

Forensic Investigation: It's Not Just for Big Cities

By Ralph A. Barfield, Detective Sergeant and Supervisor, Forensic Unit, Investigations Division, Charlottesville, Virginia, Police Department

Many police executives operate under the misguided impression that because their agencies are smaller they lack the operational capacity to fully appreciate the benefits of DNA evidence recovery and forensic examination. These executives think forensic investigation is big-city detective work. But regardless of the limitations of an agency's human resources or the inaccessibility of funds to train and equip those resources with state-of-the-art equipment, any department can benefit from the power of forensic technology and the value it brings to law enforcement service delivery. Notwithstanding their size, law enforcement organizations must exploit the full potential of all the scientific technology available to them. The advancement of such technology, coupled with the power of DNA in the retrospective investigation of crime, has produced highly effective results for policing.

This article explains how Charlottesville, a central Virginia police department, leveraged its time, energy, and resources to develop a forensic program that has served to identify criminals and make a community safer. If it can happen in Charlottesville, it can happen in your town.

How to Succeed

The recipe for success is one of people, systems, process, and vision. By understanding the value of science in helping to identify criminals and clear open cases, then everything else that is necessary falls in place. The future success of criminal investigations depends on it.

The Manager: One of the essential elements in creating an effective forensic unit is a police manager who has a basic appreciation for the value of both DNA and forensic science. Beyond a willingness to advance, these managers must be willing to lead their departments toward creating an atmosphere conducive to using new scientific technology. This includes identifying employees in the department who will be dedicated to providing the best possible forensic services to citizens and developing a training curriculum that properly educates each member of the department in the substance of forensic science and the techniques for crime scene processing and evidence recovery.

Funding: As is the case in any program implemented by a police department, identifying a funding source is second in importance only to the willingness to move forward. Identifying a funding stream can require creative thinking. It may include requesting supplemental appropriations to the department's budget, applying for state

and federal grant funds, requesting funds from private donors and foundations, and creating a department foundation to raise money for forensic investigation and other important programs and initiatives.

Requests for supplemental appropriations are generally the more difficult of choices, particularly during tough economic times. Nonetheless, compelling evidence exists that supports the proposition that departments can better serve their constituency after its members attain the knowledge, skills, and abilities to take advantage of the technological and scientific advancements associated with forensic investigations and evidence recovery.

Long-Term Plans: Capacity, operational need, and fiscal responsibility are fundamental issues to be considered when embarking on the creation of a forensic unit. Capacity, or having the appropriate staffing level, should never be a hindrance to a department's ability to move ahead with an operational plan that brings value to the department and the community. Nonetheless, department leadership may find it necessary to examine the current table of organization in an effort to determine if funds may be necessary to support the enhancement of human resources, to include equipping and maintaining those resources. A long-term plan that examines the necessary equipment and training is also critical in order to determine the funds that will be required for unit startup. A three- to five-year strategic plan with funding increases at each step would not be unusual.

Charlottesville Evidence Advisory Group

Knowing the elements needed for success, in 1994 the Charlottesville Police Department formed an evidence advisory group that consisted of patrol officers, detectives, and sergeants. Over a period of approximately eight months the group met and developed a strategy for creating a new unit. The group presented its recommendations to the chief, who endorsed the plan and ordered its implementation.

To implement the new unit the following were addressed:

- A new policy and procedure that governed the purpose and operational mandate of the unit
- A standard operating procedure for the unit and its processes, to include crime scene processing and analysis protocols
- Identification and selection of a first-line supervisor knowledgeable about forensic investigation
- Development of a training curriculum for forensic technicians
- Identification of a storage facility and development of policy, procedure, and protocols addressing such storage
- Coordination with the commonwealth attorney's office
- Coordination with management and support personnel in the department

- Development of equipment specifications, budget, and requisite purchasing procedures

The evidence advisory group's recommendations provided a blueprint for development of the forensic unit. Over a four-year period, from 1995 to 1999, the metamorphosis of an effective forensic unit began and it wasn't long before success was evident.

Policy and Procedures

The first step to program implementation was the reengineering of the department's policies and procedures related to evidence handling. Additionally, all evidence in storage was inventoried and sorted as follows:

- Evidence retained for pending cases
- Evidence stored in archives
- Items to be returned to owner
- Items to be sold at auction or destroyed

Once the proper policies and procedures were in place, greater attention was paid to the way officers were processing crime scenes. Initially, particular attention was given to the processing of crime scenes in burglary cases. With a focus on better documenting and securing items of evidentiary value, the following systems and processes were implemented:

- Documenting crime scenes with evidence case files that contain evidence recovery logs, sketches, body injury diagrams, weapon documentation, photographs, reports, and supplements
- Filing major cases in three-ring binders using section dividers and sheet protectors, a simple change that made files more available to the many officers, prosecutors, and defense attorneys who need to review the files prior to trial
- Reporting all recovered handguns to the Virginia State Police and the U.S. Bureau of Alcohol, Tobacco, Firearms, and Explosives
- Checking all weapons and expended shell casings through the National Integrated Ballistic Information Network (NIBIN)
- Checking all latent fingerprints, regardless of offense type, through the Virginia State Automated Fingerprint Identification System (AFIS), and checking major unsolved cases through IAFIS, the FBI's fingerprint identification system
- Submitting all cases involving potential DNA evidence to the Virginia State

- laboratory for analysis and checking the results of the analysis through the state's DNA databank
- Developing a regional agreement with the police chiefs, commonwealth attorneys, and judges to authorize the destruction of drug evidence in compliance with state statutes that authorized the procedures
 - Inventorying all evidence quarterly, semiannually, and annually to ensure quality control
 - Developing a major case forensic board as a quick reference tool for department employees

Personnel

Once the intricacies of identifying funds, drafting protocols, and the selecting unit leadership are accomplished, finding the right mix of policing experience is critical to successful implementation and long-term success.

Two full-time forensic detectives that answered to a remote supervisor had historically staffed the Charlottesville Police Department's forensic unit. Not only was this primitive scheme ineffective but it also diluted the importance of the forensic mission. The first step in the unit's evolution required that room be made for a full-time forensic supervisor. In addition, the department expanded the number of technicians and assigned a specific number of positions to patrol and investigations. It allotted the patrol division 10 part-time positions, three on days, four on evening, and three on midnight. It classified shift technicians as primary, secondary, and backups, and it allotted the investigations division three part-time positions.

All technicians were categorized based on their formal forensic training and experience as evidence technician I, evidence technician II, senior technician, forensic technician, and crime scene analyst. All technicians were issued utility uniforms, pagers, and cell phones and were available for voluntary callout.

Eventually, the department added a civilian clerical position to help handle the increase in evidence, administrative paperwork, and data entry. The unit relied on college interns to assist with the daily administrative tasks. Such a system works to the benefit of both the interns and the unit. Interns handle the routine clerical tasks and in turn are exposed to all aspects of the unit's operation. In order to protect the integrity of both the process and the evidence, interns are not permitted physical contact with any item of evidence.

The department fingerprints all sworn and civilian members and sends their prints to the Virginia State Police headquarters for entry into the AFIS employee database.

Training

There is no aspect of a law enforcement organization that can afford to diminish the importance of training. Forensic science is, perhaps, one of the most sophisticated and complex areas in policing and is clearly an area in which formal training must be approached aggressively. When the message became clear that the Charlottesville Police Department was moving forward with a more defined mission in the area of forensic science and evidence recovery, finding a wide variety of training opportunities for technicians became a top priority. Unquestionably, there are costs associated with such a shift in priorities. Nonetheless, when balanced against the operational needs of the department and the strong desire to reach the cutting edge of this technology, such expenditures seemed more than prudent.

Notwithstanding the wealth of training opportunities outside the department, in-house forensic training was dramatically increased not only for evidence technicians but also for all other members of the police department. The decision to proceed in this fashion proved to be important and enhanced initial DNA identification.

In addition to training that is specific to job function, senior and forensic technicians are required to obtain instructor certifications to assist with the increased training demands. This diminished the need to seek some outside training opportunities.

In an effort to better educate our community about the department's new forensic unit and the value it brings to our department, senior and forensic technicians participate in public speaking engagements on forensic topics.

Technicians select forensic specialties and pursue higher levels of expertise in those fields. Furthermore, all technicians are capable of operating any and all unit equipment and computer programs. A system of gradual formal forensic schooling while continuing to process crime scenes has proven to be a much more effective method of preparing new evidence technicians for a career in crime scene investigation.

Facilities

The evolution of a new unit had begun and the need for a larger and more advanced evidence storage room was evident. The new accommodations included a separate evidence vault for drugs, guns, and money. Although general access to such areas must be controlled to protect the integrity of the evidence and the department, evidence technicians have access to the main evidence room so that the evidence can be properly logged and processed for storage without the need to hire and train additional staff for that specific purpose. Some have access to the evidence vault itself, but only three have access to drugs and money. Determining who would have access to these areas and for what specific purpose is a critical piece of the policy and procedure dealing with the evidence storage area, particularly those areas where evidence pending trial, such as narcotics, weapons, and monies, are stored.

The newly designed evidence storage space included the following features:

- Separate intrusion alarms
- Additional lighting
- Video cameras providing 24 hours a day monitoring
- Organized storage bins and shelves
- An evidence refrigerator to preserve perishable evidence
- Drug and money vaults
- A separate and lockable cabinet for federal drug evidence
- New boxes for pre-burn and pre-melt drugs and guns and biohazard material
- A drying cabinet for wet or bloodstained items

The procedures and protocols for evidence packaging and storage require the input and support of every member of the department. To ensure their support, efficiency and convenience are critical. Evidence-packaging materials are stored in a central place in the police department for easier access. A newly organized and stocked evidence supply storage area allows for better inventory control and reordering. A temporary evidence locker system was instituted in several locations in the department with access to remove items limited to three designated personnel. The forensic office was relocated to an area adjacent to investigations. This proved to increase communication and effectiveness between evidence technicians and investigators. Due to the effectiveness of Virginia's forensic databanks such as DNA, AFIS, and NIBIN, the department was compelled to create yet another evidence room solely for storing archived evidence.

Crime Scene Processing

The success of any forensic unit is in large part due to the effectiveness of its crime lab technicians and the protocols that they follow. Acknowledging that most criminals leave behind traces of themselves at the scene of a crime, procedures were established to ensure that all crime scenes in the city were documented and processed for physical evidence. Notwithstanding the typically nonviolent nature of their commission, burglaries were given particular attention. Properly processing such scenes frequently provides information that assists in the identification of not only the person responsible for this crime but also the person responsible for other crimes, including violent ones.

The scenes of major crimes, such as homicides, shootings, and sexual assaults, require the expertise and experience of a trained graduate of the state's forensic science academy or a senior evidence technician. The processing of such scenes can go beyond the identification and recovery of evidence to require knowledge of blood splatter, trajectory, impression recovery, and a host of advanced forensic examination and evidence recovery techniques. In contrast, policies should permit, if not require, patrol officers to process the scenes of larcenies, vandalism, and minor

burglaries. This allows for the initial training and introduction of basic evidence techniques and allows the department to process crime scenes and conduct preliminary investigations more efficiently.

Notwithstanding the complexity of a given scene, any seized evidence is properly documented, packaged, and stored as awaiting identification of a subject and a subsequent prosecution.

State Laboratory and Evidence Analysis

Recognizing that officers were well on the way to developing skills in evidence recovery, the need to establish an excellent working relationship with the state laboratory examiners at the central laboratory and the chief medical examiner's office in Richmond, the state capital, seemed a prudent next step.

A part of developing this relationship was implementing a policy requiring that any and all evidence of probative value be submitted to the state lab for analysis. The examiners were contacted on a routine basis and cases were discussed freely and without reservation with the department's forensic staff and investigators. The requirements, suggestions, and recommendations of the examiners were followed closely and given the greatest respect in the investigator's evaluation of a case.

Commonwealth Attorney's Office

The successful prosecution of forensic cases requires the education of prosecutors about forensic technology because it is the attorneys who must present the evidence to the court. In the case of Charlottesville, the attorneys were hesitant at first, but as time went by their knowledge and confidence grew. Different types of forensic evidence cases were presented in court, involving latent print identification, automated fingerprint identification system, DNA, the DNA databank, ballistics, and the National Integrated Ballistic Identification Network, bloodstain interpretation, firearms, trace evidence, and toxicology. As the number of solved cold cases grew and many cases involving DNA evidence were successfully prosecuted, the attorneys became well versed in prosecution of cases involving all types of forensic evidence. Prosecutors used the new process to help obtain the convictions of two separate serial rapists.

Equipment

All forensic unit equipment was inventoried, repaired or replaced. Additional 35mm and Polaroid camera sets were purchased to allow each technician to be issued their own equipment. This policy immediately resulted in more effective and efficient crime scene processing. An alternate light source was purchased to enhance evidence and crime scene processing for latent prints and biological materials. A van was set up as the unit's primary crime scene vehicle. The primary patrol crime scene vehicle was re-equipped with all necessary documentation and collection supplies and

restricted to evidence technician operation.

The unit's evidence computer program, the Property and Evidence Tracking System (PETS), is continually upgraded and enhanced. All essential unit functions such as request for laboratory examination, court orders, 10-print fingerprint files, palmprint files, juvenile fingerprint files, and laboratory identifications and eliminations were computerized. Computerizing the laboratory request forms proved to be an enormous improvement over the handwritten or typed system previously utilized. All officers are required to complete routine lab request and are trained to use the computer system while going through the field training officer program. In addition, computer software programs for crime scene sketching and suspect composite sketching were purchased. A small electrostatic dust lifter was purchased to encourage more frequent use. A video camera and a digital camera were purchased to better document major crime scenes.

All necessary equipment, such as a portable generator, portable lights, portable tents, privacy shields and sufficient hand tools, to process outdoor crime scenes was purchased. A new more effective metal detector was purchased to assist in locating metallic physical evidence at crime scenes was purchased.

Management Support

It is important for police executives to understand that rebuilding and enhancement of the forensic unit would not have been accomplished without the continuing support of the police chief. The chief had to share the long-term vision of the process. It was critical that he made it clear to managers, supervisors, and officers his strong support for developing an effective forensic unit. The second issue was finding middle managers willing to learn about and have a working knowledge of crime scene processing, forensics, and the power of DNA evidence. The third issue was convincing the majority of first-line supervisors the importance of their support for the forensic program. This proved to be problematic initially, due to the large number of older sergeants not familiar with all the new forensic scientific technology. The management support must be an ongoing and continuous process.

Results

In 1995 the unit began a concerted effort to record and track all forms of forensic identifications and eliminations. Although time consuming, this system has provided a unique tool to help determine the effectiveness of the unit. The unit went from 54 identifications or eliminations in 1995 to more than 250 in 2002. All the information is logged onto the unit's computer system and at a moment's notice reports can be generated on a multitude of data topics that show status and yearly comparisons.

Between January 1, 1990, and July 2003, the unit had 215 DNA identifications in 75 cases. During the same period, DNA eliminations were used 183 times in 34 cases. Learning how to fully use DNA elimination has proven to be an invaluable tool by

focusing valuable investigative time, energy, and resources.

In 1998 the unit had its first lip-print identification. By 1999 the unit had established its reputation through effectiveness with routine and major case crime scene processing. The unit had been using bloodstain interpretation (blood spatter) for several years in numerous cases and it proved to be valuable evidence at trial.

In the summer of 1999 the forensic unit was confronted with two simultaneous major investigations. The first, the Spinner homicide, relied exclusively on DNA evidence for identification of the victim, whose remains were merely a skeleton. The unit also enlisted the help of researchers from a nearby university in an attempt to perform botanical DNA identifications on a leaf found in the trunk of the victim's car and on bushes found at the gravesite.

The second case, a burglary-rape-robbery, yielded the department's first DNA databank hit in October of 1999. The DNA databank was absolutely essential in solving this case. A latent fingerprint recovered from the scene failed to hit in the Virginia Automated Fingerprint Identification System but was later identified with the suspect through a DNA match.

In 2000 the department led the state in weapon, shell casing, and bullet identification through the use of NIBIN. This resulted from a departmental policy to collect shell casings and bullets from all shootings, including simple shots-fired calls, and register them in NIBIN. In addition, all handguns and semiautomatic rifles that had been seized for any reason were submitted to the state laboratory for test firing and registering in NIBIN.

As of mid-July 2003, the department had obtained 41 DNA databank hits on individuals, 20 of which have resulted in arrest and conviction. Of these databank hits, 10 were from sexual assault and 10 were from burglary, reiterating the need to pursue burglaries. Through the use of the DNA databank, cold rape cases from 1993, 1996, 1998, and 2000 have been cleared. Of those arrested, two were serial rapists. Recently, a double hit occurred in a cold 1985 homicide that continues under investigation. The department has reopened numerous burglaries, larcenies, and stolen vehicle cases due to DNA databank hits. In one recovered stolen vehicle case the lab identified three suspects through the data bank and then identified an additional four DNA profiles. In addition, the department has obtained 14 databank case-to-case matches including four against a serial rapist in three different jurisdictions. The remaining hits came from robbery, stolen autos, larceny, and vandalism cases.

The Future

Small police departments actually have a distinct advantage over big jurisdictions, where the sheer volume of calls and cases prohibits the detailed processing of routine burglaries. But all agencies should make a concerted effort to process crime scenes

and routinely submit the evidence to their laboratory for analysis.

Unsolved rape and homicide cold cases must be reviewed and those with DNA evidence must be submitted to the agencies laboratory for analysis. How will a match ever be made if the evidence is still sitting unanalyzed in the evidence room?

Charlottesville receives numerous calls from agencies wanting to know about its technique for success in investigations. There are several simple rules: (1) process the crime scenes diligently, (2) pay particular attention to burglaries, (3) search for DNA evidence, (4) and submit the evidence to the laboratory for analysis.

Creating an effective forensic unit for a smaller police department takes time, effort, organization, support, and a dedicated staff. The department must be willing to persevere through the early stages of development. If it is, all the hard work and sacrifice will pay off.

The Charlottesville Police Department has an authorized strength of 119 sworn police officers and 29 civilian support personnel, and it is accredited through the Virginia Association of State Law Enforcement Accreditation. The department's annual budget is approximately 8.4 million dollars. Charlottesville is a community of approximately 40,000.

The police department's forensic unit has gained a national and international reputation for outstanding contributions in the field of forensic science, particularly through DNA crime scene processing. Despite the seemingly uneventful posture of this central Virginia community, CBS Television, National Public Radio, and German Television have seen fit to feature the department's investigative strategies in the area of forensic science. Additionally, the Virginia Division of Forensic Science and the Virginia Institute of Forensic Science and Medicine have recognized the department's forensic unit for its effectiveness and success through the use of DNA identifications, DNA eliminations, and the DNA databank. Since 1999 the unit has led departments per capita in the area of DNA identifications, elimination, and cold-case DNA databank confirmations.

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