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Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget.	Defense Technology for Law Enforcement By the Rome Laboratory Law	The Rome Laboratory, which has spent 40 years developing technologies for the U.S. military, is now applying its expertise to law enforcement as well
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Above and Beyond the Call of Duty Preventing Off-duty Officer Deaths By EDWARD F. DAVIS, M.A. and

ANTHONY J. PINIZZOTTO, Ph.D.



ne night, an off-duty police officer visited a local bar and grill. While seated at the bar, he observed two men approach the bartender. With guns drawn, the subjects demanded cash from the register. At this point, the off-duty officer drew his service revolver, shouting "Police!" as he did so.

While the officer may have thought he had the situation under control, he was shot and killed by a third subject whom he apparently had not identified as part of the robbery team. The shooter had entered the bar and stood apart from the two other robbers to cover the escape route. All three subjects did escape, but later were identified, arrested, tried, and convicted.

As this case illustrates, for the men and women performing law enforcement duties in the United States, personal safety is more than a routine concern. Statistics support this conclusion. The 1993 edition of the FBI's annual publication, *Law Enforcement Officers Killed and Assaulted* (LEOKA),¹ indicated that in 1992, 70 city, county, and state officers were feloniously killed in the line of duty, and 66,975 officers were assaulted while performing law enforcement functions both on and off duty.

Indeed, few criminals work a 9to-5, 8-hour shift. Even when law enforcement officers are "off the clock," they still may face dangerous confrontations with armed subjects. In fact, law enforcement officers often lose their lives attempting to enforce the law while off duty.

How frequently do killings of off-duty law enforcement officers occur? According to LEOKA, from 1975 to 1985, 130 off-duty officers were feloniously killed. The period from 1991 to 1993 saw 35 officers feloniously killed while off duty.



Behavioral Science Unit at the FBI Academy.

The largest number of deaths in this 3-year period (15) occurred when officers intervened in robberies. The other 20 off-duty officers died under the following circumstances: 8 in ambush, 4 while investigating suspicious persons/circumstances, 3 during other arrest situations, 2 while handling disturbance calls, 2 while initiating traffic pursuits/stops, and 1 during a burglary in progress.

To delve deeper into the nature of police officer killings, the FBI's Criminal Justice Information Services (CJIS) Division conducted a study into 51 cases in which 50 offenders killed 54 law enforcement officers.² Of the 54 victims, 2 were off duty when they were involved in law enforcement actions that resulted in their deaths.

This article reviews the two cases from the CJIS study and then examines several more recent incidents where off-duty officers have lost their lives while enforcing the law. Finally, it offers advice for law enforcement agencies on how to prevent these tragedies from occurring.

Interviews with Cop Killers

The CJIS study included interviews of the perpetrators who killed the two off-duty officers.3 Although as a general rule, investigators question the truthfulness of such offenders, their accounts of the actual shootings are, for the most part, consistent with both the forensic evidence and investigative reports from each incident. For this reason, their comments may provide insight into their actions and help formulate a law enforcement response to such incidents.

In the case outlined in the opening scenario of this article, the killer told investigators that he had entered the bar before his partners to avoid being seen with them. The plan called for him to walk away during the confusion, after the other two had made their escape. Although they had anticipated resistance from the restaurant management, they had not expected the presence of an off-duty officer. The assailant stated that he did not hear the officer shout "Police," but admitted that it would

not have made a difference. He had entered the bar prepared to shoot, and when he observed a man with a gun, he shot him.

The killer also advised that even if the officer had waited for his partners to get the money and start to leave before making an effort to arrest them, he still would have shot him. The shooter believed that the only thing the officer could have done to avoid physical injury would have been to remain seated, observe, and not take action. In fact, he said, the trio had no intentions of robbing the customers of the restaurant.

In the second case, an officer became the victim of a carjacking. Off duty and out of uniform, the officer was driving to a shopping center with his wife when they were stopped by four men. The men opened the car doors and physically removed the couple. One subject had a revolver pointed at the officer. The officer identified himself as a police officer and drew his service revolver. Although he was shot immediately and subsequently died, the officer did manage to shoot one of the carjackers.

When interviewed, the officer's killer stated that he and his cohorts would not have harmed the officer and his wife if they had not resisted. In the shooter's opinion, the officer never should have drawn his weapon against four subjects, one of whom was armed. Instead, he said, the officer should have waited for the subjects to leave the scene, then phoned in a description of them and the stolen vehicle.

Unfortunately, the officers involved in these tragic incidents are not alive to tell their side of the story. One thing is certain, however. At the

time of their deaths, their departments did not have established procedures for how officers should perform police functions while off duty—procedures that might have saved their lives. Both departments did, however, require that their officers be armed while off duty.

Unarmed, Off-duty Confrontations

The question of whether officers should be armed while off duty has been the subject of considerable debate. While such policies are left to the discretion of individual agencies, the fact remains: Unarmed, offduty officers still take law enforcement action and sometimes get killed.

One such case occurred in 1994 and involved a recent graduate from the police academy. Although he was off duty, not in uniform, and unarmed when he witnessed an armed robbery at a grocery store, he pursued the offender, confronting him in the store parking lot. The officer attempted to arrest the robber, was shot once in the chest, and died shortly thereafter. The killer fled the parking lot on foot and escaped, but subsequently was arrested and charged with robbery and murder.

In another 1994 case, the victim, an 11-year police veteran, was off duty and shopping in a grocery store with his wife when he observed a robbery in progress. Though unarmed, he attempted to disarm and physically restrain the robber. A violent struggle ensued, during which both the officer and the robber crashed through a store window. The robber then fired one round from a sawed-off shotgun, striking the officer in the chest, killing him. The robber escaped, but later was captured, arrested, and charged with murder.

In these cases, the two officers' experience levels ranged from almost none to 11 years. Yet, both officers chose to intercede in an armed robbery while off duty and unarmed. Although neither victim's department required officers to remain armed while off duty, each department had a different policy regarding off-duty confrontations.

Another important area of consideration is how off-duty officers should react if they become victims of a crime.

One department trained and encouraged officers to be good eyewitnesses while off duty, but warned against taking police action if doing so would place them or the public at risk. The other department's orders stated that if off-duty officers observed violations of the law in their jurisdictions, they should take "proper" police action. However, this order did not indicate what proper police action might be in any given set of circumstances.

Ambushed at Home While Off Duty

As is the case for an increasing number of citizens, home is not always a safe haven for off-duty police officers. Since 1994, two off-duty officers have been feloniously killed at their residences. In 1994, an officer with 7 years of law enforcement experience was in his home when someone outside called for him to come out. When he did, he was shot 14 times with two handguns and a shotgun. The four subjects being sought for the slaying remain at large.

In a 1995 case, an off-duty, 12year veteran detective answered a knock on the door of his residence. Upon opening the door, he was shot and killed by one of three men. When arrested, the three men revealed that they had been contracted to kill the detective in order to prevent him from testifying in a pending court case.

Both of these cases beg the question: How did the killers learn where the officers lived? While the answer remains under investigation, clearly, departments need to protect the home addresses of their officers.⁴

On-duty Officers Killing Off-duty Officers: Cases of Mistaken Identity

If there could be a degree of tragedy added to the death of an offduty officer, it is when one officer is killed mistakenly by another. For various reasons, not all of these accidental deaths have been reported to the FBI's Uniform Crime Reporting Program. According to available statistics, from 1990 until 1993, 11 on- and off-duty officers were shot and killed by other officers.

In a 1995 case, an off-duty officer in a large eastern city was in the company of his girlfriend and her two young children when he observed two armed men attempting to rob a taxi driver. The officer decided to take police action. He drew his service weapon and approached the robbers. He identified himself as a police officer, and the three faced one another with guns drawn.

An on-duty, uniformed patrol officer observed these individuals, all with guns drawn, standing around the cab. The onduty officer approached with his gun drawn and demanded that the three individuals drop their weapons. The two robbers immediately obeyed the order, but the off-duty officer did not and, instead, turned toward the onduty officer. Fearing for his life, the on-duty officer fired, killing the off-duty officer.

The robbers fled, but subsequently were arrested. The onduty officer has been on medical

leave since the incident. Both officers had worked in the same police district for 3 years, but due to the size of their district and their different work schedules, they never knew each other.

Another case of mistaken identity, which involved officers from different departments, started when one department received a telephone report of a residential burglary. The caller stated his name and address and reported that he had observed several young men force open the rear window of a neighbor's home and enter the residence. Although the caller could not give the address, he stated that he would show the responding officers the house.

The dispatcher broadcast the burglary call, and an officer volunteered to respond. At the scene, the officer contacted the complainant, who showed him the house that the young men had entered. The complainant advised the officer that he did not know who owned or lived in the house. Nor did he know whether the burglars were still on the premises.



The officer left the complainant and parked his patrol car about 300 yards from the house. He walked to the rear of the building and discovered an open window. After calling for backup and a K-9 patrol unit, he continued to check the rear of the home. While standing beside an open window, he saw a person's shadow. He then observed what seemed to be the shadow of a gun in the person's hand. A man appeared in the window and started to point the gun in the officer's direction. The officer fired one round, striking the subject and knocking him to the floor. The officer sought cover and notified the police dispatcher of the shooting and that the gunman remained in the house.

Numerous officers responded and surrounded the house, convinced that a barricade situation had developed. After learning that the house was owned and occupied by a police officer from a neighboring jurisdiction, the police entered the house and found the owner dead on the floor, shot once by the first re-

sponding officer.

The victim had been at work when contacted and advised that burglars had broken into his home. Going off duty, he drove home to investigate, but did not notify the local police department. A heavy overcoat concealed his police uniform.

Several years later, FBI investigators⁵ interviewed the officer who had fired the fatal round. He related that on the night of the incident, he had been assigned as an "overlap," or extra, officer and had been

scheduled to take leave during the second half of his shift. Hearing the call for a burglary, he volunteered, thinking that after he had responded to the call and completed the paperwork, his shift would be over. He stated that even though he had called for backup at the scene, he thought the house was empty. Then, he had seen a person's shadow in the window. He had hoped that the person inside would back away from the window, to allow him to seek cover. But when the individual appeared to point the gun toward him, he fired one round and retreated.

While investigating the incident, the officer's department relieved him of his official police powers. After a very lengthy judicial process, he returned to duty. However, 7 years later, his department still refuses to return him to patrol; he remains on administrative duty.

Law Enforcement's Response

In response to both on- and offduty deaths, law enforcement agencies throughout the country have developed safety training programs to help officers survive potentially deadly encounters with armed offenders. Still, the number of assaults and killings has not been reduced significantly, and in some areas, has increased.

Off-duty homicides can be particularly devastating, especially if the incident could have been avoided. Each agency should have a well-defined policy that clearly explains what, if any, law enforcement functions off-duty officers must perform. Such a policy should not conflict with other departmental edicts. For example, if an agency requires its officers to be "on-duty" 24 hours a day, then a rule that forbids offduty officers to carry weapons would be contradictory and unadvisable.

Regardless of whether departments expect officers to carry firearms while off duty, they should make all employees aware of the policy. Additionally, off-duty officers who remain armed should be required to qualify with the off-duty weapon if it is a personally owned rather than the department-issued service weapon.

The departmental policy also should address how off-duty officers should act when observing an offense on their assigned beats, as well as in other jurisdictions. Another important area of consideration is how off-duty officers should react if they become victims of a crime. In addition to establishing a policy for officers, the department should strongly encourage officers to develop a plan of action for their families, clearly covering what each family member should say or do if the family becomes drawn into a crime in progress.

For example, each family member old enough to use the telephone should know how to contact the emergency police dispatcher and relay the appropriate information. In some cases, simply reporting the fact that one or both parents are offduty officers, the name of their agency, and the fact that they have a problem may save a life.

Each agency should have a well-defined policy that clearly explains what, if any, law enforcement functions off-duty officers must perform.

Whether crime victims or witnesses, armed, off-duty officers run the risk of being confronted by onduty officers. Agencies should develop and articulate a procedure for off-duty officers to follow during such circumstances, stressing that armed, off-duty officers *never* should turn toward armed, on-duty officers.

Finally, the department should ensure that the personal information of all departmental employees remains confidential. No one should have access to personal information, such as a home address, without the employee's permission.

Conclusion

Law enforcement officers frequently are killed in the line of duty. While off-duty officers are murdered less frequently, these incidents can be even more disconcerting to a department unprepared to deal with them. In fact, many off-duty homicides may be avoided if departments prepare officers in advance to handle confrontations with armed offenders.

Every department should institute a policy that outlines whether off-duty officers should carry weapons, what they should do if they witness a crime or become victims of crime, and how to handle encounters with on-duty law enforcement officers. Off-duty officers who confront dangerous criminals show a dedication to duty that few employees possess. They should not have to die for it. \blacklozenge

Endnotes

¹U.S. Department of Justice, *Law Enforcement Officers Killed and Assaulted* (Washington, DC: U.S. Department of Justice, 1993).

²U.S. Department of Justice, *Killed in the Line of Duty: A Study of Selected Felonious Killings of Law Enforcement Officers* (Washington, DC: U.S. Department of Justice, 1992).

³The authors conducted these interviews while serving in the CJIS Division.

⁴In some states, members of the public can obtain the addresses of law enforcement employees through avenues such as voter registration lists and courthouse precinct records. Exceptions for law enforcement, which mandate including a post office box in lieu of an actual street address, can be made only through appropriate legislation.

⁵The authors conducted this interview.

Case Study

Stopping a Serial Sniper By John J. McElhone



S uffolk County, New York, located on Long Island, 18-miles east of New York City, has a population of 1.3 million residents, who live in both suburban and rural areas. During the summer of 1994, the Suffolk County Police Department, with 2,663 sworn members, faced a series of sniper attacks that prompted a highly concentrated response from the department.

n the evening of July 22, 1994, a man and his wife were eating dinner at a windowside table in a Commack, New York, roadside restaurant. Suddenly, a bullet ripped through the window, striking the man and killing him instantly.

Three days later, at a self-serve gas station less than one-half mile away from the restaurant, located on the same well-traveled highway and at approximately the same time of evening, the station's attendant was fired upon as he stood behind the cash register in the pay booth. Fortunately, the attendant was protected from injury by bulletproof glass.

Investigating detectives from the Suffolk County Police Department believed one person was responsible for both shootings. The local news media quickly dubbed the unknown assailant the "Suffolk Sniper." Citizens throughout the county understandably became frightened at the prospect of a roving sniper shooting victims at random.

In response, Suffolk County police implemented a comprehensive strategy to prevent future incidents, to provide a sense of security and protection to a terrified public, and to develop intelligence through increased police activity. The ultimate goal, of course, was to identify and arrest the offender.

On the evening of August 3rd, a third shooting incident reinforced the need for a concentrated police response. At a fast food restaurant 8 miles from the earlier incidents, a worker was shot while cleaning tables. A single round fired through the front window of the restaurant struck the employee, causing serious injury. Investigators immediately linked the case to the two previous shootings.

THE DEPARTMENT'S RESPONSE

Because of the heinous nature of the crimes committed and the public fear they created, the Suffolk County Police Department mobilized all of its resources. Each of the department's divisions developed individual strategies that contributed to the agency's overall response.

Patrol Division

Because each of the shooting incidents occurred in or adjacent to the police department's 4th precinct, the Patrol Division initiated saturation patrol throughout the 4th and surrounding precincts. A captain in the Community Response Unit managed the special patrol. This tactical unit normally augments regular precinct coverage in problem areas during evening shifts. During this crisis, the Community Response Unit, as well as contingents of officers from each precinct, the K-9 and aviation units, the Marine Bureau, Emergency Services, and the Highway Patrol, was assigned exclusively to the special patrol. At the beginning of each shift, officers in the special patrol met for a briefing and were given a radio call sign before reporting to their assigned zones. Based on a psychological profile of the offender, supervisors directed officers to pay particular attention to vehicles containing lone, white males. Administrators also encouraged officers to file field interrogation reports and conduct traffic stops. Traffic tickets

subsequently were collected and reviewed by investigators at the end of each shift for possible leads.

In addition to the increased patrol activity on the ground, a police helicopter patrolled the skies over the 4th precinct every evening from 9 to 11, the time period during which each of the sniper attacks had occurred. However, the helicopter was available at other times when needs dictated its use.

Administrators hoped that the visible saturation patrol would deter additional incidents, reassure a frightened public, and eventually lead to

the assailant's apprehension. The increased patrol activity also would allow for a massive police response if a new shooting incident were to occur.

Detective Division

On two occasions, detectives from the division's Homicide Squad canvassed the neighborhoods surrounding the first two shootings. The detectives visited 1,100 homes and conducted 1,600 interviews. With the assistance of patrol officers, detectives also established several investigative roadblocks and conducted interviews with thousands of motorists.

Shortly after the second sniper incident, Homicide Squad detectives began gathering information from licensed firearms dealers, state hunting license applications, parolee files, and the records of recently discharged patients from state mental hospitals. Detectives also gathered data generated from the increased patrol and investigative activity. To manage the massive amount of information, personnel in the Detective Division, with assistance from technicians in the department's Data Services Section, designed a lead-tracking system using question-and-answer format software. They also developed a multipart lead sheet for data entry. The form listed names, addresses, phone numbers, vehicle descriptions, lead sources, and the actions leading to the

entry of the information. The database system was designed to search the existing police database and signal when any information matched a prior entry. Data entry clerks then notified detectives of any matches.

This signalling feature ensured that repeated entries were highlighted for closer scrutiny. For example, a person interviewed during a neighborhood canvass, who was also on parole and carried a hunting license, would be automatically highlighted for further attention. The vast amount of information collected added to the importance of this matching

feature. At the conclusion of the investigation, the database contained approximately 200,000 entries.

In addition, to learn more about the unknown subject, the homicide detectives consulted with two nationally recognized criminal profilers. These experts provided information on a likely profile of the shooter and later offered suggestions on interrogation techniques.

Support Services

The police department's Public Information Bureau, working closely with the Detective Division and the police commissioner, managed the daily media inquiries related to the serial sniper case. To handle the deluge of media requests in the early days of the investigation, the Public Information Bureau conducted daily press briefings.

A newly launched Crimestoppers Program became instrumental in eliciting information from the public.

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...Suffolk County police implemented a comprehensive strategy to prevent future incidents, to provide a sense of security and protection to a terrified public, and to develop intelligence through increased police activity.

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The program made reward money available and offered anonymity to anyone contributing information about the sniper attacks.

THE INVESTIGATION

Ballistic evidence from the murder at the roadside restaurant and the attempted murder at the fast food restaurant indicated that the same .35-caliber weapon

was used to fire each of these rounds. Unfortunately, this evidence represented the only concrete lead in a growing sea of possibilities.

Detectives from the Homicide Squad closely monitored other crimes occurring in and around the 4th police precinct, as well as events such as hostage takings, the commitment of emotionally disturbed persons to mental hospitals, and cases involving the recovery or theft of firearms. This information was added to the expanding pool of information and further widened the field of possible suspects.

With several hundred names in the database requiring further investigation, detectives began to prioritize the leads.

Developing a Suspect

One of the top leads was the name of a young man who had been identified by various department sources and offered by a parole officer. The subject had a significant criminal history and an apparent penchant for firearms. His residence sat in the middle of the area where the three shooting incidents occurred, and he currently worked for an auto parts supply store making deliveries throughout the target area.

Through surveillance, detectives determined that the subject frequented a local bar, thus violating his parole. At the request of detectives, the subject's parole officer issued a warrant, and on August 25, 1994, detectives arrested the young man. At the time of his arrest, the subject carried a stolen, loaded 9mm handgun in his waistband. During questioning, he denied any involvement in the sniper attacks.

Shortly after arraignment, the subject pled guilty to charges of weapon possession and parole violation. He agreed to a sentence of 2 to 4 years.

When homicide detectives interviewed the subject's employer and co-workers, they described him



as a quiet gun enthusiast. Shortly after the subject's arrest, his employer recontacted the detectives and turned over a .410-gauge shotgun that co-workers had found in the delivery truck that he drove.

Following Leads

A short time after the subject was sentenced for his firearms and parole violations, detectives still investigating the sniper attacks followed up on the report of a man who had been confined briefly to a mental hospital after threatening to commit suicide with a rifle. The man told detectives

that he had bought the .356-caliber rifle from a friend. This friend turned out to be the subject who had been recently arraigned and sentenced.

A search of records through the Bureau of Alcohol, Tobacco and Firearms revealed that the rifle had been one of three firearms stolen from a local sporting goods store 2 months earlier. One of the other stolen weapons, a .410-gauge shotgun, was the weapon recovered by the subject's employer. The third firearm, a used, .35-caliber rifle, remained missing.

After conducting forensic tests, the Suffolk County Crime Laboratory determined that rounds from a weapon such as the missing .35-caliber rifle were consistent with the bullets recovered from the crime scenes. Detectives located the previous owner of the missing rifle. The man informed the detectives that he remembered firing the weapon into a tree while deer hunting in upstate New York the previous year. He agreed to accompany detectives to the area in an effort to locate the tree.

On October 19, 1994, the man led detectives and a group of volunteers to a remote mountain in Turnwood, New York. After a brief search, they located the tree that the man had fired into the year before. Detectives cut the tree down and sent a large section to the crime laboratory. Laboratory technicians were able to remove the bullets from the tree and match them definitively to the rounds recovered from

the two victims. Detectives now could link a specific weapon to the sniper incidents. More important, they could place constructive possession of this weapon to the suspect, who had stolen the rifle and two other firearms a month before the first sniper attack.

Meanwhile, followup of other leads revealed that the subject had apparently admitted to an exotic dancer that he was the Suffolk Sniper. When questioned by detectives, however, the dancer downplayed this admission.

At this point, detectives learned that the subject also

was a suspect in a rape case involving a 15-year-old girl that had occurred the night before the third sniper attack. Upon his arrest on August 25th for the firearms and parole violations, the subject had provided hair and blood samples voluntarily. A saliva stain recovered at the rape scene proved consistent with genetic markers in the subject's blood. The evidence was sent for further DNA testing.

Interviewing the Suspect

On November 24, 1994, homicide detectives interviewed the subject at a correctional facility in Fishkill, New York. When confronted with the evidence and information developed by the detectives, the subject admitted to the 3 shootings and to the rape of the 15-year-old girl. Acting on information volunteered by the suspect, detectives later found the .35-caliber rifle used in the sniper attacks hidden above the ceiling tiles in the den of his mother's house. Tests conducted by the crime laboratory verified that the rifle had been used in the fatal shooting of July 22nd and the attempted murder of August 3rd.

CONCLUSION

On August 12, 1995, the suspect pled guilty to one count of murder, two counts of attempted murder, and one count of burglary. He received a sentence of 35



years to life in prison. The suspect's conviction and sentencing closed a frightening chapter for the citizens of Suffolk County and marked a successful conclusion to one of the most ambitious investigations ever undertaken in the county.

The serial sniper case presented law enforcement with several unique challenges. Because the assailant and victims did not come into contact during the attacks, little physical evidence was left at the crime scenes. The crimes also defied many of the accepted precepts of criminal

behavior—the offender evidently did not know the victims, no economic incentive was apparent, and the crimes did not appear to be drug- or gang-related. Hence, detectives had very few clues to help them identify possible suspects.

By mobilizing resources, the Suffolk County Police Department was able to identify and apprehend the assailant shortly after his spree of terror began. The rapid, decisive, and highly visible response of the police department not only prevented further attacks but also restored a sense of safety to a frightened public.

Deputy Chief McElhone commands the Detective Division of the Suffolk County Police Department in Yaphank, New York.



n the wake of the Cold War, America's attention has shifted from military threats abroad to threats posed by criminals at home. As violence proliferates on city streets and in rural towns, society is seeking better ways to stop it. Adding more police officers to department rosters and implementing numerous social and economic programs constitute some of the current methods of addressing the crime problem.

The Government Technology Transfer Program¹ has made another promising approach available to law enforcement. This initiative enables Department of Defense and commercial organizations to work together to assist law enforcement through the application of defenserelated technology.

As part of this initiative, the National Institute of Justice (NIJ) operates the National Law Enforcement and Corrections Technology Center (NLECTC),² as well as four regional technology centers across the country. These regional centers use existing facilities and resources to provide specialty support to NIJ's Office of Science and Technology and to the law enforcement and corrections field. Each center has a specific technological focus.

Rome Laboratory hosts the Northeast Regional Center. For more than 40 years, Rome Laboratory has developed the technologies that have provided the vital eyes, ears, and voices for the American military. This article describes some of the defense technologies being converted for law enforcement uses by this regional center.

PARALLEL OPERATIONAL STRATEGIES

Law enforcement and defense missions share similar concerns

and strategies. A key concept in the defense community is command, control, communications, and intelligence, known collectively as C3I. C3I includes a broad range of techniques and technologies that increase the effectiveness of a deployed force. It enables troops to perform operations more rapidly and safely and allows actions to be contained within a desired area or to a specific group of combatants.

Command and control, the first two components of C3I, address resource allocation and general mission planning—aspects shared by most law enforcement operations. As forces execute the plan, commanders monitor progress and issue corrective orders to deal with the changing scenario.

The intelligence aspect of C3I refers to covertly acquiring, cataloging, and using relevant information about the enemy or its environment. In a military scenario, intelligence could include maps, pictures, or the results of interviews. For law enforcement, it also could encompass street maps, train station locations, pictures of known suspects, fingerprint files, or any other information that might provide a clue or help to determine an optimum course of action.

Closely related to intelligence is surveillance, which the military most often uses to identify both hostile and friendly forces. A radar or multispectral device used to detect an airborne threat would be one type of surveillance sensor. Law enforcement applications could include video cameras for street surveillance and multifrequency sensors for contraband detection. The final element of C3I is communications, the infrastructure that ties everything together. Anything related to the exchange of information falls into this category, such as computer links, printed text, voice transmissions, photographs, and other imagery, to name a few.

The parallels between the military C3I concept and a similar law enforcement C3I concept easily can be recognized. Law enforcement applications include, for example, riot control, mission planning, timely

> Law enforcement and defense missions share similar concerns and strategies.

decisionmaking, covert surveillance, and illegal drug interdiction. As more and more law enforcement agencies with adjacent or overlapping jurisdictions join forces to combat crime, C3I technologies will become particularly useful for coordinating activities and making the most effective use of resources.

COMMAND AND CONTROL

A good plan can make all the difference in whether an operation succeeds or fails. Similarly, having the pertinent facts about a situation and its participants affects the decisionmaking process. Law enforcement commanders can take advantage of this to ensure that they have access to the information they need to control their operations effectively.

Planning Complex Operations

Many law enforcement operations, such as installing listening devices pursuant to a court order or responding to a widespread civil disturbance, require coordination among commanders at multiple locations or even in other governmental agencies. A distributed collaborative planning (DCP) process can make strategic deployment and crisis management tasks easier.

In the DCP process, "distributed" means that it links commanders at multiple locations and enables them to share data, software decision models, and other information on a real-time basis. "Collaborative" indicates that planners communicate with each other via digital video teleconferences and shared computer "desktops" and databases, passing textual, verbal, and pictorial information to one another instantly.

Having a DCP capability allows police commanders to coordinate activities and responsibilities among agencies and response teams and to distribute imagery, including surveillance and suspect photographs, and other information as the situation unfolds. For example, headquarters personnel, en route response cars, helicopters, and other field units responding to a civil disturbance could share up-to-date, as well as archived, information drawn from diverse locations, both prior to and during operations. Each unit in the operation could provide realtime situation reports and work through problems as they developed.

Sharing Information About Offenders

The inability to access critical information about offenders quickly and accurately represents a significant hindrance to law enforcement today. Traditionally, law enforcement agencies have developed information systems peculiar to their unique needs, making multimedia information sharing among agencies nearly impossible. Joint automated booking stations (JABS), originally a DEA-Rome Laboratory pilot project in the Miami area, help overcome this obstacle by enabling the five Federal law enforcement agencies in the region³ to share information more effectively.

JABS combines multimedia information systems, image- and text-oriented databases, image exploitation (enhancing images for identification, detection, and dissemination), and multisource fusion (combining information from many sources). Using computer workstations installed in each agency, agents can share unified text, photograph, and fingerprint information through a centralized database. Each workstation consists of an IBM-compatible computer, a digital video camera, a live-scan fingerprint system, and both black-and-white and color printers. A system administrator manages the centralized database and provides round-theclock, on-call assistance to the agencies should any problem arise.

The shared data encompass prisoner case information, biographical statistics, voice prints, and images, such as facial photographs, fingerprints, and pictures of evidence. Eventually, advanced signal

and image exploitation capabilities will enhance the system's ability to identify subjects using speaker identification, facial recognition, and fingerprint matching. This electronic booking process will replace the former paper method of booking arrests, although a printout of arrest information can be made. System designers project that JABS will reduce the time it takes to process prisoners by 75 percent, significantly cut the number of fingerprint cards rejected by the FBI, improve the quality of prisoner photographs, and make it easier to access information.

> ...JABS will reduce the time it takes to process prisoners by 75 percent....

INTELLIGENCE

Intelligence on suspects, victims, and crime trends constitutes a critical law enforcement resource. A number of technological capabilities can make it easier to obtain and analyze intelligence information.

Speech-Related Capabilities

Many aspects of intelligence gathering revolve around monitoring conversations or coordinating complex operations using voice links among operatives. The needs for high sound quality and the capability to identify and understand speakers have led to the development of several speech-related capabilities.

Enhancing Voice Transmissions

Noise and other types of interference often make it difficult to understand what people say during phone, radio, or other voice transmissions. Speech enhancement technology, currently used in military operations to clean up noisy radio communications, reduces noise and interference and enables users to recover conversations that would otherwise be unintelligible. In airborne operations, the equipment is on a 6" x 9" printed circuit card; it also comes in a 19" rack-mountable box or as a software package for operation on a personal computer with a co-processor.

Speech enhancement technology offers several benefits. It works in real time with only a 200 millisecond processing delay. It reduces interference caused by a variety of equipment, atmospheric conditions, and other sources, including receivers, wire and radio links, tape recorders, automobile ignitions, and power-line hums. It has been used to recover conversations lost due to low-level recordings, malfunctioning equipment, environmental noise, and ground loop connections. Voice transmissions can be recovered using this enhancement process regardless of the language or dialect being spoken or the person talking.

Identifying Speakers

Automatic speaker identification technology determines the identity of the speaker in a live or taped conversation. Speakers can be identified with as little as 4 seconds of their speech used to characterize the voice for comparison. Identification does not depend on the language or dialect the person uses or which words are spoken. Identification decisions can be made using as little as one word (approximately one-third of a second).

Currently only available in a laboratory setting, the military uses this technology to identify speakers on a military communication network where the communications have been recorded. A field version will be available in 1996. Law enforcement agencies could use automated speaker identification technology in a number of ways, such as tracking individuals using wire or cellular phones, recording and identifying suspects in wire-tapping and other monitoring operations, and using voiceprints for police sorting and booking operations.

Translating Spoken Conversations

Machine voice translation equipment takes in spoken voice in one language and translates it to another language. It provides the results in printed text or in audible spoken language form. As with automated speaker identification, the system does not depend on the speaker.

Three components operate the translation system—a commercial word recognizer, a personal computer that acts as a translator and system manager, and a voice synthesizer. Currently, it translates only Spanish and English in limited applications, but researchers are developing several other language translations.



Police departments in localities that have a large Spanish-speaking population would have an immediate interest in this technology. It can help officers collect information at crime scenes, reduce the time needed to acquire critical time-sensitive information, and make interrogating suspects less difficult and costly.

Sensor Technologies

Another key aspect of the intelligence component of C3I is knowing where to find the enemy. A variety of sensors can locate and track suspects. Some sensors also can locate concealed weapons, peer through walls, and see at night.

Covert Tracking

Passive sensor technology will provide law enforcement with a covert means for identifying and tracking suspects by air and by sea. It especially applies to the drug interdiction arena where covert detection and tracking of suspected drug running aircraft is essential. It merges two complementary technologies electronic support measurement (ESM) and bistatic radar. ESM enables operators to receive and analyze any signal transmitted in the radio frequency (RF) spectrum, such as communications or radar signals. Analyzing such signals reveals the angle of arrival, frequency, pulse width, and any characteristics unique to a transmitter. This information provides a profile of the targeted emitter, which can be used later to re-identify the target.

Bistatic radar uses existing sources of illumination to detect and track targets passively, instead of the more conventional monostatic radar systems that actively send a signal and wait to receive a return echo. Bistatic radars track targets using signals from television stations or from Federal Aviation Administration (FAA) en route surveillance radars to provide the ambient illumination. The FAA radar energy, for example, reflects off the target in many directions, including the direction of the bistatic radar receiver. The receiver intercepts this energy and determines the location and characteristics of the target. This passive radar system cannot be detected by the target because it does



not send signals, it only receives them.

Long-range Surveillance

Conventional radar systems work on the principle of line-of-sight detection and surveillance, which limits their range of effectiveness. Over-the-Horizon (OTH) radar, however, exploits the refractive properties of the ionosphere at low level frequencies (between 3 and 30 megahertz) to provide coverage far beyond line-of-sight distances.

The lower frequencies associated with OTH radar can bounce off the ionosphere, whereas the very high frequencies (above one-half gigahertz) at which conventional radar operates cannot. Similar to the way pool players bank billiard balls against a railing to get around their opponent's balls, the lower frequencies associated with OTH bounce off the ionosphere to reach around line-of-sight obstructions. In addition, the lower frequencies result in significantly wider beam widths, which in turn allow a much wider area to be monitored.

OTH radar performs three functions better than conventional radar—detection of targets at the source, continuous tracking of targets from take-off to landing, and routine surveillance of airfields suspected of being used by drug traffickers. At present, OTH systems are used in California for Mexican border surveillance.

Concealed Weapons Detection

RF sensors also can provide law enforcement agencies with two significant capabilities—concealed weapon detection and wall-penetrating surveillance. Law enforcement officers could use RF sensors to detect hidden weapons in crowded areas, such as airports or street parties, and to conduct surveillance of a building's interior and surrounding environment during hostage or cornered-fugitive situations.

These sensor technologies can be divided into two categories—passive and active. Passive sensors do not illuminate the targets; instead, they detect thermal energy generated from within the target and therefore can be used to find concealed weapons. For example, the human body emits electromagnetic energy, which can penetrate most types of clothing. Weapons concealed from view by clothing become visible to the sensor because they block some of the energy coming from the body.

Active sensors, on the other hand, illuminate the target with radio frequency energy for throughthe-wall surveillance. Operators select a frequency that can penetrate the wall. The RF energy reflects off the people and objects in the observed area. The radar receiver then interprets the reflections to depict what is hidden from view.

Infrared Night Vision

Existing techniques, such as night-vision goggles and low light-level television, depend on some form of light source, such as the moon, stars, or distant city lights, and are subject to saturation and "blooming," which can make them ineffective. The new infrared sensors, however, are completely passive and inherently antiblooming because they do not rely on a light source. Instead, they sense the heat radiated by the subject and produce its image on a standard television monitor. They can reveal clandestine operations without alerting subjects that they are being observed.

The military uses such sensors on a number of aircraft and weapons navigation systems. Law enforcement agencies could use infrared sensing for passive border surveillance and drug interdiction on land or water.⁴ Marine vessels can use infrared sensors to find survivors in water during both day and night searches. Limited viewing of concealed articles, including weapons, also might be possible.

Information Analysis

Investigators must closely examine the data collected during an investigation. In complex, on-going cases involving multiple suspects and broad geographical regions, a picture of the collected information can be worth the proverbial thousand words. Sometimes, however, a single piece of evidence can provide the link that solves the case. The following computerized techniques can help.

Displaying Data Visually

Rummaging through piles of reports, interview transcripts, interrogation results, and surveillance information can make it difficult to see patterns and cause-and-effect relationships in cases. Using the Timeline Analysis System (TAS), investigators can add a visual dimension to the collected information that can help bring those patterns into focus.

The system consists of a set of software tools originally developed to help intelligence analysts understand a foreign country's military and political behavior and to project possible intentions. TAS software runs on a personal computer and represents each observed event as a meaningful icon on timelines and maps. For example, in a drug-running case, investigators could record the origins, destinations, and frequency of known drug flights, movements of suspects, and other information. The system would then graphically display each event on a timeline and/or a map, showing patterns of behavior.

Scientists designed the Timeline Analysis System to be flexible, so it can be tailored easily to support various types of cases. Useful during investigations, it also can serve as an effective tool for presenting cases to prosecutors and jurors.

Identifying Firearms

To assist the FBI with forensic identification of firearms, researchers designed a system to enhance the existing Drugfire⁵ system by automating the matching process. Currently, firearms experts must manually compare the characteristics of spent shell casings—a task that grows more and more daunting as

Some sensors...can locate concealed weapons, peer through walls, and see at night.

the size of the database increases. The FBI's local database in Washington, DC, for example, contains more than 2,000 shell casings.

Computerized Automatic Target Recognition (ATR) speeds up the process by narrowing the number of potential matches for experts to examine. ATR uses a parallel, neural network-based system, which learns to recognize patterns rather than requiring operators to program the patterns. By eliminating obvious mismatches, the system can reduce by as much as 98 percent the number of images that must be examined manually. When tested on the LAPD database of more than 6,000 spent shell casings, the Automatic Target Recognition system linked five homicides.

Image Recognition

The sensitive nature of law enforcement operations often requires agencies to restrict access to certain areas. Two promising technologies currently under development include an infrared facial recognition system and an optical correlator with a phase-only filter. Both can be used to control access to secure areas. One major application of the optical correlator is in detecting counterfeited valuables.

Recognizing Faces

All people have unique facial signatures determined by their underlying vascular structure. Stateof-the-art infrared cameras, in conjunction with computerized image processing software, can be used to recognize facial signatures. Researchers envision using this infrared facial recognition system to establish automated control of access to secure areas.

In a police department, for example, cameras would record the patterns of heat radiated from the facial area of employees authorized to enter the evidence room. The patterns, or thermograms, then would be stored in a computer database connected to the evidence room's locked doorway. As someone approached the doorway, an infrared camera would capture the person's facial image. The image processing software then would compare it to the database of previously stored thermograms, and in just a few seconds, determine whether it matched the thermogram of an employee authorized to enter the area.

This technology distinguishes itself from other biometrics approaches because it is passive, not intrusive, light-independent, and invulnerable to disguises. When completed, it could be employed for any military, law enforcement, or civilian use where personnel need to be identified.

Countering Counterfeiters

To deal with the growing problems of counterfeited currency and other valuable items, researchers have developed a new pattern recognition device known as an optical correlator. It uses a laser to compare a stored reference image to an unknown image to determine their similarities.

Image processing usually involves transforming an image into a frequency spectrum representation. The components of this representation can be thought of as a set of ripples on the surface of a pond. The ripples have a magnitude (or height) and a phase (or relative time delay) associated with them. An optical correlator has been developed based on a phase-only filter, which disregards the magnitude and only uses the phase information. This filtering technique is more effective than other image processing techniques and requires far less information storage.



Developed originally for military use, the optical correlator based on the phase-only filter has been used by the Army Missile Command to track targets. For law enforcement, Rome Laboratory has built a prototype that performs real-time analysis of fingerprints. This could be used to control access to a secure area or a computer file.

COMMUNICATIONS

As crime spreads beyond traditional boundaries, criminal justice agencies across jurisdictions must join forces to enforce the law. In large part, this requires enhanced communications capabilities, in terms of both speed and of compatibility. The technologies described below will help law enforcement stay one step ahead of crime.

High-speed Networks

The advent of the National Information Infrastructure, a seamless web of broadband communications networks, computers, and databases, will provide law enforcement agencies with vast amounts of multimedia information. These networks will allow federal, state, and local agencies to share text, voice, image, and video data in a timely manner through one network.

In a military environment, these networks allow for rapid exchange of critical information, such as intelligence resources and weapon quantities, drawn from sources in diverse locations. In the law enforcement arena, high-speed networks will enable agencies to access FBI databases to perform rapid fingerprint identification, conduct live teleconferences with other agencies in situations that require shared planning and coordination, and provide immediate, widespread dissemination of pictures of wanted or missing persons.

Compatible Communications Systems

Components of the C3I system use both wide- and narrow-band services, which flow across landlines, satellites, fiber optic cables, and terrestrial radio links. The divergent characteristics of each of these media have required users to obtain many types of often incompatible equipment. Rome Laboratory researchers are working to mitigate this problem with both short- and long- term solutions.

A quick fix for the problem of communications systems that cannot interact is a rapidly deployable set of radio switching and computer equipment that can serve as an interface among systems. Under computer control, this central communications center enables the exchange of information among virtually all forms of transmission media, including facsimile, data, and voice. It can be configured quickly for a variety of communication capabilities. The U.S. Coast Guard currently uses a central communications capability in its drug interdiction and other law enforcement operations, as well as during responses to natural disasters.

A longer range approach involves development of a new concept for radio systems. Sponsored by the Advanced Research Projects Agency, the "Speakeasy" program seeks to standardize radio equipment to establish common and flexible systems for radio communications among the various military services.

Speakeasy is a modular system in which many of the modules have multiple uses and can serve a variety of radio types. It takes advantage of the newest microcircuit technology in several ways. First, it employs an open systems architecture, meaning that interface specifications at all layers and connection points are published in open salutations and U.S. standards documents. With widely published specifications, more than one vendor can design and improve components that will be mutually compatible.

...the Speakeasy system...will provide the capability for radios designed for different purposes to operate together.

Second, the Speakeasy system will be programmable, enabling the same radio to be configured for different operations. It also will be multiband, that is, capable of operating in a variety of frequencies, and will operate simultaneously in more than one mode.

For law enforcement, this system will provide the capability for radios designed for different purposes to operate together. It also will provide the foundation for a greatly improved, easily upgradable radio system for all types of law enforcement applications.

CONCLUSION

Over the past 40 years, researchers at Rome Laboratory have developed a vast array of technological tools for the military to employ in our national defense. Within the shared framework of command, control, communications, and intelligence, many of those technologies apply to the domestic law enforcement mission as well. As one of NLECTC's regional law enforcement technology centers, Rome Laboratory will continue to make substantial contributions to the war on crime by developing technologies that meet the needs of law enforcement. +

Endnotes

¹Federal Technology Transfer Act of 1986, P.L. 99-502.

²For more information on the regional technology centers, write to NLECTC, Box 1160, Rockville, MD 20849, or call 1-800-248-2742.

³The five agencies currently participating in the project are the Bureau of Prisons, the Drug Enforcement Administration, the Federal Bureau of Investigation, the Immigration and Naturalization Service, and the U.S. Marshals Service.

⁴Because of its current high cost, this important technology has not been applied widely to law enforcement missions. However, Rome Laboratory has developed a new, more affordable infrared sensor technology. The equipment consists of a palm-sized video camera that uses standard rechargeable batteries.

⁵Drugfire is a system that matches spent rounds to the weapons that fired them in order to identify firearms used in crimes.

Members of the Rome Laboratory Law Enforcement Technology Team—John Ritz, Donald Spector, Joe Camera, Fred Demma, and Warren Debany—collaborated on this article, with the assistance of Rome Laboratory researchers Wayne Bonser, Hunter Chilton, Ed Cupples, Dave Ferris, Paul Gilgallen, Joseph Horner, Robert Kaminski, John Mucks, Paul Pellegrini, Antonette Pettinato, Fred Rahrig, Lee Uvanni, Bill Wolf, and Frank Zawislan.

Focus on Domestic Violence

Prosecuting Cases Without Victim Cooperation By George Wattendorf, J.D.



police station the following day for additional photographs. Other department personnel arrive and provide the victim with the telephone number of a local shelter and with information on securing a protective order against her boyfriend. They also suggest that the victim have a doctor examine her injuries.

Three days after the assault, the victim calls the station to inform one of the arresting officers that she wishes to drop the assault charge. She tells the officer that the dispute had been her fault and that her boyfriend was merely defending himself when he struck her. Although the victim did not admit to it, the officer had an idea of what actually had led to her change of heart: The defendant had returned with the rent money, a bouquet of flowers, and a promise that "nothing like this will ever happen again."

But to the victim's surprise, the officer calmly advises her that the evidence collected in the case will enable prosecution efforts to proceed despite her lack of cooperation. Like a growing number of domestic

he scenario plays out innumerable times in jurisdictions across America. In response to a 911 call, officers rush to the site of a domestic disturbance, where they encounter the suspect and his girlfriend. The sobbing victim holds an ice pack to her swollen face and claims that her boyfriend struck her during an argument. When an officer asks for the offender's account, he replies that a disagreement had "gotten out of hand" but that everything is fine now.

The officers arrest the offender and call for a unit to transport him to a holding center. An officer then photographs the victim's injuries and obtains a written statement from her, requesting that she report to the abuse victims who decide to disavow statements and drop charges against their abusers, this victim has discovered that the criminal justice system may not be as willing to forgive and forget. In fact, with the right evidence, prosecutors can gain a conviction, even if the victim testifies on the abuser's behalf.

Aside from protecting victims from further abuse, law enforcement agencies have a vested interest in pursuing such cases. Departments often respond to repeated domestic disturbance calls from the same address. A manipulative offender who can convince a frightened and vulnerable victim to drop her charges may be deterred from violence if he knows that the police and prosecutors can pursue the case without the victim's testimony.

Law enforcement agencies *can* obtain sufficient evidence to secure convictions without the assistance of victims by carefully prioritizing evidence collection in domestic assault cases. In a case like the one described above, evidence collected by police officers enabled prosecutors in New Hampshire to win a conviction without calling the victim as a witness.

EVIDENCE COLLECTION

The Dover, New Hampshire, Police Department began prioritizing evidence collection for domestic assault cases in June 1993. Since implementation of the policy—based on a similar approach used in San Diego—the conviction rate for domestic violence assault cases has increased significantly.

As part of the policy, officers use a checklist to ensure that all evidence is preserved for later use by the prosecution. Together, the different types of evidence can

more than compensate for the lack of a victim's testimony. However, the fact that conviction may depend solely on this evidence underscores the need for officers to collect and save *all* relevant documentation regarding the case.

Secure Emergency 911 Tape

Investigating officers should secure a recording of any 911 call made by the victim. Calls to the 911 dispatcher reporting the assault can be presented at trial under the hearsay exception or as impeachment. Often, these tapes will include the defendant in the background, yelling or threatening the victim.

Record Excited Statements by the Victim

Any statement made while the victim is still under stress from the assault can be admitted into court *through responding officers* as a hearsay exception. It is important that officers document the victim's condition and note her exact statements concerning the

Together, the different types of evidence can more than compensate for the lack of a victim's testimony.

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assault. Officers can testify to such remarks as, "He punched me!" under the excited utterance exception.

Take Photographs

Photographs are critical pieces of evidence. In court, pictures truly do say a thousand words, and two or three photographs can have more impact than hours of testimony from officers describing a victim's condition after an assault.

Recent advances in instant camera technology allow for highly detailed close-up shots. Instant

photographs also reveal immediately any problems in focusing or lighting, so that corrections can be made before the opportunity is lost. Because full bruising coloration may take at least 24 hours, responding officers should encourage the victim to report to the police station the day after the assault for followup photographs.

Officers also should photograph the crime scene to provide a record of damaged property or to show evidence of a struggle. If the defendant

pleads self-defense in court, prosecutors may choose to introduce booking photographs in court to rebut such claims.

Request a Statement from the Victim

While a victim is cooperating, responding officers should request that she provide a detailed, written account of the assault. If the victim appears too traumatized to write, an officer should transcribe her exact words as she dictates the statement. Officers should make sure that the victim's statement references any prior abuse. The victim also should be encouraged to file a petition for a protective order.

If the victim later becomes uncooperative, the written statement can be used to refresh her memory or to impeach her testimony. If the victim has indicated past instances of abuse, prosecutors can request that the court admit the prior acts as character evidence. Prosecutors can even file additional charges if corroborating evidence supports the claims. The victim's sworn petition for a protective order can be used to impeach her testimony if she becomes a hostile witness.

Interview the Offender

Officers should record all spontaneous remarks the offender makes at the scene. While the officers are

conducting their probable cause investigation, they should request that the offender provide his version of the incident. Such noncustodial interviews do not require a *Miranda* warning. However, even when officers issue a *Miranda* warning upon arrest, offenders usually respond to questions. Admissions by the offender are the best type of evidence.

Interview Other Witnesses

Unlike some other crimes, domestic violence is difficult to hide. Unfortunately, children often are the primary wit-

nesses. Officers should not overlook taking statements from children who were present during the assault. Neighbors also can provide statements that could be introduced later by prosecutors to rebut claims of accidental injury or self-defense.

Secure Medical Records

Responding officers should request that the victim sign a medical records release. If she later proves uncooperative, the prosecution can still obtain medical records relevant to the case.

Similarly, officers should not overlook reports made by the emergency medical team. These reports generally contain very detailed information regarding the victim's injuries and can provide necessary documentation that confirms the assault.

Seize Plain-view Evidence

Responding officers should seize any evidence in plain view, such as blood-stained or torn clothing, and

look for indications of a struggle, such as hair clumps, bloodstains, torn buttons, etc. Officers also should seize as evidence any weapon used in the assault.

CONCLUSION

Domestic violence represents one of the most vexing problems facing law enforcement agencies.

Domestic disturbance calls are especially stress-inducing for responding officers, not only because of the potential for violence but also because officers know their efforts on behalf of the victim will probably prove futile. After a cooling down period, battered victims often reconcile with their abusive partner and refuse to support prosecution efforts. The cumulative effect of responding to repeated calls involving the same parties also takes a considerable toll on officers' morale.

But, law enforcement agencies do not need to be

passive players in a cycle of violence. By collecting sufficient evidence, law enforcement officers can help prosecutors prove assault, even if the victim testifies on the assailant's behalf. Such proactive efforts on the part of the criminal justice system send a clear message to potential abusers. At the very least, the real threat of prosecution may deter some offenders. At best, courts can use the threat of jail time to divert abusers into treatment programs.

The more evidence that officers collect, the better the chance that prosecutors can prove assault. Not every case can be won. But by collecting the right evidence and using it wisely, law enforcement officers and prosecutors can take a more active role in curbing domestic violence.

Lieutenant Wattendorf serves as a legal advisor to the Dover, New Hampshire, Police Department on liability and labor issues.

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...by collecting the right evidence and using it wisely, law enforcement officers and prosecutors can take a more active role in curbing domestic violence.

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hether to stop them from fleeing, immobilize them, or dispose of them, murderers often grab their victims. What homicide detective has not wished for the ability to develop identifiable fingerprints of a suspect from the skin of a dead body? Crucial fingerprint evidence linking the perpetrator to the victim must be right there, but, until recently, attempts to retrieve those prints rarely met with success.

Skin possesses a number of unique qualities that distinguish it from other specimens examined for latent prints. Skin tissue grows and constantly renews itself, shedding old cells that might contain the imprint of an assailant's grip. Its pliability allows movement and, hence, possible distortion of fingerprints. As the skin regulates the body's temperature and excretes waste matter through perspiration, latent prints can be washed away.

In addition to these natural changes, the skin of homicide victims often is subjected to many harsh conditions, such as mutilation, bodily fluids, the weather, and decomposition after death. Further, during crime scene processing, many people might handle a body while removing it from the scene, which also can destroy existing fingerprints or possibly add new ones to the corpse's skin. In spite of these hurdles, research conducted by the FBI Laboratory's Latent Fingerprint Section—in conjunction with police and medical authorities in Knoxville, Tennessee—proves that latent fingerprints can be lifted from skin if only investigators are willing to try. This article outlines the history and research that led to development of a workable method for developing identifiable latent prints on human skin.

HISTORY

The FBI has been involved in research on methods to develop identifiable latent prints on human skin for many years. In the early 1970s, FBI scientists reexamined existing methods using cadavers at a major university and the Virginia State Medical Examiner's Office in Richmond, Virginia. Most of these cadavers had been embalmed.

To create prints, these researchers applied a coating of baby oil and petroleum jelly to their hands and then touched areas of skin on the cadavers. At timed intervals, they then attempted to develop these latent prints, using primarily the iodine/silver transfer method. This method has five steps: heating iodine in an iodine fuming gun, directing the fumes onto the skin, laying a thin sheet of silver on the skin, removing the silver plate and, finally, exposing the plate to a strong light, which causes the prints to become visible.

The researchers developed identifiable prints in this fashion within a time frame that ranged from several hours up to several days after the prints were applied. It should be noted, however, that the researchers achieved these results under ideal laboratory conditions. It was not surprising that they developed latent prints composed of artificially introduced oily substances on embalmed cadavers. Yet, those early efforts provided important background data for subsequent research conducted in Tennessee.

In 1991, a police specialist from the Knoxville, Tennessee, Police Department contacted the FBI Latent Fingerprint Section to inquire about the FBI's experience and previous research on developing latent prints on skin. His own examination of numerous homicide victims had not produced prints with identifiable ridge detail, even though some cadavers exhibited observable outlines of fingers and palms. Out of these discussions arose a joint research project involving the Knoxville Police Department, the University of Tennessee Hospital, the Department of Anthropology at the University of Tennessee, and the FBI.

To develop a consistent and reliable technique for developing latent prints on skin, the researchers established a protocol significantly different from previous efforts. They decided to use only unembalmed cadavers and to place latent prints composed of only natural perspiration and sebaceous (oily) material. They felt that such conditions more accurately replicated field conditions faced by police investigators.

RESEARCH

The researchers first examined the body of a 62-year-old white female who had been dead for 9 days. Areas of skin were sectioned into numbered squares drawn on the body. One researcher placed latent prints on the skin by wiping his hand across his brow or through his hair and then touching the cadaver. The researchers then tried to develop the latent prints at timed intervals by employing several methods, including the use of lasers, alternate light sources, iodine/silver transfer, cyanoacrylate fuming (commonly referred to as "glue fuming"), regular and fluorescent powders, specially formulated powders, regular and fluorescent magnetic powders, liquid iodine, RAM, ardrox, and thenoyl europium chelate.1

Most of these methods developed the latent prints up to approximately 1 hour after the prints had been deposited. For additional documentation, during the next several days, researchers tested the techniques on other cadavers, but most methods failed to provide consistent results.

The one technique that developed identifiable latent prints most



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...homicide victims should be examined for latent prints whenever investigators believe that the perpetrator touched the victim.

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Mr. Futrell is a supervisory fingerprint specialist in the Latent Fingerprint Section of the FBI Laboratory in Washington, D.C.

often was glue fuming in conjunction with regular magnetic fingerprint powder. Similar to iodine/silver transfer, this method involves heating glue and directing the fumes onto the skin, then applying fingerprint powder to reveal the latent prints.

To test this technique further, researchers glue fumed several areas of skin containing sebaceous latent prints 2 hours after depositing the prints. Sixteen hours later, they applied various fingerprint powders to those areas. Using a fluorescent powder specially formulated for this testing, they developed a latent print of value for identification purposes. Initially, the researchers believed that the special fluorescent powder provided the key to obtaining usable prints, but additional tests proved that the type of powder did not matter as much as the amount of time allowed for glue fuming.

Glue Fuming Device

As they continued their research, the scientists realized that they needed an improved method for spreading glue fumes over the skin. The earlier method used-forming an airtight plastic tent over a small area of skin or over an entire bodydid not always work. It was impossible to distribute glue fumes evenly over the skin and extremely difficult to confine all of the fumes to the tent. In addition, when they removed the plastic tent at the end of the fuming process, the fumes often forced the researchers out of the work area. To alleviate these problems, one of the researchers, the police specialist from the Knoxville Department, developed a portable glue fuming chamber.



The glue fuming chamber contains a built-in heat source and a small electric fan. Glue is poured into a small disposable preheated aluminum pan and placed in the chamber. After approximately 5 minutes, the fan is turned on and the glue fumes flow out through a plastic hose attached to the top of the chamber. When set at maximum, the amount of fumes forced through the hose approximates the exhaust from an automobile on a cold day. This device enables the user to control the amount and time of the glue fuming much more easily than the tent method.

Using the new device, the scientists tested squares of skin to determine the optimal fuming time. They tried fuming in increments from 5 seconds up to 2 minutes. They obtained identifiable latent

prints most often when glue fumes had been applied to the skin for 10 to 15 seconds.

Powders

In the early testing, it seemed that particular types and brands of fingerprint powders provided the best results. As the research progressed, however, it became apparent that this was not the case. More than 30 brands and several types of powders and applicators were tested. In the end, researchers determined that powder selection is less critical than ensuring that the glue fuming process is performed correctly.

Both fluorescent powders and regular magnetic powders produce identifiable prints. With non-magnetic fluorescent powders, the best results are obtained by applying the powder with a feather duster rather than a conventional brush, which generally holds more powder. Too much fluorescent powder tends to overwhelm the latent print and the background. While fluorescent powders work, they do have some drawbacks. They generally cost more than regular magnetic powders, are more difficult to see, and require special light sources, filters, and additional photographic knowledge.

In comparison, regular black magnetic powders produce useful prints and cost much less. They also do not require special photographic skills. Indeed, technology does not need to be complex or costly in order to be effective.

Field Conditions

Developing latent prints under ideal laboratory conditions proved that prints could be obtained from human skin, but the researchers wanted to make sure that practitioners in the field could obtain similar results. In real life, homicide victims might not be found immediately, bodies might be exposed to the elements or other harsh conditions, or they might be taken to the morgue and refrigerated before they can be examined for prints.

To ensure that the process would work, the researchers simulated field conditions by testing cadavers that had been exposed to the elements for several days, as well as refrigerated corpses. They replicated potential time delays that could occur in the field by waiting for approximately 12 hours between the glue fuming (which could be done at the crime scene) and the application of fingerprint powders (perhaps conducted later at the morgue). The results showed that by following proper procedures, investigators could develop identifiable latent prints even under harsh conditions.

RECOMMENDATIONS

This research indicates that homicide victims should be examined for latent prints whenever investigators believe that the perpetrator

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The one technique that developed identifiable latent prints most often was glue fuming in conjunction with regular magnetic fingerprint powder.

touched the victim. If possible, bodies should be examined at the crime scene immediately after the coroner or medical examiner has completed an initial examination and granted permission. At a minimum, the body should be glue fumed at the scene to preserve the prints and help prevent contamination or obliteration of prints when the body is moved.

Ideally, bodies should not be refrigerated prior to examination for latent prints. The condensation that builds up on refrigerated bodies can have adverse effects by washing away the prints, reacting with the glue to distort the prints, or causing the powder to cake, thus losing the prints. Bodies that have been refrigerated should not be processed until the moisture evaporates, roughly several minutes, depending on ambient temperature. A control area of skin least likely to have prints can be tested to ensure that the moisture has dissipated.

Skin that is warm or near normal body temperature should be glue fumed for only 5 to 10 seconds. Colder skin should be glue fumed for a maximum of 15 seconds. Regular magnetic powders can then be applied. Any identifiable latent prints should be photographed first and then lifted using transparent lifting tape.

CONCLUSION

For many years, investigators and forensic scientists have tried to retrieve latent prints from dead bodies, but often the key evidence has been just out of reach. Frustrated, investigators often gave up after several failed attempts. This research proves that with practice, it can be done by those who are willing to try. As it becomes routine for law enforcement to obtain latent prints from skin, murderers who reach out to harm their victims will just be putting themselves within easy reach of the long arm of the law.◆

Endnote

These are commonly used methods for developing latent fingerprints on a variety of surfaces. For more information, see *Chemical Formulas and Processing Guide for Developing Latent Prints* (Washington, DC: Latent Fingerprint Section, Laboratory Division, FBI, 1994).



M aking appropriate decisions regarding the use of deadly force is the most critical challenge confronting law enforcement officers. Ensuring that officers possess the requisite knowledge and skills to make and implement those decisions is the challenge for law enforcement administrators and trainers. These challenges can be met only through training.

Training in the use of deadly force should encompass the knowledge and skills necessary to make appropriate decisions and should reflect the commitment of management to share the burden of responsibility for making those decisions. Foresight requires more courage than hindsight.

Realistic training does not state general platitudes and then leave officers to figure the rest out for themselves. It provides clear principles to govern the application of deadly force and then illustrates appropriate application through practical examples.

Inadequate training can cause officers to use deadly force when it is not appropriate. Conversely, it may cause uncertainty and hesitation on the part of officers in circumstances that increase the danger to themselves and to the public.

This article describes selected portions of FBI training on the new federal deadly force policy. It illustrates a training process that is effective for any law enforcement training program concerning the use of deadly force.

NEW POLICY

On October 17, 1995, Attorney General Janet Reno approved a deadly force policy to govern all law enforcement agencies within the U.S. Department of Justice. Since then, this same policy has been adopted by the Department of the Treasury, thus creating for the first time a uniform deadly force policy for federal law enforcement agencies.

The common threads that run throughout the policy are the establishment of an "imminent danger" standard and the reaffirmation of the basic principle that even when an imminent danger exists, deadly force should not be used if to do so would create an unreasonable risk to innocent third parties. The essence of the new policy is found in the first paragraph, captioned "Permissible Uses":

> Law enforcement officers...of the Department of Justice may use deadly force only when necessary, that is, when the officer has a reasonable belief that the subject of such force poses an *imminent danger* of death or serious physical injury

to the officer or to another person. (Emphasis added)

A commentary accompanying the policy explains key words and concepts and provides some guidance for interpretation. For example, it emphasizes that "as a matter of principle, the Department of Justice deliberately did not formulate this policy to authorize force up to the constitutional or other legal limits."

The difference between the policy and the law is most significant with respect to fleeing felons. In *Tennessee* v. *Garner*, 471 U.S. 1 (1985), the Supreme Court held that the fourth amendment to the U.S. Constitution permits the use of deadly force when necessary to prevent the escape of a felony suspect when there is probable cause to believe the suspect has committed a crime "involving the infliction or threatened infliction of serious physical harm." The policy requires

the additional factor of probable cause to believe that the suspect's escape would pose an imminent danger to the officers or others.

The commentary explains that "imminent...should be understood to be elastic...involving a period of time dependent on the circumstances, rather than the fixed point of time implicit in the concept of "immediate" or "instantaneous." " Furthermore, the reasonableness of an officer's decision to use deadly force "must be viewed from the perspective of the officer on the scene...[and] not...from the calm vantage point of hindsight."

The policy does not purport to answer all of the questions that may confront law enforcement officers on the scene, nor does it attempt to eliminate an officer's ability—and responsibility—to exercise judgment. Rather, it provides a framework of general principles to guide those judgments—a framework within which each agency is permitted to "develop and conduct its own training on deadly force...."

BASIC TRAINING PRINCIPLES

The underlying premise of the FBI's training doctrine is that the requisite knowledge for assessing threats—like the requisite skills for countering them—must be learned. Objective principles can and must be instilled in trainees to enable them to make timely and reasonable judgments regarding the need to use deadly force.

It is equally important that those who have the responsibility for reviewing an agent's judgment have the same objective frame of



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Imparting relevant knowledge through realistic training... teaches officers to make appropriate decisions regarding the use of deadly force.

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reference. It is not sufficient for management to simply expound the policy and then urge the agents to do their best. It is important that management commit itself to policy interpretation and application. This not only gives the agents instruction but it also instills confidence that management has the courage to confront the same issues that the agents must confront on the streets.

To accomplish these purposes, the FBI uses a multistage approach for instructing its agents on the use of deadly force. The first stage is classroom instruction on the text of the policy, accompanied by an instructional outline that explains the criteria used to determine the manner in which the policy is to be interpreted. A second stage, also done in the classroom, uses written scenarios to illustrate how the policy applies to various situations.

Trainees are given scenarios and challenged to determine the propriety of using deadly force by using the established criteria. After thorough discussion of their responses, they are given a model response to illustrate the appropriate application of the policy.

The third stage incorporates practical application of the principles through use of interactive video simulation and practical exercises using role players and blank or paint firing weapons. The initial training given at the FBI Academy is reinforced during an agent's career through mandated annual training in the FBI field offices.

Portions of the instructional outline are presented to show how the FBI teaches the new deadly force policy, followed by scenarios used to illustrate how to apply the policy's criteria. The policy text, where noted, is tailored to the FBI and is relevant only to the FBI's mission. Otherwise, apart from stylistic changes, e.g., using "agent" instead of "officer," the substance of the policy is the same. Editorial comments have been placed within brackets to provide further explanation.

The policy does not... attempt to eliminate an officer's ability—and responsibility—to exercise judgment.

INSTRUCTIONAL OUTLINE

I. INTRODUCTION

This outline provides guidance to FBI agents in the use of deadly force. The following general principles are to govern application of deadly force:

A. The policy is not to be construed to require agents to assume unreasonable risks. In assessing the need to use deadly force, the paramount consideration always should be the safety of the agents and the public.

B. The reasonableness of an agent's decision to use deadly force under this policy must be viewed from the perspective of the agent on the scene who may often be forced to make split-second decisions in circumstances that are tense, uncertain, and rapidly evolving and without the advantage of 20/20 hindsight.

II. POLICY TEXT

[NOTE: This portion of the policy text is tailored to the FBI and cites only those portions relevant to the FBI's mission.]

A. **Defense of Life**: Agents may use deadly force only when *necessary*, that is, when the agents have probable cause to believe that the subject of such force poses an imminent danger of death or serious physical injury to the agents or other persons.

B. Fleeing Subject: Deadly force may be used to prevent the escape of a fleeing subject if there is probable cause to believe: 1) The subject has committed a felony involving the infliction or threatened infliction of serious physical injury or death, and 2) the subject's escape would pose an imminent danger of death or serious physical injury to the agents or other persons.

C. Verbal Warnings: *If feasible*, and if to do so would not increase the danger to the agent or others, a verbal warning to submit to the authority of the agent shall be given prior to the use of deadly force.

D. Warning Shots: No warning shots are to be fired by agents.

E. Vehicles: Weapons may not be fired solely to disable moving vehicles. Weapons may be fired at the driver or other occupant of a moving motor vehicle only when the agents have probable cause to believe that the subject poses an imminent danger of death or serious physical injury to the agents or others, and the use of deadly force does not create a danger to the public that outweighs the likely benefits of its use.

III. DEFINITIONS

A. **Deadly Force**: Force that is likely to cause death or serious physical injury.

B. **Necessity**: In evaluating the *necessity* to use deadly force, two factors are relevant: 1) The presence of an *imminent danger* to the agents or others, and 2) the absence of *safe alternatives* to the use of deadly force. Deadly force is never permitted under this policy when the sole purpose is to prevent the escape of a suspect.

[The policy requires that either the suspect, or his escape, pose an imminent danger before deadly force is permitted.]

1. Imminent Danger: "Imminent" does not mean "immediate" or "instantaneous," but that an action is pending. Thus, a subject may pose an imminent danger even if he is not at that very moment pointing a weapon at the agent. For example, imminent danger may exist if agents have probable cause to believe any of the following:

a. The subject possesses a weapon, or is attempting to gain access to a weapon, under circumstances indicating an intention to use it against the agents or others; *or*,

b. The subject is armed and running to gain the tactical advantage of cover; *or*, c. A subject with the capability of inflicting death or serious physical injury, or otherwise incapacitating agents without a deadly weapon, is demonstrating an intention to do so; *or*,

d. The subject is attempting to escape from the vicinity of a violent confrontation in which he inflicted or attempted the infliction of death or serious physical injury.

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The underlying premise...is that the requisite knowledge for assessing threats...must be learned.

2. Safe Alternative: Absent a safe alternative, agents are not *required* to use or consider alternatives that increase danger to themselves or to others. If a safe alternative to the use of deadly force is likely to achieve the purpose of averting an imminent danger, deadly force is not necessary. Among the factors affecting the ability of agents to *safely* seize a suspect, the following are relevant:

a. Response to commands: Verbal warnings prior to using deadly force are required *when feasible*, i.e., when to do so would not significantly increase the danger to agents or others. While compliance with agents' commands may make the use of deadly force unnecessary, ignoring such commands may present agents with no safe option.

b. Availability of cover: Availability of cover provides a tactical advantage. An armed suspect attempting to gain a position of cover may necessitate the use of deadly force; conversely, an agent in a position of cover may gain additional time to assess the need to use deadly force without incurring significant additional risks.

c. Time constraints: The inherent disadvantages posed by the issue of action/reaction, coupled with the lack of a reliable means of causing an instantaneous halt to a threatening action, impose significant constraints on the time-frame in which agents must assess the nature and imminence of a threat.

[A fundamental understanding of such concepts as "action/reaction" and "wound ballistics" is essential to realistic threat assessment.]

IV. APPLICATION OF DEADLY FORCE

A. When the decision is made to use deadly force, agents may continue its application until the subject surrenders or no longer poses an imminent danger.

B. When deadly force is permitted under this policy,

attempts to shoot to cause minor injury are unrealistic and can prove dangerous to agents and others because they are unlikely to achieve the intended purpose of bringing an imminent danger to a timely halt.

C. Even when deadly force is permitted, agents should assess whether its use creates a danger to third parties that outweighs the likely benefits of its use.

ILLUSTRATIVE SCENARIOS

Use of Force Permitted

Set forth are selected scenarios to illustrate each of the four relevant factors used to assess the necessity of deadly force. Ideally, an objective analysis should lead to comparable responses.

Relevant Factor: The subject possesses a weapon, or is attempting to gain access to a weapon, under circumstances indicating an intention to use it against the agents or others.

Scenario: Agents approach a residence during the day to arrest a bank robbery subject who threatened bank personnel with a handgun during the robbery. Before the agents are able to fully establish a perimeter, a person matching the description of the subject bursts from the back door of the residence with what appears to be a pistol in his hand and runs through the backyard toward adjacent homes.

Agents shout, "FBI! Stop! Or we'll shoot!" Ignoring the commands, the subject continues to run. An agent fires a shot from a distance of about 15 yards, striking the subject in the back.

Discussion: The use of deadly force is permitted.

Necessity: The agent has probable cause to believe that the subject, who has armed himself with a



firearm, has done so to resist arrest and poses an *imminent danger* to the agents in the immediate vicinity. The subject ignored commands to stop. There is *no safe alternative* to the use of deadly force to avert the danger.

As long as the fleeing, armed subject remains within gunshot range of the agents, he has the ability to turn and fire on them before they can effectively respond by taking cover or returning fire. Attempting to pursue an armed subject increases that danger. In addition, the subject poses an imminent danger to those agents who are trying to form the perimeter and whom the subject is likely to encounter as he continues his flight.

In deciding whether to use deadly force in this scenario, agents also should consider that the suspect is fleeing in a neighborhood setting. Accordingly, agents should assess whether its use creates a danger to

third parties that outweighs the likely benefits.

Relevant Factor: *The subject is armed and running to gain the tactical advantage of cover.*

Scenario: Two FBI agents possess a warrant to arrest a subject for armed robbery of a bank the previous day. During the robbery, the subject shot and wounded a bank guard. As the agents drive into the neighborhood where they believe the subject previously resided, they observe a man matching the subject's description walking down the sidewalk. From a

distance of about 25 yards, the agents see what appears to be a handgun tucked into the waistband of the subject's trousers.

Getting out of their car, the agents walk toward the subject. When they are about 10 yards from the subject, one of the agents shouts, "FBI! Put up your hands! We have a warrant for your arrest!" Following a quick glance in the direction of the agents, the subject turns and runs away from the agents and toward a nearby house. The agent again shouts, "FBI! Stop or I'll shoot!" When the subject continues to run, the agent fires one shot.

Discussion: The use of deadly force is permitted.

Necessity: The agents have probable cause to believe the subject has committed a felony involving the infliction or threatened infliction of death or serious physical injury and probable cause to believe the subject is presently armed with a firearm. If the subject reaches the house under these circumstances, he will have the tactical advantage of cover, whereas the agents are in an exposed position. In addition, the subject poses a danger to other per-

sons in the house whom he may take as hostages.

The nature and imminence of the danger permits the use of deadly force under these circumstances. Because permitting the subject to enter the house would place the agents and others in *imminent danger*, and because there is *no safe alternative* available to forestall that action, deadly force is permitted.

Relevant Factor: An unarmed subject with the capability of inflicting death/serious physical injury, or otherwise incapacitating agents, is demonstrating intention to do so.

Scenario: Two agents have a warrant to arrest a man for a bank burglary that occurred several weeks previously. Unable to locate the subject at his apartment, they go to a nearby garage where he works as an auto mechanic. The agents approach the subject, identify themselves, and tell him that he is under arrest. The subject glares at the agents for a moment and then suddenly hurls a wrench at them, which they manage to dodge. The subject then removes a small canister from a nearby bench and shouts: "If you guys don't get out of my way, I'll mace you!"

The agents hold their positions about 30 feet from the subject, draw their handguns, and order the subject to drop the canister. The subject does not comply with the command, but continues to point the canister in the agents' direction as he moves toward them. When the subject is within about 20 feet of the agents,



they both fire, striking the subject in the chest.

Discussion: The use of deadly force is permitted.

Necessity: Although there is no probable cause to believe the subject previously committed a crime involving the infliction or threatened infliction of death or serious physical injury, he is posing an *imminent danger* to the agents by his violent resistance to arrest with what appears to be a chemical agent.

A noncompliant subject who has the capability of rendering agents incapable of defending themselves also has the capacity to gain access to the agents' weapons and to kill or seriously injure them. The agents commanded the subject to drop the canister and surrender; he refused to do so and increased the danger to the agents by advancing toward them in a threatening manner.

There is *no safe alternative* to the use of deadly force to avert the danger. The agents are not required

> to retreat from their duty, or to permit the subject to get close enough to use what is believed to be an incapacitant against them.

> **Relevant Factor:** Subject attempts to escape from the vicinity of a violent confrontation in which he inflicted or attempted to inflict death or serious injury.

> **Scenario**: FBI agents are looking for a fugitive who jumped bail rather than face trial for cocaine distribution. Two agents go

to the residence of the fugitive's exwife, hoping to interview the woman about her former spouse's present address. As the agents approach the house from the street, the fugitive emerges from the front door, sees the agents, and draws a handgun from the waistband of his trousers. The agents take cover behind cars parked at the curb, draw their weapons, and shout, "FBI! Put up your hands!" The fugitive opens fire and begins to run across the front yard to get away.

As the fugitive turns the corner of the house, he trips over a bicycle

and is seen losing his gun. Regaining his feet, he runs along a driveway toward the backyard and begins to climb a six-foot chainlink fence. One of the agents yells for him to stop. When the fugitive ignores the command and continues to climb, the agent fires a shot striking the fugitive.

Discussion: The use of deadly force is permitted.

Necessity: The subject has demonstrated his dangerousness by firing on the agents. Even though the fugitive was seen to have lost his gun, the agents must consider the possibility that the suspect possesses another weapon. Moreover, his efforts to escape from the vicinity of a violent confrontation in which he inflicted or attempted infliction of death or serious physical injury supports probable cause to believe that he poses an *imminent danger* to the agents or others.

There is *no safe alternative* to the use of deadly force to prevent escape. Agents are not required to pursue a demonstrably dangerous subject who has just attempted to kill them. The subject ignored commands to surrender.

It is neither safe nor reasonable to require agents to attempt to physically overpower a person who has demonstrated that he will use violence to avoid capture. To do so exposes the agents' firearms to the subject and the agents to unnecessary risk. It is equally unreasonable to permit the subject to gain the tactical advantage of cover or to depart the scene and rearm himself in preparation for his next violent encounter with law enforcement officers.

Use of Force Not Permitted

In addition to scenarios depicting the necessity for using deadly force, the FBI's training package includes scenarios where either the absence of an imminent danger or the availability of a safe alternative obviates the necessity for its use. There also are scenarios where the level of danger to innocent third parties makes its use impracticable.

It is important that management commit itself to policy interpretation and application.

Relevant Factor: Suspect poses no imminent danger.

Scenario: Two agents possess an arrest warrant for a man who is wanted for bank fraud and embezzlement. As they approach his residence to make the arrest, they observe a man matching the subject's description standing on the front porch. When the agents are within about 20 yards of the residence, the man looks in their direction and immediately jumps from the porch and runs down the sidewalk away from them.

One of the agents shouts, "FBI! Stop!" When the man ignores that command, the agent shouts a second time, "FBI! Stop or I'll shoot!" The suspect continues running, increasing the distance between himself and the pursuing agents. Realizing that they are not going to be able to overtake the fleeing suspect, the agent fires a shot, striking the suspect in the back.

Discussion: The use of deadly force violates FBI policy.

Necessity: There can be no necessity to use deadly force if there is no imminent danger. There is no probable cause to believe that the suspect poses an imminent danger to the agents or to others.

His offense did not involve the infliction or threatened infliction of death or serious injury, nor is there probable cause to believe that the escape of the subject poses an imminent danger to the agents or others. If the agents are unable to seize the suspect without resorting to deadly force, the suspect will avoid arrest for the time being.

Relevant Factor: Another safe alternative is available.

Scenario: FBI agents possess a warrant to arrest a subject for armed robbery of a bank the previous day. During the robbery, the subject shot and wounded a bank guard. A team of several agents sets up a perimeter around the house where the subject is believed to be staying. The arrest plan calls for an agent to announce their presence and purpose on a bull horn and to demand the subject's surrender.

Before the announcement can be made, the agents see a man matching the subject's description walking from the front door of the house toward a mailbox near the street. From a distance of about 25 yards, the agents see what appears to be a handgun tucked into the waistband of the subject's trousers. An agent announces on the bull horn, "FBI! We have a warrant for your arrest! Put your hands up!" The subject turns quickly and runs back toward the front door of the house. One of the agents fires two shots, striking the subject in the back.

Discussion: This use of deadly force violates FBI policy.

Necessity: The agents have probable cause to believe the subject has committed a violent crime and is presently armed with a firearm. In addition, he is noncompliant. These factors satisfy the *imminent danger* element of this policy. However, based on these specific facts, there appears to be a *safe alternative* to the immediate use of deadly force.

The agents are in positions of cover, not just concealment, thereby lessening the immediacy of the risks to themselves. Given these facts, if the subject gets back into the house, the risks to the agents appear to be no greater than if their original arrest plan, i.e., containment and negotiation, had been implemented. [This scenario suggests that a safe alternative to the use of deadly force exists, not that the suspect poses no danger to the agents. Different facts, e.g., lack of cover for the agents or the presence of innocent third parties who would be endangered by the suspect, could give a different result.]

Relevant Factor: Use of deadly force poses unreasonable risks to innocent third parties.

Scenario: Agents respond to an alarm indicating a bank robbery in progress. When they arrive on the scene, they observe a masked individual running from the bank with what appears to be a gun in his hand. The agents identify themselves and order the subject to stop. In response, the subject fires two shots in the direction of the agents.

As the agents dive for cover, the subject flees into a nearby crowded restaurant. An agent pursues the subject, and from the entrance to the restaurant, sees the subject making

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Realistic training...provides clear principles to govern the application of deadly force and then illustrates appropriate application through practical examples.

his way through the crowd toward the rear exit. The agent fires at the subject.

Discussion: Firing the shots under these circumstances violates FBI policy.

Necessity: The agents have probable cause to believe that the subject has committed a crime involving the infliction or threatened infliction of death or serious physical injury. In addition, the subject is attempting to escape from the vicinity of a violent confrontation.

There is clearly probable cause to believe that the subject poses an imminent danger to the agents and to others. However, firing a weapon into the crowded restaurant creates an unreasonable danger to the public that is not outweighed by the likely benefits.

If other safe options are not available to them, the agents must permit the subject to escape. In considering the availability of other options, agents are reminded that pursuing an armed and dangerous subject is not a safe one.

CONCLUSION

The training provided to FBI agents with the outline and accompanying scenarios lays the foundation for further training throughout their law enforcement careers. The propriety of using deadly force is the most serious decision facing law enforcement officers. Consequently, preparing officers to make these decisions is the gravest responsibility of a law enforcement agency.

Imparting relevant knowledge through realistic training—repeated or otherwise reinforced as often as time and resources permit—teaches officers to make appropriate decisions regarding the use of deadly force. Incorporating departmentally approved illustrations of appropriate policy application enhances their abilities, while instilling confidence in themselves and in their leaders.

A copy of the FBI's new deadly force policy can be obtained by submitting a request on department letterhead to the Legal Instruction Unit, FBI Academy, Quantico, VA 22135.

New Appointment

Director Freeh Appoints Harlin R. McEwen to Head Communications and Technology Branch



n February 20, 1996, FBI Director Louis J. Freeh swore in Chief Harlin R. McEwen, of the Ithica, New York Police Department, as the head of the Communications and Technology Branch of the Bureau's Criminal Justice Information Services Division (CJIS). Mr. McEwen, a 38-year veteran of law enforcement, has the title of Deputy Assistant Director in his new post.

Mr. McEwen's appointment marks the first time in FBI history that a local police executive has assumed a leadership role in an FBI division. The CJIS Division is directed at the identification needs of law enforcement at every level nationwide.

Mr. McEwen's appointment to the FBI position has been widely praised throughout the law enforcement community. The International Association of Chiefs of Police described Mr. McEwen's longstanding contributions to the IACP as "extraordinary...on a variety of highly technical issues that have been of great significance to the law enforcement community."

Over the next several years, those issues will include unprecedented modernization in the areas of fingerprint identification and related data, and the collection of uniform crime statistics.

Director Freeh cited Mr. McEwen's "exceptional qualifications in an area that is so fundamental to effective law enforcement and public safety across the county." The Director said that Mr. McEwen's long and respected experience at the state and local level will bring a "critically needed perspective to national criminal justice information programs

that are undergoing unprecedented technological change."

The CJIS Division serves as the focal point and national central repository for criminal justice information and fingerprint services. The division provides identification, fingerprint and information services to local, state, federal, and international criminal justice agencies.

Mr. McEwen, 58, a 1973 graduate of the FBI's National Academy, began his law enforcement career in 1957 with the Waverly, New York, Police Department. Throughout his career he served in numerous police departments in New York state. In October 1985, he was appointed Deputy Commissioner of the New York State Division of Criminal Justice Services and Director of the Bureau for Municipal police, where he was responsible for overseeing the training of all police officers in New York state, and the development and implementation of the New York State Law Enforcement Agency Accreditation Program.

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