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CCTV: A Law Enforcement Tool

By Grant Fredericks, Forensic Video Analysis Expert, Constable (Retired), Vancouver Police Department, Vancouver, British Columbia, Canada

The past decade has seen unprecedented growth in the deployment of closed-circuit television (CCTV) security monitoring systems. Nationally reported events, such as terrorist attacks and school and workplace shootings, have led schools, businesses, government offices, and even churches and private homes to install video surveillance systems in record numbers.

Detective Joe Giufrida, forensic video analyst with Prince George's County Division of the Maryland National Capital Park Police, analyzes a CCTV tape recovered from a crime scene.

Video cameras are routinely placed in police vehicles to record traffic stops, and roadways are monitored to manage vehicle movement. Although privacy advocates and civil libertarians decry the emergence of a surveillance society, it appears the public seeks and expects these systems to protect them.

The proliferation of video systems has resulted in the collection of a staggering amount of recorded evidence of crimes. This article will describe how agencies can effectively use this valuable evidence and discuss strategies for building an invaluable investigative video infrastructure.

Video-Ready World

Falling equipment costs and increased production of CCTV equipment has helped make it possible for even the smallest businesses to purchase this visual surveillance technology. Wholesalers, security retailers, and Internet vendors offer a variety of products for a wide range of security needs, from two-camera systems that record video on a personal computer for less than $200 to more complex systems that can monitor a given area and automatically sound an alarm if a package is left behind or an item is removed from the field of view.

Many security managers are turning to integrated security monitoring systems that combine perimeter access, fire and intrusion alarms, and surveillance video into a single security network. Wireless technology allows security personnel to monitor cameras from laptops, handheld devices, and even mobile phones.

But this is just the beginning. In an increasingly security-conscious environment, the use of video surveillance will continue to expand and law enforcement will be challenged to meet the growing expectations of a video-ready world.

Training for law enforcement in handling CCTV is available from the following sources:

International Association for Identification (IAI)
2535 Pilot Knob Road, Suite 117
Mendota Heights, MN 55120
Phone: 651-681-8566
Fax: 681-8443
www.theiai.org

Law Enforcement and Emergency Services Video Association (LEVA)
PMB 333
2100 Riverside Parkway, Suite 119
Lawrenceville, GA 30043
Phone: 770-277-0310
www.leva.org

How Video Helps Investigators

Increasing use of video monitoring is presenting law enforcement with an unparalleled amount of visual information to aid in investigations. A few frames of video from a car wash in Florida,[1] the scratchy image of a rented truck in Oklahoma City,[2] and the amateur video of unruly teens assaulting women after a New York City parade[3] are just some of the examples of video images that have become crucial evidence in high-profile criminal investigations. Tens of thousands of lesser crimes are caught on video each year, eventually playing an important-and sometimes critical-role in the courts. Many agencies are now routinely taping suspect interrogations, which, according to a recent study, have significantly reduced defense motions to suppress confessions and statements.[4]

A crime scene is just where the search begins when looking for video that may assist an investigation. A sharp-eyed investigator can survey businesses or public buildings near the scene and spot the telltale smoked plastic domes concealing the cameras that might have caught a suspect fleeing the area. In many cases the video captured by CCTV systems may reveal important clues, such as a vehicle used for escape or accomplices standing lookout on a nearby street corner. In many cases the videotape is the sole survivor, the silent witness.

Often video provides the only evidence linking a suspect to a crime. Perhaps the most famous example came in the Oklahoma City bombing investigation and subsequent trial of Timothy McVeigh. The black-and-white video image of the Ryder truck passing in front of an apartment complex a block from the Alfred P. Murrah Federal Building provided a critical link, placing the suspected vehicle at the scene.

In many cases, the suspects themselves provide damaging video evidence. Frequently investigators are recovering video cameras and tape containing footage offenders recorded of themselves while committing a crime. Sexual offenses captured to video are, in many cases, trophies collected by suspects. Although the videotapes are often well hidden, sexual predators frequently keep the video records long after the offense. Videotape should be high on the list of evidence targeted in search warrants during sex-related crimes.

Video evidence often provides the investigator with the first glimpse of the crime, giving the investigator a virtual and contemporary walk-through of the crime scene as the event took place. Confident but overzealous witnesses who might otherwise lead an investigation down the wrong path can be easily discounted and more valuable witnesses prioritized as their observations more accurately parallel the actual events recorded to tape.

Officers and prosecutors must be educated in video technology and prepared for the increasingly so-

Recovering the Evidence

The recovery of video from a crime scene should follow scientifically accepted procedures, and officers should observe the chain-of-custody policies just as they would with any other physical

prepared for the increasingly sophisticated challenges being presented by defense attorneys. The Office of Community Oriented Policing Services (COPS) Regional Community Policing Institutes (RCPI) will be hosting a series of training events across the United States through 2005. The RCPI, the IACP, and the Law Enforcement Mobile Video Institute (LEMVI) will be delivering training addressing many of the issues surrounding the effective use of video. Designed for police executives, prosecutors, and judges, the daylong IACP class will discuss the use of video in investigations, management issues, presentation of video evidence, and pertinent case law. Information about these workshops can be found on the IACP Web site, www.theiacp.org.

evidence. Agencies should limit videotape recovery to properly trained officers thoroughly familiar with standard operating procedures for the collection of media at a crime scene. The danger is that officers arriving on the scene of a robbery and eager to get a look at a suspect may accidentally damage or erase video evidence. Although everyone has handled videotapes at home, tapes found at crime scenes are evidence and need to be collected and handled as evidence by properly trained officers.

Recently, digital video recorders have begun rapidly replacing traditional analog VCRs in security systems and computers are quickly taking the place of tape machines. Recovery of video from these devices can be very difficult, often requiring law enforcement personnel to seize the hard drive or the entire computer system in order to retrieve and preserve the original evidence. Incorrect recovery practices of digital video evidence could render the exhibit worthless for follow up investigation and subsequent trial. To complicate the new technology further, there are currently no standards governing the design, installation, operation, or performance of digital recorders. Agencies need to provide specialized training for personnel tasked with the recovery of recorded media.

Another word of caution is also necessary. Well-meaning employees of businesses where digital video equipment is installed may offer to help in the evidence recovery; however, experience has shown that they can rarely provide the assistance required for the evidence seizure process. It is best to secure the equipment and wait for the specialist to recover the evidence.

Once retrieved, the recorded media must be handled in a manner to preserve chain of custody and to protect the integrity of the evidence. In the case of a VHS tape, for instance, the so-called record tab on the back of the cassette should be broken off to help prevent accidental recording. Again, department standard operating procedures should address the proper handling of evidence.

Making the Most of Video Evidence

An agency interested in developing a video support infrastructure should begin by identifying all current video applications within the agency. Many times existing personnel and equipment will be able to provide the expertise and technology necessary to assemble an effective video support system. The common uses of video in a police department include the following:

- Patrol vehicle in-car cameras
- Training
- Public affairs
- Robbery investigation
- Crime scene processing
- Undercover surveillance

- Tactical operations
- Vehicle collision investigation
- Interrogation
- Video lineup

An agency presently using video in any of these areas will likely possess many of the basic tools necessary for examining video evidence. Developing a comprehensive video support strategy can benefit all of these units, in turn maximizing the value of the agency's investment in video technology.

There are several levels of video support an agency might consider, depending on its specific needs and operation. The most basic level provides playback and duplication of tapes recorded within the agency; only a pair of VCRs compatible with the recording equipment and a monitor are required to provide this level of service.

With the addition of some relatively inexpensive video processing hardware, the capabilities of the system can be expanded to include the capture and printing of individual video images. A time base corrector (TBC) synchronizes and helps to stabilize video images; however, personnel using this equipment should be thoroughly familiar with its operation and officially trained in its proper use. Most TBCs also allow the user to make basic contrast, brightness, and color adjustments and can freeze a frame of video, which can then be printed. When printing a freeze-frame, specialized video printers should be used for the best results.

To facilitate the playback of video recorded on many commercial CCTV security systems, VCRs capable of playing time-lapse recordings should be considered. Multiplexers, devices that decode complex recordings from systems employing multiple cameras, may also be required. Unfortunately, security system vendors often market systems employing proprietary encoding, so several multiplexers may be necessary to accommodate the security systems in use in a given area.

The increasing popularity of digital video recorders (DVRs) has created additional challenges for law enforcement. Investigators arriving on a crime scene may encounter a CCTV system that does not use videotapes but rather records video directly to a hard drive or other digital storage device. Lacking industry standards or conventions, manufacturers of DVRs usually employ proprietary recording formats that require specialized software or hardware to play back the images recorded on these devices. Sometimes a portable VCR can be used to copy the necessary footage from the security system at the crime scene, but a conversion from the original proprietary file to an analog signal may result in significant loss of image quality.

The next level of support requires the acquisition of computer equipment and software designed specifically for forensic examination of video images. These forensic video analysis (FVA) systems allow a trained operator to digitize analog video for processing with a number of computer applications. These tools can be used to clarify, stabilize, and reveal important details in the video. However, it is highly recommended that any system used for forensic analysis also have the ability to digitize the video without applying compression, a process designed to reduce file storage requirements. Compression of video files can result in the loss of important information in the recorded images, and seriously degrade the image quality and, therefore, the evidentiary value.

It is also important that the personnel operating this equipment are properly trained in its use and the legal issues involved. Forensic video analysis is recognized as a forensic science, and must be practiced with the same attention to detail as other forensic applications. The American Society of Crime Laboratory Directors Laboratory Accreditation Board (ASCLD/LAB) now includes forensic video analysis as an accredited discipline, a development that could have ramifications for agencies seeking accreditation for their crime laboratories. Documented training and demonstrable proficiency of forensic analysts is an important component of the accreditation program.

Managing the Video

Whether an agency has a full-service forensic video analysis unit or just a pair of VCRs to copy the occasional tape, there is still the problem of storage. Department policies must address some basic storage concerns, including chain of custody and tape retention time.

Agencies using digital recorders in patrol vehicles or other applications, or using digital media recovered from a crime scene, may need to invest in a robust media management system to log, track, and store digital media in a manner that will not degrade the evidence. This virtual property room must be capable of storing media without applying compression or altering the

files in any manner. A removable write-once read-many (WORM) medium like DVD-R can be used to archive evidence. Some commercial off-the-shelf media management systems specifically designed for evidence storage have recently come onto the market, and might be a good choice for some agencies.

Use in Court

Each agency will need to determine what local or state statutes require for tape retention. Since the end user of the evidence will be the state's attorney or local prosecutor in the courtroom, involving the attorneys in how the evidence will be handled is important. Also, the police department will need to educate the prosecutors in how the evidence is identified, how it is collected and analyzed, how it is used in the investigative process, and how suspects are identified. Without buy-in from the prosecutors, the effort to obtain video evidence will not be presented in court.

Video and audio evidence can be among the most compelling exhibits a prosecutor can present at trial. With the growing use of CCTV and digital video surveillance systems, there is a wealth of evidence available to investigators. However, the proliferation of digital effects in motion pictures and television has given rise to some skepticism on the part of the courts, attorneys, and juries. Although a series of significant rulings have supported the use of digital imaging technologies, great care must be taken when preparing and presenting any case involving video evidence. A police officer may be qualified to testify to the recovery, chain of custody, and significance of the images on a tape but may be in trouble if asked on the witness stand to make expert opinions in highly technical areas.

Analog videotape has had a long, successful history with the courts; in part because of the broadcast television standards regulate the technology. As noted earlier, however, such standards have yet to be established for digital video, leaving the technology vulnerable to possible challenges under Frye and Daubert, the tests courts apply to determine the admissibility of novel scientific evidence.[5] ■

[1] A carwash security camera in Sarasota, Florida, captured the abduction of 11-year-old Carlie Brucia on February 1, 2004. However, the video was not discovered until after an Amber Alert was issued the following afternoon. The carwash tape gave investigators their best lead in the case.

[2] A video camera at an apartment complex a block from the Alfred P. Murrah Federal Building in Oklahoma City caught the image of a Ryder truck shortly before a massive explosion destroyed the Murrah building on April 19, 1995. It was later determined the explosion was caused by a homemade bomb hidden in a Ryder truck.

[3] After the annual Puerto Rican Day parade in New York's Central Park in June 2000, dozens of youths attacked women in the park, tearing off clothing and sometimes groping their victims. Home video seized from witnesses was the most important evidence in the investigation and subsequent arrests.

[4] Northwestern University School of Law Center on Wrongful Convictions, *Police Experiences with Recording Custodial Interrogations*, by Thomas P. Sullivan (Evanston, Ill.: 2004); available at (www.reid.com/SullivanReport.pdf).

[5] *Frye v. United States*, 293 F. 1013 (DC Cir. 1923), sets out a test that scientific evidence must "have gained general acceptance in the particular field in which it belongs." *Daubert v. Merrell Dow Pharmaceuticals*, (92-102), 509 U.S. 579 (1993), deals with the admissibility of expert evidence under *Federal Rules of Evidence*, requiring that the expert evidence is "scientific knowledge" supported by validation, and the evidence must assist the court in understanding the evidence or determining a fact in issue.

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