in the wake of the fraud/identity theft success. "It's relatively easy to use yet it's a very powerful tool. The more practice you have on it, the more benefit you receive from the power it has. You can use some very basic tools in it or you can get very advanced. We have a records management system with its own analytic tools, but it doesn't compare to the analytical abilities of the software that ALEISS uses."

Juneau Police Chief Greg Browning, who chairs the ALEISS consortium, agrees the software program seems more intuitive and user friendly than his department's records management system. "When I look for information, it's always easier to find," he says. "Plus, if this person also happens to be wanted in, say, Anchorage and Kenai, I would miss that if I just used our system. It gives us a complete picture, not just a local one."

Browning, who relocated to Alaska from Texas almost 7 years ago, immediately noticed the strong cooperative spirit among Alaska law enforcement agencies and their openness toward sharing information with other agencies. The State's isolation demands cooperation between agencies, he says, and the software program was the perfect technological solution. "They call it, 'Google™ for Cops.'"

The Alaska State Troopers back up the high opinion of the software program given by the Fairbanks and Juneau departments. Research Analyst Sue Davis says that all five members of her unit use the program daily, noting "it is one of the first places we all go to when a request for research comes in."

Davis says the Alaska State Troopers Criminal Intelligence Unit has used the software since it came online. "For an investigator it could mean an immediate lead; for the analysts, it could provide the answer they've been searching for to make a connection," she says. One such connection allowed her to link a name to a phone number and ultimately help an investigator identify a suspect in a death threat case.

The ALEISS project originally was supported by seven agencies: the Alaska Department of Public Safety, Division of Alaska State Troopers; and the Anchorage, Homer, Juneau, Kenai, Seward, and Soldotna police departments. Almost 30 participating agencies now have access to the network, although not all of them contribute data. Plans call for expanding the network to cover the entire State, as funding permits. NLECTC–Northwest is providing ongoing training and support.

In addition, plans call for the ALEISS system to connect with the NIJ-funded State, Regional, and Federal Enterprise Retrieval System, or SRFERS (surfers), a seamless interstate information sharing application currently under development.

For more information about ALEISS, including original governance documents and other resources and detailed project background information, visit www.aleiss.org or contact NLECTC–Northwest, 866–569–2969 or nlectc_nw@ctsc.net.

CRUISER SMARTS

A common scenario: An officer on routine patrol sees a car run a red light and takes off in pursuit. While avoiding other vehicles and pedestrians the officer must reach for one switch that activates the car's lights, stretch for another that turns on the siren, and grab at the microphone for the radio—all of which distracts the officer when extreme attention is needed.

A not-so-common scenario: An officer pushes a button on the steering wheel, says a few simple commands and the lights, siren, and radio automatically activate and the vehicle registration is checked for wants and warrants.

Two projects sponsored by the Office of Justice Programs' National Institute of Justice (NIJ)—one in New Hampshire and one in Texas—are working to help make police vehicles smarter and turn the not-so-common scenario into a common one.

Although the name of the New Hampshire smart car project came from the 1960s television show, *Car 54 Where Are You?,* the resemblance ends there.

Project 54 began in 1999 and deployed its first vehicle in 2001. Today, the system is used on 497 patrol vehicles belonging to New Hampshire law enforcement agencies and on another 200 in other New England States as well as in Maryland and California. Lt. Mark Liebl, assistant unit commander for support services with the New Hampshire State Police, drove that first test vehicle in 2001 and still is the lead tester for improvements. (A group of six troopers also tests innovations before full-scale implementation.)

"Cruisers were getting smaller and smaller, and loaded with more and more equipment. Each piece of equipment had its own controller, and that takes up a lot of space inside the cruiser," Liebl says of the project's inception. "By providing a means of accessing equipment with fewer distractions, Project 54 creates an environment that is safer for officers and for everyone else on the road."

Developed by the University of New Hampshire's Consolidated Advanced Technologies Laboratory (CATLab), Project 54 is a fully integrated system that works with most manufacturers' equipment and can be activated via voice commands, an LCD touchscreen, a keyboard, and/or the original controls. The modular system can be easily installed, modified, and repaired at low cost.

"One of the nicest features about the project is that the speech technology is very, very tolerant of accents," Liebl says. "With many speech technologies, you have to talk into the computer for 15 to 20 minutes [before] it starts to understand your voice function. I could take anyone out to my cruiser, and it would understand that person right away."

Project 54 works with almost any voice and with almost every manufacturer's equipment. CATLab continually works on improving that capability. Liebl explains, "The last thing we want to tell an enthusiastic individual is, 'oh, by the way, it only works with particular equipment.'" He notes that some State police departments have 500 to 800 cars. If they have to change their light bars or video systems, what starts out as affordable (approximately $1,500 for a cruiser already outfitted with a Microsoft® Windows®-based operating system) may become too costly.

In addition to turning equipment on and off, Liebl says, Project 54 allows officers to run license plate checks verbally, switch channels on radios, activate radar or mobile video equipment, and obtain certified copies of driving records. CATLab is working on adding the ability to operate its features off a personal digital assistant as long as the officer remains within 300 feet of the cruiser.

Two thousand miles away at the University of Houston, the university's police department also is evaluating and testing smart car technologies. The department has been evaluating a Ford Expedition and a Ford Crown Victoria equipped with TACNET™ technologies since June 2005.

Gordon Dilmore, director of the university's Southwest Public Safety Technology Center, has been helping evaluate the project. Dilmore notes that as equipment has proliferated, police cars' front seats have grown more cramped. "Most have anywhere from two to five different radio heads, a mobile data terminal, siren and light controls, plus gunracks, radar, and other equipment," he says. The goal was to move the control heads from the front seat to the trunk, where a computer would control all the functions.

Preliminary results indicate that officers like the decluttering, having one control mechanism for all vehicle functions, and particularly the voice-activated component, Dilmore says. Their constructive criticisms were incorporated into TACNET units deployed with other police departments around the country.

Originally developed using NIJ funding, TACNET offers voice command, touchscreen, and push-button controls on a centralized control center for lights, sirens, radios, radar, video, mobile data functionality, and more. Its voice-control system operates on 39 device commands and 76 application commands, including license plate lookup. A unique heads-up display provides information to officers and allows them to keep their eyes on the road instead of looking down at a laptop. The system can receive and transmit up to five radio transmissions simultaneously and serve as a crossband repeater linking up to five radios.

For more information about Project 54, contact Lt. Mark Liebl at mliebl@safety.state.nh.us. For more information about the TACNET evaluation project, contact Gordon Dilmore at gdilmore@att.net.

CHICAGO'S Vehicle of the Future

At the mayor's direction, the city of Chicago is working on the "Patrol Vehicle of the Future" customized to law enforcement needs.

The prototype was unveiled at a press conference in February 2006, just 6 weeks after Kevin Campbell, automotive engineer for the city's Department of Fleet Management, learned of this top-priority project. According to Campbell, the project started with a Chevrolet Tahoe (the only nonsedan that is police-rated for pursuit) and an ad hoc committee of officers to provide feedback. This prototype unit is now in daily use, and its success, he says, led to the development of four more vehicles, one for each of Chicago's five policing areas.

Campbell says the most expensive technology added to the vehicle has already proved to be its most valuable—a database and camera system that reads the license number of every vehicle it passes. If the system finds a license number that matches a stolen vehicle warrant, it alerts the patrol officer. Use of this technology was cleared through the city's legal department. Commander Jonathan Lewin, who oversaw the vehicle's initial weeks of use, says this technology resulted in the recovery of 48 stolen vehicles and 2 stolen handguns between March 1 and April 18, 2006.

Other features include—

- A plug-and-play wiring harness that allows incorporation of devices made by various manufacturers (e.g., lights and sirens).
- LED lighting to improve vehicle visibility.
- A work area, including a light, a computer, and a pullout tray, in the rear cargo area.
- A night-vision camera installed on the spotlight. These devices can be used in tandem or separately.
- Molded plastic rear seats and a rubberized floor with drainplugs, so the rear seat can be washed out and kept clean.
- Ballistic-resistant lamination on the windows

Enhancements under consideration include—

- Gunshot location technology.
- Biometric vehicle access (e.g., fingerprints).
- Interoperability technology, such as TACNET™ or Project 54.

For more information on Chicago's Patrol Vehicle of the Future, contact Kevin Campbell, 312–744–5228.

HOMELAND SECURITY
your next move

As the Nation's emphasis on homeland security deepens, so does the need for advanced education. Public safety managers seeking to improve their homeland security skills may want to look to the California coast.

The Naval Postgraduate School's Center for Homeland Defense and Security in Monterey, California, offers a homeland security master's degree and other programs aimed at senior managers from law enforcement, fire departments, the military, public health, and emergency management.

The U.S. Department of Homeland Security (DHS), which sponsors the Center, pays all tuition costs and travel expenses for State, local, and DHS employees. Non-DHS Federal employees and U.S. military officers accepted into the program must have financial sponsorship.

Students admitted to the master's program must already hold positions with significant homeland security-related responsibilities. A new class of 30 students is graduated every 6 months. Applications are accepted twice a year; deadlines are May 1 and December 1.

During the 18-month program, participants are required to be in residence a total of 12 weeks—2 weeks per quarter. Students complete the remainder of the coursework via the Internet so they can continue to work.

Students learn to develop strategies and policies to help thwart terrorist plans and shield the Nation from attack. The curriculum includes agricultural security, weapons of mass destruction, planning and budgeting for homeland security, technology, and critical infrastructure protection.

Student comments have helped shape courses. "We've had a chance for our students to make sure the curriculum components are valuable to their jobs," says Paul Stockton, director of the Center.

Noncredit, online versions of the master's degree courses are available to security professionals who require the flexibility of self-paced instruction. "We are very proud of this because thousands of first responders who don't have the time to take a master's but have important responsibilities can take these classes one by one, at their own pace, and gain important insights on their own," Stockton says. "Our goal is to get the knowledge out to as many people in the law enforcement community as possible."

Other Center programs and resources include the following:

- **Mobile Education Team Seminars.** These intensive, half-day seminars are designed for Governors, their homeland security teams, and senior homeland security leaders in major urban areas. Mobile Education Team trainers often travel to State capitals to conduct sessions.
- **Executive Leadership Program.** This program offers senior officials nondegree, graduate-level seminars at the Center in Monterey. Senior local, State, Federal, military, and private sector officials with homeland security responsibilities are eligible to participate. Participants must commit to four 1-week sessions over 12 months. Travel and lodging costs are covered. Seminar topics include intelligence, critical infrastructure, public health, threat recognition, and incident management.
- **University and Agency Partnership Initiative.** This initiative was established to support the development of education programs in homeland security through collaboration among institutions. Through the partnership, the Center makes available its curriculum, Homeland Security Digital Library, and distance learning technology.
- **Homeland Security Digital Library.** The library provides quick access to U.S. policy documents, Presidential directives, national strategy documents, and theses and research reports from universities, organizations, and local and State agencies.

For more information about homeland security programs offered by the Naval Postgraduate School's Center for Homeland Defense and Security, visit the website at www.chds.us.

CERTIFICATE PROGRAM
For First Responders Online

A new, interactive online homeland security training program offers first responders at all levels practical guidance on preventing terrorist attacks.

The Homeland Security Certificate Program is offered through the Institute for Preventive Strategies, a division of The Center for Rural Development in Somerset, Kentucky. The U.S. Department of Homeland Security Office of Grants and Training funds the training.

The first certificate course being offered is for law enforcement. Eventually, similar training will be developed specifically for firefighters, health care workers, and emergency medical assistance personnel. Another course might be developed for local government officials.

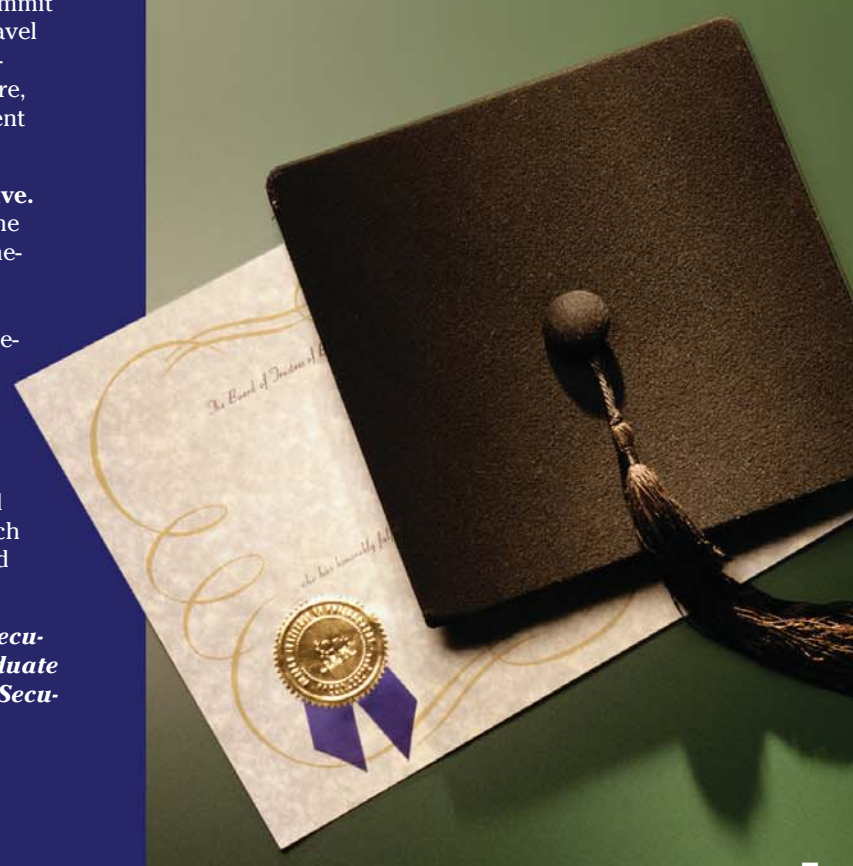
The introductory portion of the law enforcement training is an immersive, strategic game in which the participant is a police officer who must prevent a developing, realistic terrorist threat to the community. The training is designed for first responders in any size agency in rural, suburban, and urban communities.

Participants' choices have consequences. Some decisions made during the exercise will result in failure to prevent the attack. If participants fail, they repeat the exercise until they thwart an attack, then move on to the advanced training.

The advanced session features five exercises in collaboration, information sharing, threat recognition, risk management, and intervention that require participants to demonstrate understanding of prevention principles and apply that understanding to solve problems.

The law enforcement certificate program is available free to qualifying agencies and individuals.

For more information, visit the Institute for Preventive Strategies website at www.preventivestrategies.net or call The Center for Rural Development, 606–677–6000.



(30 Years, 3,000 Saves . . . cont. from page 1)

failed to prevent penetration from a bullet it was designed to defeat.

In the 28 years between those two incidents and in the time since, at least 3,000 officers survived shootings or other incidents because they were wearing body armor meeting NIJ performance standards.[5] But the Forest Hills incident caused great concern within the law enforcement community and within the U.S. Department of Justice: Are we keeping our officers safe?

The Body Armor Initiative

In November 2003, in the aftermath of the Forest Hills incident, former Attorney General John Ashcroft announced the Department of Justice's Body Armor Safety Initiative[6] to address the reliability of body armor used by law enforcement and to review the process by which body armor is certified.

As part of the initiative, NIJ tested ballistic-resistant vests (both new and used) made with Zylon.[7] NIJ also tested upgrade kits distributed by the manufacturer of the armor in the Forest Hills incident to retrofit some models of its Zylon-based vests. And NIJ began a review of its standards and testing program for ballistic-resistant vests, which has resulted in interim changes to the standards and testing process. Read on for results of these tests and a summary of changes to the standards and testing program.

Why did the vest fail?

Even before the announcement of the Attorney General's initiative, NIJ staff contacted representatives of the Forest Hills Police Department and the Allegheny County Police Department (the agency handling the criminal investigation of the shooting) to examine the vest, the weapon, and the ammunition used in the shooting in order to determine why the vest failed. The examination found that:

- The bullet velocity from the gun used in the shooting was not greater than the bullet velocity NIJ uses in compliance testing for the type of vest Limbacher was wearing.
- The physical properties of the bullets used in the shooting were similar to bullets used in NIJ's compliance testing of the type of vest Limbacher was wearing, although there were some differences in bullet geometry and in how the bullet deformed on impact.
- The tensile strength of Zylon yarns removed from the back panel of Limbacher's vest was up to 30 percent lower than Zylon yarns from new armor that the manufacturer provided for this study. (The front panel, which was penetrated in the incident, was being held as evidence in the criminal case against the shooter, so it was not available for testing.)

NIJ developed a detailed test plan simulating the Forest Hills incident to isolate the factors deemed most likely responsible for the vest failure. Test designers identified five potential causal factors: ballistic material tensile strength, bullet type, the gun barrel twist, the shot angle, and the location of the shot on the armor.

NIJ obtained and tested 32 ballistic panels of the type worn in the Forest Hills incident. Half of the panels were tested "new" and the other half were artificially aged for 5 months in a chamber exposing the panels to controlled temperature and humidity conditions, until the tensile strength of fibers in the vests matched those of fibers from the rear panel of the Forest Hills vest.

Each of the 32 panels was shot 6 times. None of the 192 shots penetrated the panels. NIJ is continuing efforts to determine the cause of the Forest Hills failure, but is still unable to draw a definitive conclusion.

Testing the Upgrade Kits

As part of the Attorney General's initiative, NIJ was directed to test any upgrade kits offered by body armor manufacturers to retrofit existing vests. The tests would determine if the upgrade kits met the NIJ performance standard when used with the original vest they were designed to supplement. One manufacturer, Second Chance Body Armor, Inc. (the manufacturer of the body armor worn in the Forest Hills incident) offered an upgrade kit to users of some models of Zylon-based body armor—an additional ballistic panel inserted into the armor. At NIJ's request, Second Chance provided 50 sets of armors and matching upgrade kits for three soft armor protection levels—Level IIA, Level II, and Level IIIA.[8] The samples provided included both new and used upgrade kits, and the majority of the armors had been previously worn.

NIJ's testing found that the upgrade kits provided added protection when used with the existing used body armor. However, the level of protection did not meet existing NIJ performance standards for new body armor.

Also, the vest/upgrade kit combinations in all three protection levels experienced excessive "backface signatures." This means that the bullets did not penetrate the vest, but the impact of one or more bullets created a "dent" of more than 44 mm (almost 2 inches) into the clay in back of the vests during testing, a depth that may cause serious injury. Six of eight Level IIA armors, two of eight Level II armors, and five of eight Level IIIA armors ultimately tested experienced excessive backface signatures during testing.

Further, two of the eight Type IIIA vests/upgrade kits (designed to offer protection against high-velocity 9 mm and .44-caliber Magnum bullets) experienced penetrations.

Despite safety questions raised by these test results, it is important to note that the upgrade kits did add some measure of protection. NIJ encouraged officers to wear their Zylon-containing armor and upgrade kits until they were replaced.

Testing Used Armor

Heat, moisture, ultraviolet and visible light, detergents, friction, and mechanical damage may all contribute to the degradation of fibers used in the manufacture of body armor. Body armor manufacturers design their armor and provide care instructions to minimize the effects of these degrading properties.

Because the evidence showed an unexpected degradation rate in Zylon-based armor, NIJ conducted ballistic and mechanical properties testing on 103 additional used Zylon-containing body armors. Law enforcement agencies across the United States provided these vests to NIJ. Sixty of these used armors (58 percent) were penetrated by at least one round during a six-shot test series. Of the armors that were not penetrated, 91 percent had backface deformations in excess of that allowed by the NIJ standard for new armor. Only four of the used Zylon-containing armors met all performance criteria expected under the NIJ standard for new body armor compliance. Although these results do not conclusively prove that all Zylon-containing body armor models have performance problems, the results show that used Zylon-containing body armor may not provide the intended level of ballistic resistance.

In addition, armors were visually inspected and given one of four condition ratings from "no visible signs of wear" to "extreme wear and abuse." Testers found no correlation between the level of visible wear of the body armor panels and the ballistic performance of those panels. This is important because even used Zylon body armor that appears to be in good condition may not provide an acceptable level of performance.

Exploring Fiber Degradation

With funding provided by NIJ, polymer scientists at NIST are probing down to the molecular level to learn more about how Zylon degrades. They are examining the chemical changes that occur as the fibers degrade, the trace contaminants on fibers that may contribute to degradation, the moisture content of fibers, and mechanical strength differences among individual fibers and what causes those differences.

Initial findings have isolated the ballistic performance degradation to the breakage of a small part of the Zylon fiber molecule. Breakage of this part of the molecule, called the oxazole-ring, occurs as a result of exposure to both moisture and light. When there was

(See 30 Years, 3,000 Saves, page 10)

2 Survivor Stories

In 1975, a Seattle lawman became the first law enforcement officer saved by a new kind of soft body armor being field tested by the National Institute of Justice (NIJ). Thirty years later, an Atlanta police officer became save number 3,000. Here are their stories.

Save Number 1

On the afternoon of December 23, 1975, Seattle Police Department patrolman Raymond T. Johnson, wearing a winter coat over his uniform, stood in the checkout line at a local market as a man entered the store and drew a gun, intending to rob the store. Seeing Johnson, the suspect ordered him to hand over his service revolver and moved to take it away from him. Johnson lunged for the suspect's gun. As the two grappled, the suspect fired his .38 caliber pistol, striking Johnson in the hand. Johnson broke the suspect's finger as they wrestled for the gun. The suspect broke free, stepped back, switched the gun to his left hand, and shot Johnson in the chest. When Johnson kept coming, the suspect, wide-eyed in disbelief, fired again, striking Johnson directly over the heart. Still Johnson charged. They fell to the floor in a battle for the gun. The suspect fired his last shot, just missing Johnson's head. Johnson managed to tear off the suspect's ski mask as he broke free and fled. Officer Johnson survived with severe hand injuries, chest bruises, and a unique distinction—the first law enforcement officer saved by a new generation of soft body armor being field tested by the National Institute of Justice.

RAYMOND T. JOHNSON

Johnson was wearing body armor made with Kevlar®, an extraordinarily strong fabric developed by DuPont. NIJ, in partnership with the U.S. Army, had begun a program at the beginning of the 1970s to develop lightweight body armor woven from Kevlar. Field testing began in the summer of 1975, with 5,000 armors provided to 15 urban police departments. Less than 6 months later, Johnson was the first officer saved by one of those armors. In all, 17 other armor-wearing officers were saved during the 1-year field test.

The disbelieving criminal fled the scene of the shooting. Officer Johnson was transported and hospitalized for several days for treatment of severe backface signature contusions and the gunshot wound to his left hand. Based on information provided by Officer Johnson the suspect was identified and arrested. He was convicted on charges of 1st degree assault on Officer Johnson and was sentenced to prison. Officer Johnson returned to duty and completed his police career. Officer Johnson is now retired.

Save Number 3,000

In the predawn hours of October 8, 2005, Officer Corey B. Grogan of the Atlanta Police Department was in the zone 4 district house taking a report from a walk-in complainant, when Lt. John Demmit requested he assist in the service of an arrest warrant. The warrant was for an individual known to the police with a prior criminal conviction. The warrant charged three counts of aggravated assault that occurred in Douglasville. Three officers from Douglasville teamed up with several Atlanta officers to serve the warrant.

The original plan was to cordon off the residence where the suspect was known to be. The lieutenant and Officer Grogan approached the front door and knocked but got no response. Light in a back room appeared to be from a television.

Lt. Demmit pulled the officers back to a driveway area, developed an entry plan, and briefed all personnel as to their individual responsibility. The lieutenant took the point and carried a ballistic shield with Officer Grogan second in the stack. The door was hit and forced opened. Lt. Demmit was the first in and announced police presence and the purpose for the entry. Officer Grogan heard Lt. Demmit give verbal commands to someone to show their hands. He turned and observed a male lying on a couch covered with a blanket. This individual opened fire on the officers.

Officer Grogan reached to pull Lt. Demmit back out the door. He was going to the ground when he felt something impact his chest and something hot graze his face. Officer Grogan exited the house and moved toward cover behind a vehicle that was parked in the front yard. Firing continued inside the residence. When the gunfire subsided, Officer Grogan withdrew across the street to gain better cover where he found Lt. Demmit and Officer A. Nixon. Grogan requested that Lt. Demmit look at his face because he thought he had been shot as the burning sensation continued. He was told that his face had scratch marks.

COREY B. GROGAN

A SWAT team responded. On entry they found the suspect deceased. He had been justifiably killed during the shootout with the officers. Investigators discovered weapons and a quantity of methamphetamines in the shooter's house. A female friend of the shooter suffered a nonlife-threatening gunshot wound to the leg during the exchange of gunfire. She was transported and treated for her injury.

When order was restored, Officer Grogan and Lt. Demmit were examined by Atlanta Fire Department EMS personnel. It was determined that in addition to the grazing wound to his face, Officer Grogan had been hit twice in the chest with bullets from the shooter's .45 caliber semiautomatic pistol. The rounds hit center upper left torso and were stopped by his protective body armor. Lt. Demmit suffered fragmentation wounds to his face after a bullet struck and shattered his radio microphone. The officers were transported to a trauma center where they were examined, treated, and released. Lt. Demmit and Officer Grogan have returned to duty.

These survivor stories are courtesy of the IACP/DuPont™ Kevlar® Survivors' Club®, www.dupont.com/kevlar/lifeprotection/survivors.html.

the NLECTC 'center system'

The National Law Enforcement and Corrections Technology Center (NLECTC) system, a program of the Office of Justice Programs' National Institute of Justice (NIJ), offers no-cost assistance in helping agencies large and small implement current and emerging technologies.

The NLECTC system was established in 1994 by NIJ's Office of Science and Technology to serve as an "honest broker" resource for technology information, assistance, and expertise by providing information and technology assistance to the Nation's more than 18,000 police departments; 50 State correctional systems; thousands of prisons, jails, and parole and probation departments; and other public safety organizations.

With a network of regional centers and specialty offices located across the country, the NLECTC system delivers expertise in a number of technologies in partnership with a host organization. In addition, a number of technology working groups and a national advisory council provide guidance relating to the technology needs and operational requirements of the public safety community for each of NIJ's technology focus areas.

Contact NLECTC for:

Technology Identification

The NLECTC system provides information and assistance to help agencies determine the most appropriate and cost-effective technology to solve an administrative or operational problem. We deliver information relating to technology availability, performance, durability, reliability, safety, ease of use, customization capabilities, and interoperability.

Technology Assistance

Our staff serve as proxy scientists and engineers. Areas of assistance include unique evidence analysis (e.g., audio, video, computer, trace, and explosives), systems engineering, and communications and information systems support (e.g., interoperability, propagation studies, and vulnerability assessments).

Technology Implementation

We develop technology guides, best practices, and other information resources that are frequently leveraged from hands-on assistance projects and made available to other agencies.

Property Acquisition

We help departments take advantage of surplus property programs that make Federal excess and surplus property available to law enforcement and corrections personnel at little or no cost.

Equipment Testing

In cooperation with the Office of Law Enforcement Standards (OLES), we oversee the development of standards and a standards-based testing program in which equipment such as ballistic- and stab-resistant body armor, double-locking metallic handcuffs, and semiautomatic pistols is tested on a pass/fail basis. NLECTC also conducts comparative evaluations—testing equipment under field conditions—on patrol vehicles; patrol vehicle tires and replacement brake pads; and cut-, puncture-, and pathogen-resistant gloves. NLECTC also has evaluated emerging products to verify manufacturers' claims. The primary focus of OLES is the development of performance standards and testing methods to ensure that public safety equipment is safe, dependable, and effective.

Technology Demonstration

We introduce and demonstrate new and emerging technologies through such special events, conferences, and practical demonstrations as the Mock Prison Riot™ (technologies for corrections) and an annual public safety technology conference. On a limited basis, NLECTC facilitates deployment of new technologies to agencies for operational testing and evaluation.

Capacity Building

We provide hands-on demonstrations of the latest technologies to address such operational issues as crime and intelligence analysis, geographic information systems, explosives detection and disablement, inmate disturbances and riots, and computer crime investigation.

Technology Information

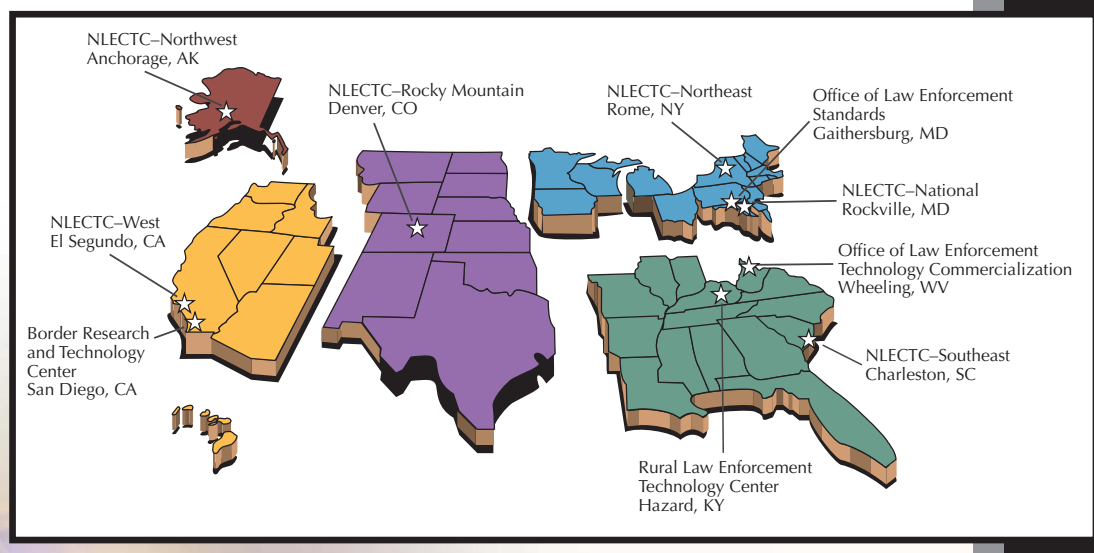
NLECTC disseminates information to the criminal justice community at no cost through educational bulletins, equipment performance reports, guides, consumer product lists, news summaries, meeting/conference reports, videotapes, and CD–ROMs. NLECTC also publishes *TechBeat*, an award-winning quarterly newsmagazine. Most publications are available in electronic form through the Justice Technology Information Network (JUSTNET) at *www.justnet.org*. Hard copies of all publications can be ordered through NLECTC's toll-free number, 800–248–2742, or via e-mail at asknlectc@nlectc.org.

Technology Commercialization

Our law enforcement and corrections professionals, product and commercialization managers, engineers, and technical and market research specialists work together to identify new technologies and product concepts. They then work with innovators and industry to develop, manufacture, and distribute these new, innovative products and technologies.

Technology Needs Assessment

Our national body of criminal justice professionals—the Law Enforcement and Corrections Technology Advisory Council (LECTAC)—ensures that we are focusing on the real world needs of public safety agencies.



Because most of the country's law enforcement and corrections services are provided at the local level, the NLECTC system is composed of five regional centers and is complemented by several specialty offices and a national center. Most centers and offices are colocated with or supported by federally funded technology partners so they can leverage unique science and engineering expertise.

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TECH shorts

Technology News Summary

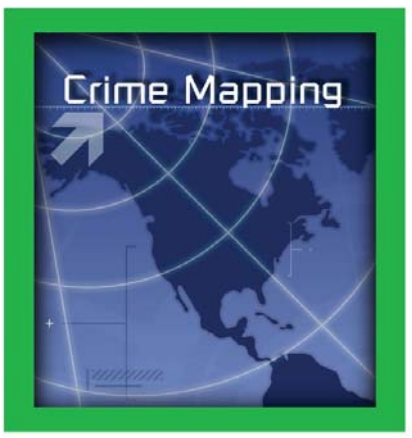
TECHshorts is a sampling of the technology projects, programs, and initiatives being conducted by the Office of Justice Programs' National Institute of Justice (NIJ) and the centers and specialty offices that constitute its National Law Enforcement and Corrections Technology Center (NLECTC) system. If you would like additional information concerning any of the following TECHshorts, please refer to the specific point-of-contact information that is included at the end of each entry.

In addition to TECHshorts, an online, weekly technology news summary containing articles relating to technology developments in public safety that have appeared in newspapers, newsmagazines, and trade and professional journals is available through the NLECTC system's website, JUSTNET, at *www.justnet.org.* This service, the *Law Enforcement and Corrections Technology News Summary,* also is available through an electronic e-mail list, *JUSTNETNews.* Each week, subscribers to *JUSTNETNews* receive the news summary directly via e-mail. To subscribe to *JUSTNETNews,* e-mail your request to asknlectc@nlectc.org or call 800–248–2742.

Note: The mentioning of specific manufacturers or products in TECHshorts does not constitute the endorsement of the U.S. Department of Justice, NIJ, or the NLECTC system.

No-Cost Crime Analysis Starter Kit

The Crime Mapping and Analysis Program (CMAP), located at the University of Denver, and NLECTC–Rocky Mountain recently released the Crime Analysis Unit Developer's Kit, a unique collection of documents, tools, and examples to assist in the design, creation, implementation, and expansion of any crime analysis unit. The kit contains several free software applications,



including geographic information systems programs, geographic profiling utilities, tactical crime analysis tools, link-charting programs, statistics programs, and OpenOffice.org.

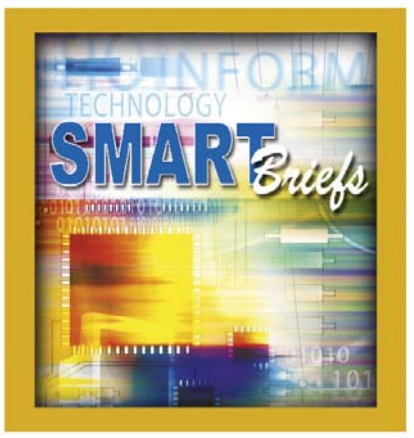
The kit also contains articles and publications on analytical processes, procedures, and methods from acknowledged experts in the field. It also includes numerous examples of crime bulletins, routine products, work analysis, flowcharts, timelines, job descriptions, mission statements, internship announcements, statistics, and other materials that can be used as templates or starting points. All software is provided free by CMAP and the developers for use by the Nation's law enforcement community.

"We're pleased that public safety will be able to immediately put these tools to work in their organization," says Dan Helms, GIS and crime analysis specialist. "The product addresses a vast majority of the requests that we receive from the community regarding starting or enhancing their crime analysis capabilities."

To download and install the kit, visit *www.crimeanalysts.net* and click on "CAU Developer Kit" under the Resources tab. For additional information, contact Dan Helms, 800–416–8086 or dhelms@du.edu.

Get More SMART

NIJ's Rural Law Enforcement T - nology Center i Hazard, Kentuc and Eastern Ke tucky Universit '



Justice and Safety Center have completed several more SMART (Small and Rural Technology) Briefs. Each brief is based on a short survey completed by a panel of small and rural chiefs and sheriffs from all 50 States. The following SMART Briefs are available online at *www.nlectc.org/ruletc/projects.html:*

- Digital Evidence.
- Less Than Lethal Technologies.
- Voice Communications and Interoperability.
- Vehicle Pursuits.
- Body Armor.

Upcoming SMART Brief topics include ballistic shields, surveillance technology, rifles/shotguns, and electronic communication with the public. Suggestions for future topics should be sent to the attention of Gary Cordner, gary.cordner@eku.edu.

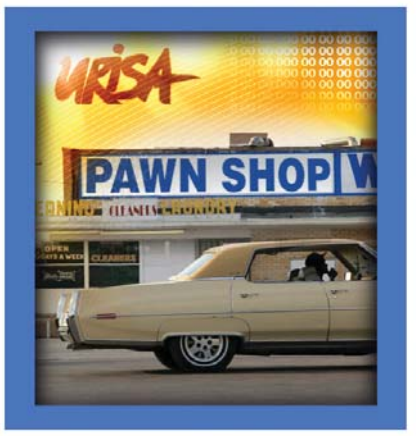
Taking Out a Loan

Last summer the Illinois Department of Central Management Services (*www.state.il.us/CMS/*) requested help from NLECTC–Southeast to create an equipment loan program. On July 12, 2006, the first undercover vehicle, equipped with removable surveillance equipment, was placed into service for counter-drug operations. In less than an hour, the Springfield Police Department made 3 arrests and recovered 11 grams of cocaine and 1.5 grams of marijuana. The department reported that the video recordings made with the video/audio/recordable DVR system will likely result in the suspects pleading their case out of court because the video clearly shows the transactions taking place. DVR technology is state-of-the-art for police undercover operations; it is the preferred file method for prosecution and will hold up in court.

The equipment loan program concept requires the State 1033 Program Coordinator's office to obtain and maintain, through the Federal Excess Property Program and other sources, a pool of equipment suitable for law enforcement purposes and to make that equipment available on loan to local law enforcement agencies as needed. Generally, this pool consists of equipment that small, local agencies cannot justify purchasing because of cost and/or irregular, sporadic need. The State's Central Management Services has another grant pending with the Illinois Criminal Justice Information Authority (*www.icjia.state.il.us/public/*) to expand the program. For more information about establishing an equipment loan program, contact NLECTC–Southeast, 800–292–4385 or nlectc-se@nlectc-se.org.

Pawn Praise, Indeed

The Washington, D.C., Regional Pawn Data Sharing System has received the 2006 Exemplary Systems in Government (ESIG) Award in the Enterprise Systems Category. The data sharing system was deemed exemplary by the 2006 ESIG Committee and was officially recognized by the Urban and Regional Information Systems Association (*www.urisa.org/*) this past September. Developed to serve the Washington metropolitan area, approximately 20 law enforcement agencies in Maryland, Virginia, and the District of Columbia are sharing pawn transaction data through this Web-enabled project, which was developed through a Community Oriented Policing Services' Technology Grant. The National Institute of Justice provided funding for support staff to oversee its design and development.



In addition to the routine documenting, tracking, and querying of pawn transactions, developers incorporated robust investigative features into the system. Among these features is the ability to automatically link individuals who live at the same address, share a common phone number, or who are otherwise associated. Another feature of the system alerts investigators via their cell phones or pagers when a person of interest conducts a pawn transaction or when a piece of property is pawned. Investigators can also set alerts based on accumulated dollar amounts or frequency of transactions within a set period of time. The system checks every serial number of pawned items against the National Crime Information Center (NCIC) (*www.fas.org/irp/agency/doj/fbi/is/ncic.htm*) database. The design is unique because it uses an extract of the NCIC stolen article files to conduct the query in-house rather than route a query of each serial number to NCIC. Using this method, investigators can rerun the serial numbers an unlimited number of times without affecting NLETS (*www.nlets.org/*) or NCIC. Because the system is Web based, investigators with the proper authentication can access the data from any computer with Internet access.

The Regional Pawn Data Sharing System was introduced in August 2004. Within the first 6 months of operation the system resulted in 1,320 arrests and the recovery of more than $4 million of stolen property. An independent evaluation of the system concluded that 450 cases that would have otherwise gone unsolved were closed because of the regional system. For more information, contact Robert Moseley, NLECTC–Northeast, 703–838–6360, ext. 1533, or Robert.Moseley@L-3com.com. Or contact Stephen Dickstein, Metropolitan Washington Council of Governments, 202–962–3261 or sdickstein@mwcog.org.

(30 Years, 3,000 Saves . . . cont. from page 7)

no potential for external moisture to contact Zylon yarns, there was no significant change in the tensile strength of these yarns. Therefore, it appears that external moisture is necessary to facilitate the degradation of Zylon fibers.

In addition to this work, NIJ is funding research on other ballistic materials to better understand how and why ballistic-resistant materials degrade over time.[9]

Improving the NIJ Standard and Compliance Testing Program

NIJ has undertaken a complete review of its performance standard for ballistic-resistant armor and the compliance testing program. It solicited input from law enforcement; corrections; fiber, fabric, and armor manufacturers; and standards and testing organizations.

NIJ's 2005 Interim Requirements for Bullet-Resistant Body Armor, issued in August 2005, take into account the possibility of ballistic performance degradation over time. These interim requirements will help ensure that officers are protected by body armor that maintains its ballistic performance during its entire warranty period.

Under the 2005 interim requirements, NIJ will not deem armor models containing PBO (the chemical basis of Zylon) to be compliant unless their manufacturers provide satisfactory evidence to NIJ that the models will maintain their ballistic performance over their declared warranty period.

NIJ recommends that agencies that purchase new ballistic-resistant body armor select body armor models that comply with the NIJ 2005 Interim Requirements. A list of models that comply with the requirements is maintained at *www.justnet.org/BatPro.*

NIJ is also encouraging manufacturers to adopt a quality-management system to ensure the consistent construction and performance of NIJ-compliant armor over its warranty period. In the future, NIJ will issue advisories regarding body armor materials that appear to create a risk of death or serious injury as a result of degraded ballistic performance. Any body armor model that contains any material listed in such an advisory will be deemed no longer compliant with the NIJ standard unless the manufacturer satisfies NIJ that the model will maintain ballistic performance over the declared warranty period. On August 24, 2005, NIJ identified poly-*p*-phenylene benzobisoxazole (commonly known as PBO or Zylon®) as a material that appears to create a risk of death or serious injury as a result of degraded ballistic performance when used in body armor.

Life Vests

There are at least 3,000 other stories like Seattle Police Officer Raymond T. Johnson's. That's 3,000 families spared the anguish of the death or debilitating injury to a loved one in the line of duty. And cases like that of Forest Hills Officer Limbacher's are rare—a testament to the reliability of soft body armor. Even so, that single failure prompted NIJ to review its body armor program and to conduct an intensive examination of why that failure occurred. Through this review and research, NIJ remains committed to working for the safety of law enforcement officers.

The evidence is clear: An officer not wearing armor is 14 times more likely to suffer a fatal injury than an officer who is. Therefore, the most important message for the law enforcement community is that officers should continue to wear their body armor.

At least 3,000 officers would second that advice.

***Status reports on the Attorney General's Body Armor Safety Initiative and other updates on the activities in support of the Initiative are posted on the Bulletproof Vest Partnership/Body Armor Safety Initiative Web site at* https://vests.ojp.gov.**

***This article was adapted from the July 2006 issue of the* NIJ Journal, *which features articles to help criminal justice policymakers and practitioners stay informed about new developments. To subscribe, visit* http://nij.ncjrs.gov/subscribe/reg.asp.**

Endnotes

1. The suspect was arrested 6 weeks later and charged with first-degree assault and attempted robbery. He was convicted and sentenced to 15 to 30 years.
2. Commercial body armor was being manufactured and sold even as NIJ's field test began, accelerating the need for a standards program. In fact, the first documented "save" unrelated to NIJ's field test occurred in May 1973 in Detroit, Michigan.
3. More information about NIJ's body armor standards and testing program can be found at NIJ's National Law Enforcement and Corrections Technology Center Web site, Justnet, at *http://www.justnet.org/testing/bodyarmor.html.*
4. The suspect was arrested later that night. In April 2004 he was convicted of 2 counts of attempted homicide, 11 counts of aggravated assault, and 9 counts of reckless endangerment related to the June 23 incident.
5. In 1987 DuPont and the International Association of Chiefs of Police created the IACP/DuPont™ Kevlar® Survivor's Club®, which recognizes law enforcement and corrections officers who survive life-threatening or disabling events because they were wearing personal protective body armor. In March 2006, the IACP recognized Atlanta Police Department Officer Corey B. Grogan as the 3,000th documented save. A Web site, *http://www.dupont.com/kevlar/lifeprotection/survivors.html,* keeps a tally of survivors, maintains a database of survivor stories, and provides criteria and instructions for membership.
6. A Web site supporting the Body Armor Safety Initiative is at *https://vests.ojp.gov/index.jsp.*
7. Zylon fiber is manufactured by Toyobo Co., Ltd. of Japan.
8. For a description of the protection levels, see NIJ's *Ballistic Resistance of Personal Body Armor, NIJ Standard-0101.04, http://www.ojp.usdoj.gov/nij/pubs-sum/183651.htm.*
9. The most recent NIJ solicitation for concept papers, "Officer Safety Equipment," is at *http://www.ncjrs.gov/pdffiles1/nij/sl000720.pdf.*

Innovative Technologies for Community Corrections Conference

The 8th Annual Innovative Technologies for Community Corrections Conference will spotlight the innovative use of technology in community corrections as well as technologies on the horizon. A vendor exposition where attendees can interact with technology providers will be available.

Tentative Topics:

- Drug and Alcohol Testing
- Electronic Supervision
- Info Tech Applications
- Management Issues
- Monitoring the Sex Offender

JUNE 4–6, 2007
Adam's Mark Hotel
St. Louis, Missouri

REGISTRATION FEE:
Through April 30 – $150
On or after May 1 – $175

For more information, visit the conference website at *www.nlectc.org/training/commcorr.html.* Questions can be directed to Joe Russo, 800–416–8086, ext.15, or jrusso@du.edu.

Hosted by the National Law Enforcement and Corrections Technology Center–Rocky Mountain, a program of the Office of Justice Programs National Institute of Justice.

National Criminal Justice Reference Service

In addition to funding the National Law Enforcement and Corrections Technology Center, the National Institute of Justice (NIJ) and other Federal agencies support the National Criminal Justice Reference Service (NCJRS), assisting a global community of policymakers, practitioners, researchers, and the general public with justice-related research, policies, and programs.

NCJRS offers reference and referral services, publications, onsite and offsite conference support, and other technical assistance. The easiest way to access NCJRS is online.

Start at http://www.ncjrs.gov. The NCJRS website showcases the latest criminal and juvenile justice and drug policy information. Take advantage of:

- Topic-specific resources.
- Online registration and ordering.
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Stay informed. Register at *http://www.ncjrs.gov/subreg.html* to receive:

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The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, Bureau of Justice Statistics, Office of Juvenile Justice and Delinquency Prevention, and Office for Victims of Crime.

Fishing for Technology

TechBeat *is the award-winning newsmagazine of the National Law Enforcement and Corrections Technology Center (NLECTC) system.* TechBeat's *latest award is the APEX 2006 Award of Excellence–Newsletters–Print. Our goal is to keep you up to date with current and developing technologies for the public safety community, as well as other research and development efforts within the Federal Government and private industry.* TechBeat *is published four times a year.*

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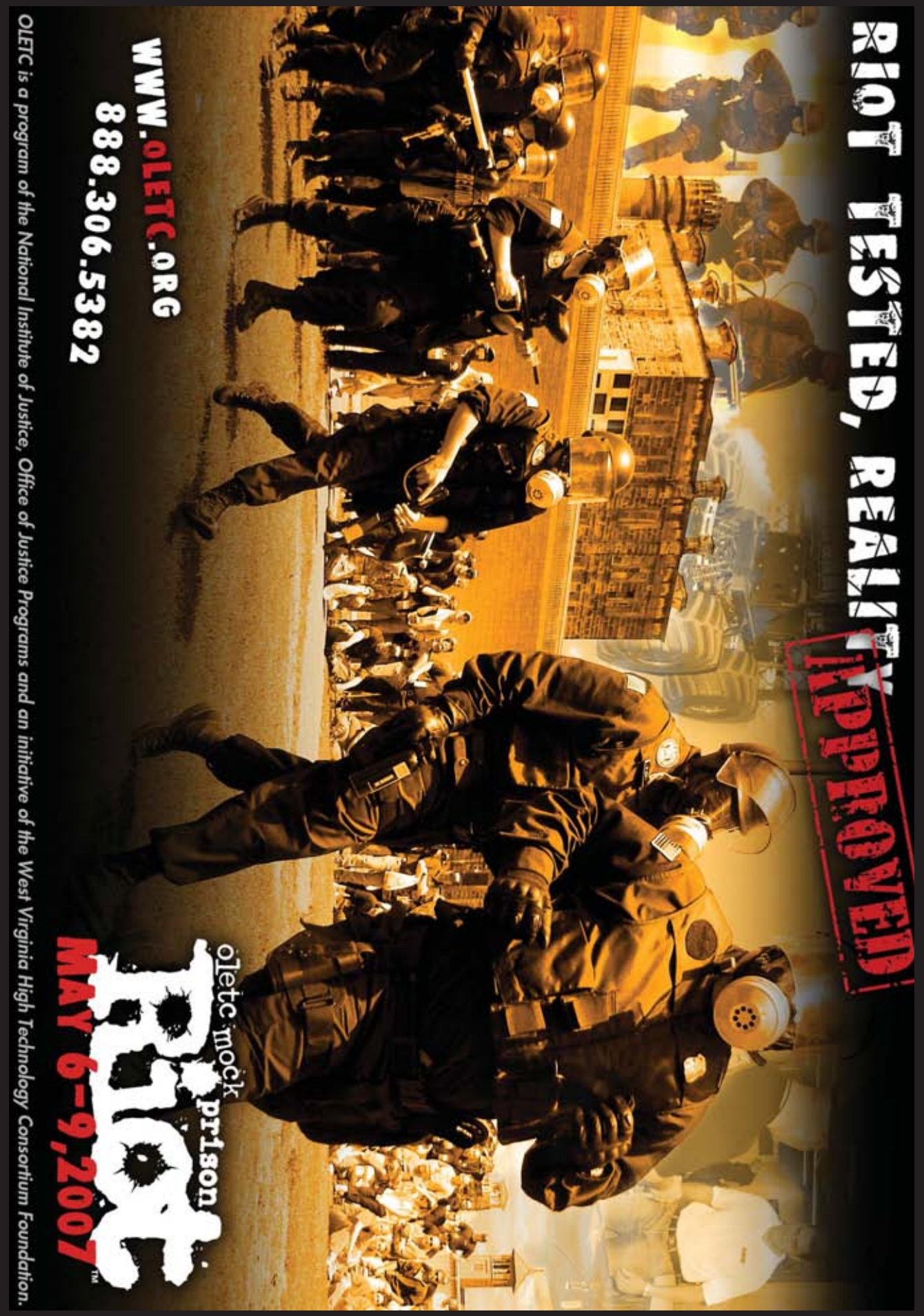
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