SMALL POLICE DEPARTMENT FORENSICS AND DNA

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Many small police departments nationwide are under the misguided impression that because of their size they lack the operational capacity to fully appreciate the benefits of DNA evidence recovery and forensics examination. Whether this impression is founded simply in the number of human resources that exist in smaller agencies or the inaccessibility of funds to train and equip those resources with state of the art equipment, no department is exempt from the power of forensic technology and the value it brings to law enforcement service delivery. Notwithstanding their size, law enforcement organizations must utilize 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 American policing and has paved new roads for investigators.

What follows is a glimpse at how a small to mid-size central Virginia police department leveraged its time, energy, and resources to develop a model forensic program that has served to both identify criminals and make a community safer. If it can happen in Charlottesville, Virginia, it can happen in your town. The recipe is one of people, systems, process, and vision. If you understand the value of science in helping to identify criminals and clear open cases, then everything else that is necessary will fall into place. The future success of your department as it relates to criminal investigations depends on it.

The Charlottesville Police Department has an authorized strength of 119 sworn police officers, 29 civilian support personnel, and is accredited through the Virginia Association of State Law Enforcement Accreditation. The department's annual budget is approximately 8.4 million dollars. A community of approximately 40,000 residents, Charlottesville is home to three of our nation's presidents, Thomas Jefferson's Monticello estate, and the nationally renowned University of Virginia.

The police department's Forensic Unit has a long history of commitment to the field of forensic science and has quickly gained national and international prominence 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 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 Data Bank. On a national level the unit has led departments on a per capita basis in the area of DNA identifications, eliminations, and cold DNA Data Bank confirmations. Such success proves paramount in the clearing of cold cases through the use of DNA.

One of the essential elements in creating an effective forensic unit is a police manager who has a basic knowledge, understanding, and appreciation for the value of both DNA and forensic science. Beyond the willingness to advance, these managers must have a willingness to assume a leadership role in implementing the necessary steps within their departments to create an atmosphere conducive to utilizing new scientific technology. This includes assessing personnel within the department who will be dedicated to providing the best possible forensic services to the 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.

Like any program implemented by a police department, identifying a funding source is second only to the willingness to move forward. Oftentimes, identifying a funding stream will require managers to "think outside the box." Such creative thinking may include requests

for supplemental appropriations to the department's budget, making application for state and federal grant funds, requesting funds from private philanthropic donors and foundations, and the creation of a departmental foundation created for the purpose of funding this and other important departmental programs and initiatives. Requests for supplemental appropriations are generally the more difficult of choices, particularly during tough economic times for localities. Nonetheless, a wealth of compelling evidence exists that supports the proposition that departments could well serve their constituency with the knowledge, skill, ability, and technological/scientific advancements associated with forensic investigations and evidence recovery.

Capacity, operational need, and fiscal responsibility are fundamental issues to be considered when embarking on the creation of a forensic unit. As previously mentioned, capacity 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, departmental 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 start-up. A three to five year strategic plan would not be unusual with funding increases at each step.

With all these things in mind, the Evidence Advisory Group of the Charlottesville Police Department was formed in 1994 and consisted of a cross section 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. During this period, excitement was piqued as more department members became involved in this important process, and an overwhelming sense of purpose grew. The group presented their recommendations to the Chief who endorsed the plan and ordered its implementation.

Now that the Chief Executive was on board and the plan was to be implemented, the following areas needed to be 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 knowledgeable forensic first line supervisor
- 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 within the department
- Development of equipment specifications, budget, and requisite purchasing procedures

The Evidence Advisory Group's recommendations provided a blue print for development of the Forensic Unit. Over a four-year period, from 1995 to 1999, the metamorphosis of an effective forensic unit began. In short, the retrospective investigation of crime had begun to change in Charlottesville and it wasn't long before success was evident.

Policy and Procedures

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

- Evidence retention for pending cases
- Evidence 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 processes. One such process was the manner in which crime scenes were handled. Initially, particular attention was given to burglary cases. With a focus on better methods of documenting and securing items of evidentiary value, the following systems and processes were implemented:

- Better documentation of crime scenes by utilizing evidence case files containing evidence recovery logs, sketches, body

injury diagrams, weapon documentation, photographs, reports, and supplements.

- The filing of major cases in three ring binders using section dividers and sheet protectors. This simple process proved to be very functional and effective considering the number of officers and prosecution and defense attorneys constantly reviewing the files prior to trial.
- All recovered handguns were properly reported to the Virginia State Police and Bureau of Alcohol, Tobacco & Firearms.
- All weapons and expended shell casings were checked through the state and federal ballistic systems - National Integrated Ballistic Information Network (NIBIN).
- All latent fingerprints, regardless of offense type, were checked through the Virginia State Automated Fingerprint Identification System (AFIS), with major unsolved cases being checked through the Federal Bureau of Investigation's Integrated Automated Fingerprint Identification System (IAFIS).
- All cases involving potential DNA evidence were submitted to the Virginia State Laboratory for analysis and checked through the DNA Data Bank.
- A regional agreement with the police chiefs, commonwealth attorneys, and judges was developed to authorize the destruction of drug evidence in compliance with state statutes that authorized procedures.
- All evidence was to be inventoried on a quarterly, semi-annual, and annual basis to ensure quality control.
- A major case forensic board was developed as a quick reference tool for the department.

Personnel

Once the intricacies of identifying funds, drafting protocols, and 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. This primitive scheme was not only ineffective but diluted the importance of our forensic mission. The first step in the unit's evolution required that room be made for a full-time forensic supervisor. This was accomplished in March of 1995 after a deliberate examination of the department's pool of qualified sergeants. Additionally, the number of technicians was expanded and a specific number of positions were assigned to patrol and investigations. The patrol division was allotted ten part-time positions: three on days, four on evenings, and three on midnights. Shift technicians were titled as Primary, Secondary, and Back-ups. The investigations division was allotted three part-time positions.

All technicians were categorized based on their formal forensic training and experience as Evidence Tech I, Evidence Tech II, Senior Tech, Forensic Tech, and Crime Scene Analyst. Advances in the system depended on advanced forensic courses, crime scene experience, and number of years as an evidence technician. All technicians were issued utility uniforms, pagers and cell phones, and were available for voluntary call out.

Eventually, a civilian clerical position was added to help handle the enormous increase in evidence, administrative paperwork, and data entry. The unit relied heavily on college interns to assist with the daily administrative tasks. The system works to the benefit of both the interns and the unit. They handle the daily, oftentimes 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 during their internship.

All members of the police department, sworn and civilian, are fingerprinted and their prints are sent 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, a wide

variety of training opportunities for technicians became a top priority. Eight, twenty-four, and forty-hour courses covering a multitude of forensic topics were at the disposal of unit membership. Unquestionably there are cost benefits with such a shift in priorities. Nonetheless, when balanced against the operational needs of the department and our 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 for not only evidence technicians, but for all 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 were required to obtain instructor certifications to assist with the increased training demands. This diminished the need to seek outside, and often costly, training opportunities.

The hallmark of evidence training is the Virginia Forensic Science Academy. This prestigious program includes a nine-week course designed specifically to train crime scene investigators in every major aspect of forensic science and evidence recovery. It remains, without question, one of the most effective courses of its kind in America. The Charlottesville Police Department has had the distinction of graduating 11 members from this Academy since its creation in 1974.

In an effort to better educate our community about the department's new Forensic Unit and the value it would bring to our department, Senior and Forensic Technicians were encouraged to participate in public speaking engagements on forensic topics.

Lastly, technicians were encouraged to select forensic specialties in which they were interested and pursue higher levels of expertise. Furthermore, the technicians were required to be 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 apparent. The new accommodations included a separate evidence vault for drugs, guns, and money. While general access to such areas must be controlled to protect the integrity of the evidence and the department, evidence technicians were given access to the main evidence room so that the evidence could be properly logged and processed for storage without the need to hire and train additional staff for that specific purpose. Some were given access to the evidence vault itself and only three had 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, narcotics, weapons, and monies are stored.

Our newly designed evidence storage space included the following things:

- Separate intrusion alarms
- Additional lighting
- New video cameras (monitored 24 hours a day)
- 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, guns, and biohazard material
- A drying cabinet for wet or blood stained items (restored from available materials)

The procedures and protocols that are put in place with regard to evidence packaging and storage require the input and support of every member of the department. To ensure this cooperation, efficiency and convenience was seen as critical. Evidence-packaging materials were relocated to a central location within the police department for easier access and better utilization. A newly organized and stocked evidence supply storage area was created and allowed for better inventory control and re-ordering.

The following other efficiencies were created to enhance the efforts that we had put into place:

- 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 moved from the basement of the headquarters building 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 data banks such as DNA, AFIS, and NIBIN, the department was compelled to create yet another evidence room solely for the storage of 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 they follow. Acknowledging that most criminals leave behind traces of themselves prior to fleeing the scene of a crime, procedures were established to ensure that all crime scenes within the city were documented and processed for physical evidence. Notwithstanding the frequently "non-violent" nature associated with their commission, burglaries were given particular attention. Properly processing such scenes frequently provides information that not only assists in the identification of the individual responsible for this crime, but oftentimes is responsible for additional incidents of a more intrusive nature.

Major crime scenes such as homicides, shootings, and sexual assaults require the expertise and experience of a trained graduate of the Virginia Forensic Science Academy or a Senior Evidence Technician. Often the processing of such scenes goes beyond the identification and recovery of evidence and requires specific knowledge of blood spatter, trajectory, impression recovery, and a host of additional advanced forensic examinations and evidence recovery methods. In contrast, policies should permit, if not require, patrol officers to process their own larcenies, vandalisms, 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 we await identification of a subject and a subsequent, and hopefully successful, prosecution.

State Laboratory and Evidence Analysis

Recognizing that our officers were well on the way to developing great skill in evidence recovery, the need to establish an excellent working relationship with the Virginia State Laboratory examiners at the Central Laboratory and the Chief Medical Examiner's Office in Richmond, Virginia, seemed a prudent next step.

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

Commonwealth Attorney's Office

The successful prosecution of forensic cases requires that the prosecutors be educated about forensic technology. This is another important element in the utilization of modern forensic technology, for it is the attorneys who must present the evidence to the court. 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 such as latent print identification, AFIS, DNA, the DNA Data Bank, ballistics, NIBIN, blood stain interpretation, firearms, trace evidence, and toxicology. As the number of solved cold cases grew, along with the convictions of two separate serial rapists and many cases involving DNA, the attorneys became well versed in the prosecution of cases involving all types of forensics.

Equipment

All Forensic Unit equipment was inventoried and 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 Omni-chrome 5000 alternate light source was purchased to enhance evidence and crime scene processing for latent prints and biological materials. A Ford van was set up as the unit's primary crime scene vehicle. The primary patrol crime scene vehicle was 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, is continually upgraded and enhanced. All essential unit functions such as requests for laboratory examination, court orders, ten print fingerprint files, palm print files, juvenile print files, and laboratory identifications/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 requests and are trained to use the computer system while going through the field training officer program. Additionally, 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 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.

Management Support

It is important for police executives to understand that the rebuilding and enhancement of the Forensic Unit would not have been accomplished without the continuing support of the Police Chief. The Chief had to buy into the long-term vision of the process. It was critical that he make it clear to managers, supervisors, and officers his strong support for developing an effective forensic unit. The second issue was finding mid-managers willing to learn about and have a working knowledge of crime scene processing, forensics, and the power of DNA. The third issue was convincing the majority of first line supervisors of 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. 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 has gone from 54 identifications/eliminations in 1995 to over 250 in 2002. All information is logged into 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, 1995 and July 2003, the unit has had 240 DNA identifications in 91 cases. During the same time period DNA eliminations were utilized 207 times in 43 cases. Learning how to fully utilize DNA eliminations 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 success with routine and major case crime scene processing. The unit had been utilizing bloodstain interpretation (blood spatter) for several years in numerous cases and this has 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, who was totally skeletonized. We also attempted a botanical DNA identification from a leaf found in the victim's car trunk to bushes found at the gravesite. The botanical analysis was conducted by Virginia Tech College. This case has been presented to the Virginia Forensic Science Academy Re-Training Seminar and was featured on German television. The second case, a burglary/rape/robbery, yielded the department's *first* DNA Data Bank hit in October of 1999. The DNA Data Bank was absolutely essential in solving this case. A latent fingerprint recovered from the scene failed to hit in the Virginia AFIS and was later identified to the suspect, after DNA. This case has been featured twice on CBS television.

In 2000 the department led the state in weapon, shell casing, and bullet identifications 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. Additionally, all handguns and semi-automatic 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 has obtained 41 DNA Data Bank hits on individuals, 20 of which have resulted in arrest and conviction. Of these Data Bank hits, 10 were sexual assaults and 10 were from burglaries, reiterating the need to pursue burglaries. Through the use of the DNA Data Bank, 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 remains under investigation. The department has re-opened numerous burglaries, larcenies, and stolen auto cases due to DNA Data Bank hits. In one recovered stolen auto case the lab identified three suspects through the Data Bank and then identified an additional four DNA profiles. Additionally, the department has obtained 14 Data Bank case-to-case matches including four against a serial rapist in three different jurisdictions. The remaining hits came from robbery, stolen auto, larceny, and vandalism cases.

Summary

Small police departments actually have a distinct advantage over our big jurisdiction brothers. The sheer volume of calls and cases in bigger departments prohibit the detailed processing of routine burglaries. However, 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 agency's laboratory for analysis. How will a match ever be made if the evidence is still sitting unanalyzed in the evidence room?

We get numerous calls from agencies wanting to know what our special technique is. There are several simple rules. Process the crime scenes diligently, pay particular attention to burglaries, search for DNA, and submit the evidence to the laboratory for analysis.

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

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