

Located in the town of Sudbury, the Massachusetts State Police Crime Laboratory officially opened in May, 1995 after a two-year renovation that cost approximately 5.5 million dollars.

According to lab director Detective Captain David A. Ranieri, the state is reaping huge returns on the investment of time and money in increased efficiency and crime-solving capabilities. The facility, encompassing all of the Massachusetts State Police (MSP) Forensic Services Sections, currently processes approximately 20,000 cases a year.

Ranieri, a 25-year veteran of the force, is enthusiastic about the current capabilities of both the lab and the people who staff it. A tour of the facility and interviews with officers and technicians assigned there revealed his attitude was shared by many.

The building itself, designed to house some of the

most advanced crime-solving equipment available, is aesthetically pleasing. The Sudbury complex is supplemented by seven satellite offices located strategically around the state. The regional laboratories insure faster response times to crime scenes in the state's nearly 11,000-square-mile area.

However, all of the MSP's forensic operations are based out of the Sudbury complex, making it, in effect, the state's Forensics Services Headquarters.

Chemist Mary Kate McGilvray preparing a sample in the Serology Lab.

The Massachusetts State Police Crime Laboratory, Sudbury, MA, (below) and the interior view from the lobby to main entrance (left). Elements of light and space are incorporated throughout the structure.



By Michael E. Conti

The Massachusetts State Police Crime Laboratory

The Crime Lab

The Crime Lab Section of the complex assists state and local law enforcement investigators by conducting scientific analysis, comparison, and identification of evidence. This section is further broken down into six specialized sub-laboratories. Personnel from each utilize an integrated team approach to insure that evidence is collected, analyzed, and documented correctly.

The sub-sections include a criminalistics laboratory responsible for obtaining and analyzing biological and trace evidence; a serology laboratory which identifies and characterizes blood, semen, and other bodily fluids; a toxicology laboratory which analyzes biological samples for the presence of drugs, alcohol, or poisons and may assist investigators in determining the cause of death; a drug identification laboratory that performs quantitative and qualitative testing to determine the presence and purity of controlled substances as well as the presence of any other materials; an arson/explosives laboratory which is used to analyze evidence from suspected arson and bombing scenes to determine the presence of accelerants or explosives residue; and an alcohol testing laboratory which is responsible for the calibration of breath testing equipment and the preparation of simulator solution used by all police departments throughout the state. In addition, crime lab personnel often provide expert courtroom testimony.

DNA testing is the next technological advance that the Crime Lab Section is planning to implement. According to chemist Mary Kate McGilvray, who is in charge of the Serology Laboratory, DNA testing is far superior to standard serology methods for identification of bodily fluids.

"Using a sexual assault case for an example," McGilvray said, "with standard serology testing, trying to separate and identify the bodily fluids of the assailant and victim would be like trying to separate mixed tuna and mayonnaise — difficult, if not impossible, to do.

"If DNA testing is implemented, however, the difficulty level can be compared to trying to separate golf balls and tennis balls. In other words, mixed bodily fluids can be separated and positively identified by using the DNA process."

Crime Scene Services Section

The Crime Scene Services Section, led by Lt. Richard D. Lauria, provides crime scene technical support, documentation to support its findings, expert fingerprint identification, and courtroom testimony. At a scene, its function is to collect, store, and preserve evidence for future testing. Unit members also videotape and photograph the scenes extensively, providing a lasting record.

Additionally, the section assists in the training of state and local officers in crime scene search techniques. Classes, administered by recognized experts in the forensics field, are routinely presented at the Sudbury site.

Lauria and the officers under his command have processed numerous crime scenes. A high-profile case that the unit assisted with occurred in December 1994 when a gunman walked into two separate clinics in Brookline and opened fire with a .22 caliber rifle. Two people were killed and five more were wounded during the unprovoked

attacks. The key piece of evidence that eventually led investigators to the shooter, John Salvi, was discovered at the scene by investigators from the Crime Scene Services Section.

More recently, several horrific murders were solved with the assistance of Crime Scene Service's Lt. Brian M. O'Hara, using a new blood reagent. The product, which is called "Hungarian Red," is very effective for uncovering and enhancing fingerprints and footwear impressions that otherwise could go undiscovered.

Another member of the unit, Lt. Kenneth F. Martin, developed a technique for recovering latent fingerprints from duct tape used in the commission of serious crimes. This technique, now employed throughout the forensic community, has proven invaluable to investigators.

Investigative methods used to process crime scenes are advancing at a tremendous rate. The implications of these advances are not limited only to current or future investigations, however. According to Lauria, "We're currently taking evidence that still exists from old cases and reprocessing it with the new techniques. We have had some success with this and anticipate more as newer technology comes on line."

Firearms Identification

The Firearms Identification section conducts scientific testing, comparison, and identification of firearms and firearms-related evidence. Examinations of evidence are conducted using conventional comparison microscope and ballistics testing methods. These standard methods, however, are soon to be augmented by the acquisition of the DRUGFIRE Program.

DRUGFIRE, a Digitized Firearms Identification System, was developed by the FBI in 1992. The program links firearms-related evidence (cartridge cases, bullets, and guns) from serial shooting investigations. Once Sudbury's DRUGFIRE Program is operational, it will be accessible to over 180 other laboratories across the nation.

Facilities such as the Sudbury Lab, referred to as regional "servers," provide a database that can be accessed by all participating agencies. In this way, a bullet or casing recovered in Miami can be searched against recovered firearms in Los Angeles, New York, or any other DRUGFIRE-serviced area, providing results in a matter of seconds. Sudbury has been designated as the server site for New England, maintaining links with other sites in Maine, Vermont, Connecticut, and Rhode Island.

Members of the Firearms Identification Section also routinely respond to crime scenes to assist investigators in determining what role, if any, firearms may have had in the commission of the crime. The section is also responsible for destroying firearms and ammunition turned over to it by police agencies, the courts, and private citizens.

Identification Section

The Identification Section has two units: the Automatic Fingerprint Identification System (AFIS) and the Identification Unit. AFIS, which utilizes a mainframe database, stores and compares fingerprint data. Currently, the finger-

prints of nearly half a million criminals are maintained, and the unit processes approximately 140,000 inquiries per year.

While the system greatly improves both the likelihood of a suspect being found as well as the speed by which closely matching fingerprints may be located, Lauria pointed out that the final match is still made by another precise instrument: the highly trained and discriminating human eye.

The Identification Unit receives and maintains fingerprint files and mug shots from contributing law enforcement agencies throughout Massachusetts. All fingerprint files received are entered into the AFIS database.

An Image-Based Identification System (IBIS) is also maintained by the Identification Unit. This computer database stores both fingerprints and mug shot images on optical disks.

Polygraph Section

The polygraph section assists investigators by rendering opinions as to the veracity of statements obtained from victims, witnesses, and suspects involved in ongoing criminal investigations. It is currently staffed by Lt. John Consigli and Sgt. Patricia Driscoll. Consigli, a graduate of the FBI Advanced Law Enforcement Polygraph Course, is also a member of the Board of Directors of the American Polygraph Association. The section provides services to 117 cities, towns, and organizations, scheduling more than 200 polygraph tests per year.

Although the results of polygraph testing have not been allowed into evidence in Massachusetts in many years, Consigli noted that the State Supreme Court is beginning to display a willingness to consider such evidence in certain situations. Documentation of the training of the test giver is a major factor with regard to the acceptance of polygraph testing. Consigli said the findings of any polygraph test is directly affected by the type of training and amount of experience possessed by the technician.

When asked about other types of lie detection technology, such as voice stress analysis, Consigli is adamant. "Up to this point, there is no other technology available that is more accurate than the polygraph." Not that the science of forensic psychophysiology, upon which polygraph testing is based, isn't changing.

"Polygraph testing in one form or another is here to stay," Consigli said. "Both the methods and tools are evolving, becoming more precise."

The new Crime Laboratory provides a vast array of capabilities and resources to the New England's law enforcement community. While employing some of the most advanced equipment and methods, the facility must also keep up with rapidly changing technology and increased case loads. Finding ways to better serve the ever-expanding needs of law enforcement while alleviating backlogged cases is one of many obstacles that must be overcome.

Incorporating federally sponsored networks such as LABNET (a special high-speed communication system being established throughout the country by the FBI) should

aid in reducing backlogged cases by insuring faster service and processing of information. The Crime Lab in Massachusetts is one of eight regional LABNET router site. Others are located in Washington, DC, Florida, Illinois, Kansas, Texas, California and Oregon.

Once online, participating agencies will be able to access a wide variety of services and programs, improving efficiency as well as communication between departments. Current programs such as DRUGFIRE will be supplemented by other FBI-sponsored databases such as the Combined DNA Index System (CODIS) for biological evidence, automotive carpet fiber files, and explosives files.

The department is also seeking accreditation through the American Society of Crime Laboratory Directors (ASCLD) in its attempt to meet national standards and enhance the professionalism of the crime lab and its personnel.

While the facility itself is impressive, the true value and strength of the lab cannot, according to Ranieri, be measured by the precision of the equipment or the advances in the technology.

"Our strength, like that of our entire department, is in our people," Ranieri said. "The work they do, the things they deal with and see — no machine can understand the sacrifices they make, or do the job they do." L&O

Michael E. Conti is a free lance writer in Andover, MA.

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