FINAL REPORT


# COMPARATIVE ASSESSMENT OF THREE POLICE BOOKING CENTER PROJECTS


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**Executive Summary**

In recent years, police departments and court systems in the Commonwealth of Pennsylvania have increasingly adopted automated technologies. This report presents the results of an evaluation of the use of automated technologies to process crime suspects in three Pennsylvania jurisdictions: Cumberland County and Schuylkill County, which each operates a regional booking center, and the City of Harrisburg, which operates a booking center used by the Harrisburg and Penbrook police departments. The specific technologies being used involve the booking of suspects by means of automated fingerprinting machines and digital mug shot systems. In 1996, the Pennsylvania Commission on Crime and Delinquency (PCCD) awarded subgrants to these three localities for the establishment or expansion of their booking centers. In April 1998, the PCCD commissioned Concurrent Technologies Corporation (CTC) to conduct an evaluation with funding provided under the federal Drug Control and System Improvement (DCSI) program. CTC, in turn, subcontracted with CONSAD Research Corporation to perform the major evaluation tasks.

Based on data gathered from site visits, surveys of booking agents and booking center administrators, and surveys of police officers and police chiefs, CONSAD analyzed the impacts that these automated booking centers have had on the processing of suspects in each locality. The evaluation focused on the extent to which these centers have achieved various goals. One goal is to improve the speed with which fingerprint records and associated information are submitted to the Pennsylvania State Police Central Repository and a "rap sheet" containing information on the suspect's identity and statewide criminal history is returned to the arresting agency or booking center. A second goal of the automated booking projects is to reduce the length of time police officers and booking agents must wait for a rap sheet. Other goals include freeing police officers from booking duties so that they can spend more time on patrol or performing other duties; improving the quality and accuracy of fingerprint images, suspect photographs, and related suspect information; and increasing the overall efficiency of the booking process, which may result in cost savings.

CONSAD's evaluation indicates that the three automated booking centers have had several positive impacts on the process of booking suspects. Specifically, the use of automated fingerprinting machines and digital mug shot systems at these sites has:

I.      Increased the speed with which fingerprint images and associated data are sent to the Central Repository by between 5 and 8 days and increased the speed with which a rap sheet is subsequently returned to the booking agency by between 3 and 5 weeks;

I.      Increased the number of suspects for whom fingerprint records are created and submitted to the Central Repository;

I.      Enabled police officers to return to patrol or other duties much more quickly after arresting a suspect. Cumberland County police officers have been able to spend approximately 2,008 additional hours per year on patrol; Schuylkill County police, an

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extra 2,682 hours per year; and Harrisburg and Penbrook police, an additional 9,585 hours per year.

I.      To some extent, improved the quality of fingerprint images and suspect photographs; and

I.      Improved the effectiveness of criminal investigations, largely as a by-product of booking agents, police officers, district justices, and other criminal justice participants receiving suspect information from the Central Repository more quickly, and receiving this information for a greater number of suspects.

The analysis also indicates that at two of the three booking centers included in this evaluation, the use of automated booking technologies is nominally more expensive than the prior use of conventional booking methods. However, in general, the larger the number of police departments and police officers associated with a given booking center, the more likely that the use of automated booking technologies will be less expensive than conventional booking methods. In addition, the significant time savings and other benefits associated with automated booking technologies may make them worthwhile to counties with fewer police departments and police officers.

CONSAD found that utilization of the booking centers varies among the three counties. In Cumberland County, several municipal police departments often do not transport suspects to the Booking Center because the distance they must travel is quite far. In Schuylkill County, all municipal police departments use the Booking Office most all of the time. In contrast, the Harrisburg Center serves only two municipal police departments. Another possible impediment to greater utilization are problems that police officers have encountered at the centers. Although most police officers report that their experiences with the centers have been positive, some cited such problems as processing errors, uncooperative booking agents, and centers sometimes being backlogged or understaffed.

This evaluation also assesses the extent to which police departments have integrated information on suspects and crimes into their management information systems. CONSAD found that police typically enter this information into their departments' records systems, but that these records systems vary considerably among police departments in the three counties.

Finally, the evaluation examined whether the automated fingerprinting machines and digital mug shot systems used meet relevant industry or government standards. In all three centers, the technologies used conform with standards issued by the American National Standards Institute and the National Institute for Standards and Technology.

In conclusion, this report suggests that the use of automated booking technologies results in significant improvements in the effectiveness of processing suspects. This is especially the case for counties that have many police departments (and other law enforcement agencies) whose officers make many arrests.

## 1.0     Introduction

The use of manual fingerprinting, photography, and data entry technologies for the booking of criminal suspects is relatively inefficient and resource-intensive.   Most significantly, manual booking requires substantial amounts of police officer time.   Local police departments must also often wait one or several weeks to receive a positive identification of the suspect and associated criminal history information from the State Police.

In 1996, the Pennsylvania Commission on Crime and Delinquency (PCCD) awarded subgrants to three localities in the Commonwealth for the establishment or expansion of police booking centers that use automated technologies for booking suspects.   These booking centers are located in Harrisburg, Lower Allen Township (Cumberland County), and Pottsville (Schuylkill County).   The City of Harrisburg Booking Center is located at the Harrisburg Police Bureau and is used by police officers in that department and in the nearby Penbrook Police Department.   The Lower Allen Township Central Processing Center is available to surrounding law enforcement agencies in Cumberland County, and the Pottsville Central Booking Office is available to surrounding law enforcement agencies in Schuylkill County.[1]

In April 1998, the PCCD, using federal Drug Control and System Improvement (DCSI) funding, commissioned Concurrent Technologies Corporation (CTC) to conduct an evaluation of these three police booking center projects.   CTC, in turn, subcontracted with CONSAD Research Corporation (CONSAD) to perform the major evaluation tasks.

The process of booking a suspect typically involves creating a record that consists of images of the suspect's fingerprints, photographs, and information about the suspect,

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[1]There are other municipal and state police agencies and booking centers in the state that utilize automated booking technologies.  This evaluation focuses, however, only on the three booking centers mentioned here. Cumberland County has just recently added a second booking center, located in Carlisle, but we did not have the time or resources to include this site in our evaluation.

such as his/her name, date of birth, and address. In addition, the record also consists of information describing the criminal incident that occurred. Traditionally, fingerprinting is done by manually placing ink on the suspect's fingers and "rolling" them on a special card to create fingerprint impressions. The information about the suspect and the incident is also recorded on the card. A photographic image of the suspect is conventionally taken with a Polaroid or roll film camera. These tasks are typically done by the arresting officer, often with the assistance of another police officer. The completed fingerprint card is sent to the Pennsylvania State Police Central Repository, which uses the fingerprints and other information provided to positively identify the suspect. The Repository then sends the arresting agency a "rap sheet" listing the suspect's identity and summarizing his/her criminal history, which includes previous arrests and convictions, and any crimes for which the suspect is wanted elsewhere in the state.

According to contacts at each of the three sites, the primary objective of the police booking center projects is to implement and use automated technologies to increase the speed with which a positive identification is made and criminal history information received by the arresting agency. A second objective is to improve the quality and accuracy of the information produced from booking a suspect. A third objective is to rely on trained, dedicated booking agents to book suspects, allowing police officers to return to their duties as quickly as possible. (Trained agents specializing in booking suspects could further improve the quality and accuracy of the information produced.) The centers in Lower Allen Township and Pottsville add a fourth objective of rationalizing the booking process county-wide by having a single site for booking, thereby taking advantage of economies of scale. The automated technologies used at all three booking centers consist of Livescan TENPRINTER Fingerprinting Machines, manufactured by Digital Biometrics, Inc., and digital mug shot systems provided by various vendors.

This report presents the results of our evaluation of the use of these automated booking technologies in each of the three sites, and describes the facilities and procedures

followed in each site.  The evaluation assesses the extent to which the technologies have impacted the cost, speed, and efficiency of the booking process in the three counties of interest.  The evaluation seeks primarily to:

(1)     Assess whether automated booking technologies (automated fingerprinting machines and digital mug shot systems) enable police officers to return to patrol or other duties more quickly;

(2)     Analyze whether automated booking technologies provide a cost-effective alternative to conventional booking methods (the manual rolling of fingerprints and the use of conventional mug shot cameras to produce suspect photographs);

(3)     Assess whether the quality and accuracy of the fingerprints, photographs, and other information produced using automated technologies is significantly different from those produced using conventional booking methods;

(4)     Determine whether there is a significant difference in the amount of time required for criminal history information and a positive identification of the suspect to be acquired by law enforcement officials using automated technologies than by those using conventional methods; and

(5)     Determine the extent to which municipal police departments are utilizing the three booking centers, and assess the barriers to such use.

Secondary objectives of the evaluation are to:

(1)     Assess the extent to which automated booking has affected the effectiveness of conducting investigations;

(2)     Determine the extent to which criminal history and other information obtained at the booking centers is integrated into the management information systems of municipal police departments; and

(3)     Assess the extent to which the automated technologies used at the centers conform with industry or government standards.

The impact of automated booking on the efficiency and effectiveness of the activities of law enforcement agencies in the Commonwealth is potentially quite large. Broader commitment to the use of automated technologies by additional law enforcement agencies may be warranted based on the results of this evaluation.

Section 2.0 of this report provides background information on the conventional booking process followed at most police departments and on the processes followed at each of the three booking centers. It also describes the booking process in a municipal police department in Dauphin County that has its own automated fingerprinting machine, as well as the process of fingerprint data storage and retrieval at the State Police Central Repository. Section 3.0 describes the data collection strategy and evaluation methodology we have utilized; Section 4.0 describes the evaluation results; and section 5.0 provides our conclusions.

## 2.0    Background

This section contains information describing the implementation and use of automated booking technologies by local law enforcement agencies. Each of the three booking centers is described separately in what follows. A description of the booking process followed by the Lower Paxton Township Police Department, which has its own automated fingerprinting machine, is also presented. Following these reviews of the technologies and practices used in each of these sites is a description of the process of fingerprint data storage and retrieval at the Pennsylvania State Police Central Repository. Before discussing the four sites and the role of the Central Repository, however, this section begins with a description of the conventional process used to book suspects in most police departments.

## 2.1    The Conventional Booking Process

The booking centers in Lower Allen Township, Pottsville, and Harrisburg serve a number of local police departments in their respective counties. Police departments in these three counties that do not use one of the booking centers must book suspects using conventional methods. Prior to the establishment of the three booking centers, the police departments that now use them also booked suspects themselves using the conventional approach. This approach basically involves using the ink method to capture fingerprints and taking mug shots with either Polaroid or roll film cameras.

When a suspect is arrested in a police jurisdiction using the conventional booking process, the arresting officer transports the suspect to his/her respective department, where he/she books the suspect. The arresting officer typically books a suspect himself/herself, often with the assistance of another police officer. While at the police station, the officer usually completes a field report (or uniform incident report), which contains the officer's notes describing events and information pertinent to the crime

committed. The officer uses these notes to generate a Criminal Complaint form (which contains the suspect's name, address, and other identifying information, and describes the charges in legal terms) and an Affidavit of Probable Cause (a narrative version of the incident that occurred, which serves to support the Criminal Complaint). These two forms are sent or taken to the district justice who is to arraign the suspect.[2] The arresting officer must also complete an arrest report, which contains much of the same information, describing all of the circumstances surrounding the arrest.

Most police departments have a specific counter or table for fingerprinting. On the counter is a glass or metal slab (often there are more than one), on which the officer applies black ink from a tube. The officer then uses a special roller to spread the ink evenly across the slab. Next to the slab is a fingerprint card holder, into which the officer places a Pennsylvania State Police Arrest and Institution Fingerprint Card. The officer places ink on the suspect's right thumb by manually rolling the thumb over the slab. The officer then rolls the thumb from side-to-side onto the card, creating a fingerprint impression. The officer continues this process with each of the other fingers. For each hand, all four fingers must be rolled individually, and then again together. Each thumb must be rolled twice.[3]

This entire process must then be repeated, because at least two State Police cards are typically produced for a given suspect, one for the state police and one to be kept on file at the police department. Although police departments are not required by law to keep fingerprint cards themselves, many do so. In addition, a third fingerprint card must be produced for the Federal Bureau of Investigation (FBI). Although this is a different type of card, it requires the same basic information, including fingerprint impressions.

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[2]During an arraignment, the district justice informs the suspect of the charges against him/her, sets bail or determines whether the suspect is to be released, and sets a date for the suspect's preliminary hearing.

[3]See "AFIS Fingerprinting Techniques," Pennsylvania State Police, December 18, 1992 (videotape), for a visual demonstration of this process.

Some police departments also produce additional State Police cards for other local law enforcement agencies. Thus, in many police departments, the officer must produce three or more complete sets of fingerprints for a given suspect. The suspect's name, date of birth, and other identifying and demographic information is also recorded on each card. In addition, the agent must record the charges against the suspect. In a small percentage of cases, the number of charges that must be listed exceeds the available space on the card, and the officer must record some of them on a second card. Fingerprint impressions are not needed on this second card.

Some police departments use a slightly different method of capturing fingerprints, one that does not involve the use of ink. Instead of rolling the fingers on an inked slab, the police officer rolls them on a dry pad that contains a special solution. The officer then manually rolls the fingers onto the fingerprint card in the same way that he/she would if using ink. The card is then placed into a special development chamber, which heats the card and produces a chemical reaction. After approximately 45 seconds, the process creates permanent fingerprint impressions, and the card is removed from the chamber.

After fingerprinting, the suspect is typically photographed using a mug shot camera with Polaroid or 35 millimeter film. In most cases, only frontal photographs are taken, although some departments occasionally take profile photographs. Typically, mug shot photographs are not sent to the State Police in Harrisburg, but are kept on file at the arresting police department. The State Police use fingerprints -- not photographs -- to positively identify suspects. Nonetheless, photographs can assist local departments' efforts to identify suspects and solve crimes (e.g., by having police officers or witnesses review photographs in a mug shot book). Some police departments glue the photographs onto a special card, which they then file with the fingerprint card and other records on the suspect.

For each arrest, police departments must send two fingerprint cards to the Central Repository (one state card and one FBI card, which the Repository forwards to the FBI).

State law requires that fingerprint cards be mailed to the Central Repository within 48 hours of an arrest.[4] However, based on initial discussions with site contacts and other law enforcement officials in Pennsylvania, we learned that in some municipalities, fingerprint cards are collected and sent to the State Police Central Repository in Harrisburg every three days or so. Our survey results, described in Section 4.0 of this report, confirm that police departments in the three counties typically take several days to mail fingerprint cards to the Repository. Moreover, some police departments often do not send fingerprint cards to the Repository at all. According to an audit conducted for the State Police by Ernst & Young, fingerprint cards for about 40 percent of all suspects arrested in the Commonwealth were not submitted to the Repository.[5] Upon receipt of a mailing of fingerprint cards from a police department, staff at the Repository sort and scan the cards into the computerized Automated Fingerprint Identification System (AFIS). AFIS is a system of electronic databases containing the fingerprint records of all suspects ever booked in Pennsylvania. A detailed description of how fingerprint data are stored and retrieved at the Repository is provided below. According to staff at the Central Repository, it can take several weeks for criminal history information on a given suspect to be sent to the originating police department.

There are some shortcomings associated with the use of traditional mug shot cameras and with manual fingerprinting in the booking of suspects. The older cameras often produce poor images and the equipment necessary for their operation and maintenance is difficult to obtain. With regard to fingerprinting, it has been noted by some police departments that there is an art to manual fingerprinting, and that some

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[4]See "Guidelines for Mandatory Fingerprinting and Preparation of Pennsylvania State Police Fingerprint Cards," Pennsylvania State Police, Records and Identification Division, October 27, 1997.

[5]We were unable to obtain a copy of the complete audit from either the State Police or Ernst & Young. This statistic was provided by staff at the Central Repository. For additional evidence that police do not submit fingerprint cards for a substantial number of suspects, see "Don't Count on Your Fingerprints," Richard S. Morelli, *The Justice Analyst*, September 1990 (Vol. 5, No. 2), Pennsylvania Commission on Crime and Delinquency, Bureau of Statistics and Policy Research.

officers tend to be more skilled at it than others. For example, if not careful, an officer can easily place too little or too much ink on the suspect's fingers, creating an impression that is either too light or too dark. If the finger is not rolled well, the resulting impression can be smudged or smeared. Thus, the quality of fingerprints recorded manually varies based on the skill and patience of the processing officer. Also, if the impression for one finger is smudged or otherwise unreadable, the entire fingerprint card must be discarded and all of the fingerprints must be re-captured.

The inkless method of fingerprinting reportedly produces better quality fingerprint impressions.[6] Because no ink is involved, a fingerprint cannot be smudged or smeared. In addition, if an impression is poor, the officer does not have to discard the entire fingerprint card and begin again. Rather, the officer places a special label over the poor impression and re-rolls the finger onto the label. Nonetheless, both types of manual fingerprinting require much skill, patience, and time on the part of police officers. Moreover, regardless of which manual process is used, if a suspect is hostile or uncooperative, manual fingerprinting can become quite difficult.

## 2.2    The Lower Allen Central Processing Center

### 2.2.1    Booking Center Facilities

The Lower Allen Central Processing Center in Cumberland County (hereafter referred to as the Cumberland Center) began operation in January 1997 with Drug Control and System Improvement (DCSI) funding provided by the Pennsylvania Commission on Crime and Delinquency (PCCD). Prior to this time, the Cumberland Center served as a central site for the booking and processing of suspects arrested for driving under the influence (DUI) in Cumberland County. At that time, it utilized an

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[6]Two of the police chiefs we surveyed, Charles Dowell of Hummelstown Borough Police Department and Keith Reismiller of Middletown Borough Police Department, reported that their departments use the inkless method of fingerprinting. Both stated that this method is somewhat easier and produces better quality fingerprints than the more conventional ink method.

automated fingerprinting machine, purchased with DCSI funding and local funding of approximately $50,000. DCSI and other outside funding provided by the Pennsylvania Chiefs of Police Association (PCPA) enabled the Center to purchase a new automated fingerprinting machine and expand its scope to include the booking of suspects arrested for all types of offenses. In early June 1999, as part of a statewide project coordinated by the Pennsylvania State Police and the PCPA, the Center purchased and installed a digital mug shot system, manufactured by Printrak International, Inc. During its first three years of operation, the Center received DCSI seed funding from the PCCD to cover part of the cost of operation (including personnel costs) and certain capital costs (excluding the cost of the fingerprinting machine). The office no longer receives PCCD funding for operating expenses.

The Cumberland Center is operated jointly by the Lower Allen Township Police Department and the Cumberland County District Attorney's Office. It is available to a total of 32 law enforcement agencies in Cumberland County, 16 of which are municipal police departments. However, some law enforcement agencies choose not to use the Center, largely because they consider the distance they must travel to be too far. Cumberland County is quite large, and some agencies, including police departments, are located more than 50 miles away. In its first year of operation, the center was utilized by 19 of these agencies. Since that time, the number of agencies using the Center has grown steadily, and now includes all 16 municipal police departments. The frequency of utilization among the different police departments that use the Cumberland Center varies considerably (see Section 4.6).

Nonetheless, because a growing number of municipal police departments in Cumberland County are using the Center, the number of suspects processed there has increased dramatically since it began operating in January 1997. Initially, the Center was processing approximately 30 suspects a month. In 1998, it processed a total of about 1,100 suspects, for an average of 92 per month.

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Since its inception, the Center has been open 7 days per week, 24 hours a day.  On certain Sundays, processing agents are not at the Center, but are on-call.  The Center has gone from having 2 full-time and 36 part-time booking agents to having 7 full-time and 5 part-time agents.  Typically, two agents are on-site at any given time Monday through Saturday, although sometimes in the evening a single agent is on duty.  A major goal of Central Processing Director Eric Radnovich has been to move toward a completely full-time staff.  In his view, full-time agents are better-trained, and therefore do a consistently better job of processing suspects.  Each suspect booked at the center is charged a $200 fee.  According to Radnovich, approximately one-third of all suspects actually pay the fee.

The DCSI and other outside funding secured in 1996 was used to purchase and install a Livescan TENPRINTER Electronic Fingerprint System (Series 1133S) manufactured by Digital Biometrics, Inc., and a computerized management information system known as the METRO system.  Until recently, the center used a Polaroid camera for mug shots.  Its new mug shot system enables booking agents to produce digital photographs of suspects.

The TENPRINTER, or automated fingerprinting machine, enables a booking agent to record a suspect's fingerprints electronically, instead of the conventional method of manually rolling the suspect's fingers on a card.  The machine is a large modular device (about 5.5 feet tall and 2 feet wide), with a clear, glass plate on which the fingerprints are captured, a keyboard that can be used to enter demographic and other data, and a monitor for viewing the fingerprint images.  Attached is a special printer (Image Printer Station, Model 5701LD), which prints the fingerprint images on conventional fingerprint cards.  The agent places the suspect's fingers on the glass plate and rolls them from side-to-side, similar to the conventional ink method.  While doing so, the agent presses a foot pedal, and the fingers are scanned electronically.  Using the monitor, the agent can view the fingerprint images as he/she is rolling the fingers.  The

TENPRINTER automatically alerts the agent if an error occurs and an image is unacceptable.  It also has special options for fingerprinting suspect's with deformed, burned, amputated, or bandaged hands.  Such features help to ensure that the fingerprints are of acceptable quality before they are sent to the Central Repository.

The digital mug shot system, which has replaced the Polaroid mug shot camera, produces digital photographs of suspects.  The system consists of a Printrak MultiCapture digital camera, monitor for viewing photographs, a color printer, a black-and-white printer, and a personal computer that operates special software for electronically capturing, storing, and searching a database of suspect photographs.  Booking agents use the camera to take frontal and profile photographs, as well as photographs of scars, tattoos, and other distinguishing marks.  These photographs are stored in electronic files. Agents can also print color and black-and-white paper copies.  The system is fully integrated with the METRO records system and the TENPRINTER.

METRO is a regional computer records information system of criminal data on suspects arrested in Cumberland and Dauphin Counties.  There are currently 9 municipal police departments in Cumberland County and 14 municipal police departments in Dauphin County that use the system, as well as the Cumberland and Harrisburg booking centers.  (Several other county agencies in each county, such as the sheriff's office, district attorney's office, probation/parole office, and communication center, have direct links to the METRO system.)  Whenever one of these departments makes an arrest, information on the incident and the suspect is entered into the system, and can be accessed by all other police departments and agencies on the system.  Police departments not on the system can also contact the communication centers in the two counties via telephone or radio dispatch and request information on a particular suspect.

### 2.2.2 The Booking Process

When a police officer arrests a crime suspect, the officer usually first transports the suspect to his/her police station, where he/she completes a uniform incident report,

Criminal Complaint form, and the Affidavit of Probable Cause. A police officer has the option of completing these forms at the Booking Center, but many police chiefs prefer that officers complete them at the police station instead.

The officer then transports the suspect to the Cumberland Center, where he/she provides a booking agent at a front desk with intake information on the incident and the suspect.[7] The agent enters this information into a METRO computer terminal (some agents first write down the information by hand). This information is used to create or update a record on the suspect in METRO, and is used to generate an arrest report. The arrest report lists the incident number, date of the incident, the suspect's name and date of birth, location of the arrest, the criminal charges, and related items. During the first year-and-a-half of the center's operation, booking agents did not complete the arrest report; rather, police officers completed it themselves at the police station after leaving the Center. The police officer also provides copies of the Criminal Complaint form and Affidavit of Probable Cause to the booking agent. The officer then sometimes waits while the suspect is being processed, after which he/she transports the suspect and copies of the arrest report, Criminal Complaint form, and Affidavit of Probable Cause to the district justice's office for arraignment. In most cases, the arresting officer does not wait but is free to go back on patrol or resume other duties. This is especially the case if the processing occurs after-hours (4:30 p.m. to 8:30 a.m. the following day, a weekend, or a holiday). If it is after hours, the booking agent faxes the documents to the office of the district justice who is on-call at that time, who must later arraign the suspect by videoconference.

While one booking agent completes the arrest report, a second agent takes the suspect into another room for fingerprinting and mug shots. The METRO terminal is

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[7]With the exception of retail theft, summary offenses (such as disorderly conduct or criminal mischief) do not require that the offender be booked. In these cases, the officer usually issues the offender a citation or summons. The offender must later appear at the district justice's office, where he/she is assessed a fine.

integrated with both the TENPRINTER and digital mug shot system.  Thus, the data on the incident and the suspect entered into the METRO terminal is automatically transferred to both the TENPRINTER and mug shot system.  As a result, the second agent does not have to re-enter the same information.  (Prior to the addition of the digital mug shot system, the METRO system was not linked to the TENPRINTER, and suspect and incident data had to be re-entered.)  Once the agent is satisfied with the fingerprint images captured on the TENPRINTER and the photographic images captured by the digital camera, he/she transmits them (along with the data on the suspect and the incident) to the Central Repository with the press of a button.  The information is transferred electronically over telephone lines to the Repository's computer systems.  Later, the Repository electronically transmits a rap sheet containing the suspect's positive identification and criminal history information to the Center over the Commonwealth Law Enforcement Assistance Network (CLEAN).  The rap sheet is printed at a special CLEAN terminal.  If no matching fingerprint records were found at the Repository, a message stating so is received.  The booking agent also prints two standard fingerprint cards, along with hard copies of the suspect photographs.  These cards and photographs are mailed to the arresting agency.

If the suspect has not been booked at the Center before, palm prints are also recorded.  Much like manual fingerprinting, this process involves placing ink on the suspect's palm and pressing his/her hand on a special card to create an impression.  Palm prints are sometimes useful in identifying suspects, although there is no electronic database of palm prints that can be searched.  Once the first booking agent completes the arrest report and turns over copies of the necessary documents to the arresting officer (or faxes them to the on-call district justice), he/she either begins the intake work on another suspect or assists the second agent, especially if the suspect is hostile or otherwise uncooperative.  If the processing occurs after-hours or if the arresting officer has left, the booking agents place the suspect in a holding cell, where he/she remains until it is time

for his/her arraignment by videoconference. After-hours video arraignments are conducted at certain scheduled times.

These arraignments are conducted in a separate room at the Center. An agent brings the suspect into the arraignment room, where he/she is arraigned by the on-call district justice in a remote location (either the justice's home or office). Typically, the only participants in the proceeding are the district justice in one location, and the suspect and a booking agent (who guards the suspect) at the other location. After the arraignment, the district justice may release the suspect on his/her own recognizance or on bail, or may commit the suspect to prison. In some cases, the suspect is committed to prison because he/she is unable to post bail. If committed to prison, the suspect is taken by the booking agents back to the holding cell. Later, county sheriff's deputies transport these suspects to the County Prison, where they await a preliminary hearing.

Currently, police officers in the western and central areas of Cumberland County may take suspects to after-hours video arraignment sites located at the Mid-Cumberland Valley Regional Police Department in Shippensburg or the County Sheriff's Department in Carlisle. The videoconferencing rooms at these two sites are manned by police officers, as opposed to booking agents.

The Carlisle site is also expected to serve as a second booking center in Cumberland County. In addition to videoconferencing equipment, a TENPRINTER machine and Printrak digital camera were just recently installed. As mentioned above, many police officers in the western half of the county have not often used the Booking Center in Lower Allen Township because of the long distance they must travel, and have instead manually booked suspects at their own police stations. For example, police in Shippensburg (in the far western part of the county) must travel over 50 miles to get to the Booking Center in Lower Allen Township (in the far eastern part of the county). Often when police in the western part of the county have brought a suspect to the booking center, it is because they believe the suspect may be lying about his/her identity. In such

cases, getting a rap sheet from the State Police quickly justifies the long trip (which usually takes over an hour). According to Radnovich, police from these departments are bringing all types of suspects to the Center more frequently. Nonetheless, it is expected that the new booking center in Carlisle will be more convenient for police from these departments.[8]

According to District Justice Robert Manlove and Intermediate Punishment Coordinator Laura Patterson, the centralized, automated booking project has two primary goals:

(1)  To enable police officers to return to patrol as quickly as possible, by relieving them of the responsibility of booking suspects. If police officers return to the streets more quickly, public safety and crime control should be improved. In addition, the burden on those officers who remain on patrol while their colleagues are booking a suspect at the police station should be relieved. (As a result of videoconferencing, police also save time by no longer having to transport suspects to district justices' offices for arraignments after-hours.)

(2)  To obtain a positive identification and statewide criminal history information for a suspect much more quickly. It is not uncommon for suspects to lie about their identities, or to refuse to tell police their names or provide any other identifying information at all. If booking agents can receive a rap sheet on a suspect within an hour or so, they will know whether the suspect has given them false information while the suspect is still in custody. Under the previous manual system where receiving a rap sheet could take one or several weeks, the police or district justice might discover that a suspect they had released is wanted for crimes -- possibly a serious offense such as murder -- elsewhere in the state.

A third, long-term goal has more to do with having a common electronic system of criminal information than with automated booking technologies: To standardize criminal history information on suspects arrested in Cumberland and Dauphin Counties (and eventually across the state). As more police departments in the region rely on electronic fingerprinting and digital mug shots, and as more adopt the METRO records system, police departments and booking centers in both counties will be able to share

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[8]As mentioned in Section 1.0, we did not have the time or resources to include the new booking center in our evaluation.

information on all suspects arrested in the region.  It is important to note, however, that the METRO system only contains information on arrests, convictions, and other information that pertain to those agencies in the two counties that are on the system.  It does not contain a suspect's full statewide criminal history information.  Thus, if a suspect is wanted for murder in Philadelphia or another part of the state, this information is not listed in the suspect's METRO record.

## 2.3    The City of Harrisburg Booking Center

### 2.3.1    Booking Center Facilities

The City of Harrisburg Booking Center (Harrisburg Center) is housed within and operated by the Harrisburg Bureau of Police.  Unlike the processing center in Lower Allen Township, the Harrisburg Center is not a centralized facility that can be used by all municipal police departments in the county.  Rather, it is used exclusively by the Harrisburg Police and the nearby Penbrook Borough Police Department.  The Penbrook Borough Police Department pays the Harrisburg Bureau of Police an annual fee of $2,025 for its use of the center.  The Harrisburg International Airport Police Department also uses the center, and pays an annual fee of $1,500.  This department was not included in CONSAD's evaluation.  Any police department wishing to use the Harrisburg Center to process criminal suspects must pay for the service.[9]  The city and county are currently studying the feasibility of establishing a centralized center similar to that in Cumberland County.  This facility would likely serve all municipal and state police departments, and possibly other agencies, in the county.  Suspects are not charged a fee at the Harrisburg Center.  The Center books between 4,000 and 5,000 suspects per year, and is open 24 hours per day, 7 days a week.

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[9]Other police departments on the METRO system, however, can bring suspects to the booking center after-hours to be placed in the center's holding cells.  These suspects remain there until they are to be arraigned by the night court district justice.  The center is also used by the Dauphin County Drunk Driving Unit, which spends about 25 hours each week processing people arrested throughout the county for driving while intoxicated.

At any given time, there are generally two booking agents working in the Harrisburg Center. Rather than having a staff of full-time booking agents, Harrisburg police officers serve as booking agents. In all, about 30 officers serve as booking agents on a rotating basis. During a typical week, each of these officers spends about 8 hours working as a booking agent. All of these officers receive training over the course of two tours of duty. After this initial training, an officer is paired with another who is more experienced in booking suspects.

The Harrisburg Center also houses the mainframe computer system that runs the METRO database. Thus, the center serves as a central repository of suspect information for all agencies in Cumberland and Dauphin Counties that are linked to METRO. The Harrisburg Police Bureau first purchased a TENPRINTER machine in 1991, with no outside funding, at a total cost of $56,250. With the assistance of DCSI funding from the PCPA, the department spent $5,042 in 1997 to upgrade to a better TENPRINTER machine. In 1996, the department combined DCSI funding from the PCCD with $59,022 of its own money to purchase a digital camera manufactured by Dynamic Imaging Systems, Inc.[10] Unlike the Cumberland and Schuylkill County Booking Centers, the Harrisburg Center received no seed funding from PCCD or any other outside source. In the near future, the Harrisburg Center plans to acquire a new Printrak digital mug shot system as part of the statewide initiative.

### 2.3.2 The Booking Process

When a police officer brings a suspect into the Harrisburg Center, the booking process is quite similar to the process followed at the Cumberland Center. The arresting officer provides a booking agent at the front desk with the necessary information to produce the arrest report. The arresting officer also assists with confiscating and storing

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[10]This funding was also used to purchase equipment to upgrade the METRO computer system.

the suspect's property. The officer completes a form listing any items that were in the suspect's possession, and has the suspect sign the form. The officer then enters the roll call room located behind the intake desk, where he/she types a field report at a computer terminal and prints the Criminal Complaint form and Affidavit of Probable Cause. These two documents are then placed on the intake desk, along with a copy of the arrest report. The arresting officer is then free to return to his/her patrol or resume other duties.

Similar to the Cumberland Center, while one booking agent performs intake work at the front desk, another fingerprints and photographs suspects in separate rooms (one contains the TENPRINTER machine, the other contains the digital mug shot system). The TENPRINTER is identical to the one used at the Cumberland Center, but the mug shot system is older and less sophisticated. As in Lower Allen, both systems are integrated with the METRO system. Thus, the data entered by the agent at the front desk is automatically transferred to the personal computers that run the TENPRINTER and digital camera, eliminating the need to manually enter the data more than once. The fingerprint images and associated information on the suspect and incident are simultaneously transmitted to the Central Repository, and rap sheets are printed from a CLEAN terminal. The mug shot system does not have the capability to transfer files containing the digital photographs to the Repository. The Harrisburg Center will gain this capability when it acquires the new Printrak system.

Two State Police fingerprint cards are usually printed -- one for the county prison and another to be kept on file at the Booking Center. The Penbrook Police Department has access to the filed fingerprint cards for suspects arrested by its officers. Photographs are not usually printed. Although digital photographs cannot be sent electronically to the State Police, they are electronically stored in a database that is part of the METRO system. This database is made available to any agency on the METRO system. To search the database and view suspect photographs, however, law enforcement officials from these agencies must go to the Harrisburg Center.

After being processed, the suspect is placed in a holding cell located within the Booking Center. If the suspect was booked during the day, when district justices have office hours, a transport officer later drives the suspect and necessary documents (along with any other suspects) to the district justice's office for arraignment. If the suspect was booked after-hours, when an on-call district justice holds night court sessions, a booking agent or other police officer eventually walks the suspect and the necessary documents to the night court located in a building adjacent to the Booking Center. Night court preliminary arraignment sessions are held at certain scheduled times throughout the night and on weekends.

According to Robert Morrison, Director of Metro Police Operations at the Harrisburg Police Bureau, the primary goals behind the establishment of the Harrisburg Center are to enable police officers to return to patrol more quickly and to receive a positive identification and statewide criminal history information on a suspect in a short period of time. The Harrisburg Police Bureau also shares Cumberland County's goal of having all municipal police departments and other area law enforcement agencies on the METRO system, so that all agencies can share data on suspects arrested in the region. In addition, the county and city are interested in taking advantages of economies of scale by establishing a geographically centralized booking center that can serve the entire county.

## 2.4 The Central Booking Office in Schuylkill County

### 2.4.1 Booking Office Facilities

The Central Booking Office in Schuylkill County (Schuylkill Office) is located in Pottsville, Pennsylvania, and is operated by the Schuylkill County Sheriff's Department. The office has a staff of three people: one full-time receptionist, one full-time booking agent, and one part-time agent. It began operation on a part time basis in Fall 1996 and utilized an older TENPRINTER machine that had previously been used by the Pottsville Police Department. Shortly afterwards, the office purchased a new TENPRINTER

machine with DCSI and other outside funding obtained through the PCPA and local funding of $5,042. At the same time, it purchased a Kodak digital camera and software for $7,640. This camera was recently replaced with a Printrak digital imaging system (identical to the one in Cumberland County), funded in part through a PCPA grant. The Office began operation on a full-time basis in January 1997. During its first three years of operation, the Office received DCSI seed funding from the PCCD to cover part of the cost of operation (including personnel costs) and certain capital costs (excluding the cost of the TENPRINTER). The Office no longer receives PCCD funding for operating expenses. It is open on Monday through Friday from 8:30 a.m. to 5:00 p.m. During 1998, the Office booked a total of 1,944 suspects from throughout the county.

The Schuylkill Booking Office serves as a central booking facility for all 45 municipal police departments in Schuylkill County. Some other agencies, such as licensing agencies and two state police barracks located in the county, also use the Office. According to staff at the Booking Office and survey responses from police officers in Schuylkill County (which are discussed in more detail in Section 4.0 of this report), local police departments rarely book suspects themselves.

The Office utilizes a TENPRINTER machine that is identical to that used in Cumberland County and Harrisburg. As in Cumberland county, its recently installed Printrak digital mug shot system enables it to transfer photographs electronically to the Central Repository. (The Office's previous digital camera, similar to that used in Harrisburg, was not electronically linked to the AFIS system at the Repository.) In addition to transmitting the fingerprint images, associated arrest data, and photographic images to the Repository, two fingerprint cards are typically printed -- one for the arresting agency and one to be kept on file at the Booking Office. The Office also mails to the arresting agency copies of suspect photographs and a formal disposition sheet containing more detailed information about the suspect and the incident.

### 2.4.2 The Booking Process

According to Booking Office Supervisor James McCann, only about 10 suspects per year are brought to the Office by the police. The vast majority of suspects (approximately 90 percent) in Schuylkill County are first arraigned and then given a fingerprint order by a district justice. If the suspect is released on his/her own recognizance or on bail, he/she must then make arrangements with the Booking Office to schedule a time to be processed. In those cases in which the district justice commits the suspect to prison, the police officer is usually responsible for transporting the suspect to the county prison. Later, corrections officers at the prison transport the suspect, typically with several other suspects, to the Booking Office. The booking process in Schuylkill County is designed to allow police officers to spend a great deal of time on patrol and performing other duties that they would otherwise spend booking suspects.

When a suspect arrives at the Schuylkill Booking Office, he/she first provides information, including a copy of his/her fingerprint order, to the receptionist at the front desk. The receptionist enters basic information about the suspect and the incident into a computerized database containing records of all suspects ever booked at the Office. Neither the Booking Office nor any police departments in Schuylkill County have access to the METRO system; nor do they have a similar regional records system. Each suspect must also pay a $50 booking fee. If the fee is not payed within 30 days, it is raised to $60. (In 1998, the payment rate was 56.5 percent.) After providing information to the receptionist, the suspect enters a back room that contains the TENPRINTER and digital camera. There, a booking agent fingerprints and photographs the suspect in the same manner followed in Cumberland County and Harrisburg. As in Cumberland County, the records system is integrated with the TENPRINTER and digital mug shot system. (Previously, the agent had to enter the information on the suspect and the incident two times, once at a computer terminal linked to the old camera system, and again at the TENPRINTER terminal.) If both booking agents are available, they work together to complete these tasks, and the suspect is booked more quickly. Once a suspect is booked,

he/she either leaves the Booking Office or is taken back to the prison by corrections officers. If a police officer brought the suspect to the Booking Office, the officer typically waits there while the suspect is being booked, and then transports the suspect to the prison.

Unlike the booking centers in Cumberland County and Harrisburg, the Schuylkill Office does not have a CLEAN terminal for receiving rap sheets from the Central Repository. Instead, rap sheets are received at a CLEAN terminal at the sheriff's office, located a few miles away in the county courthouse. In most cases, the Booking Office does not receive a rap sheet until the following day, when a deputy brings any that had been received at the sheriff's office the previous day. If a rap sheet is needed sooner, a deputy can bring it to the Booking Office as soon as it is received, or can relay the necessary information to a booking agent over the telephone.

As in Cumberland County, a major goal of the Booking Office is to eliminate the need for police officers to book suspects. The Office also takes advantage of the economies of scale associated with having a single booking facility shared by all municipal police departments in the county.

## 2.5    The Lower Paxton Township Police Department

Although the Lower Paxton Township Police Department (located in Dauphin County) is not one of the demonstration sites that the PCCD asked us to evaluate, it is the only municipal police department in the three counties that has its own TENPRINTER machine.[11]    Thus, we believe that it is useful to describe briefly how suspects are processed in Lower Paxton.  Using the TENPRINTER machine, which is the same as that used in the three booking centers, all suspect fingerprints are recorded electronically and transmitted to the Central Repository.  Lower Paxton does not have a digital camera, but it is in the process of obtaining a digital mug shot system (as part of the statewide project).  Like the Schuylkill County Booking Office, Lower Paxton lacks a CLEAN terminal, and therefore cannot receive a rap sheet directly from the Repository.  Instead, the Repository transmits rap sheets to the CLEAN terminal at the Dauphin County Communication Center.  A dispatcher at the Communication Center prints rap sheets and faxes them to the Lower Paxton police station.  Often, a police officer at Lower Paxton will call staff at the Communication Center to notify them of a rap sheet that he/she is expecting.  This is done especially in those cases in which a positive identification and criminal history information are needed quickly.  An example would be if the charge is retail theft, and the police must know whether the suspect has been arrested for retail theft in the past.  If so, the offense is a misdemeanor instead of a summary offense, and the suspect can be taken into custody instead of released.

According to Lieutenant Gary Weisinger, Systems Administrator at Lower Paxton, a rap sheet is typically received by fax in less than an hour.  However, if a police

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[11]Two other municipal police departments that we surveyed, Elizabethville Borough and Lower Swatara Township, both in Dauphin County, reported that they have their own digital mug shot cameras.  However, these cameras are similar to that currently being used by the Harrisburg Booking Center (and previously used by the Schuylkill County Booking Office) in that they are not linked to the State Police Central Repository.  Thus, although the quality of the photographs they produce may be better than those produced by conventional cameras, the process by which these departments book suspects, submit fingerprint cards to the Repository, and receive rap sheets is similar to other police departments that lack both a TENPRINTER machine and a digital camera.

officer forgets to call the Communication Center, several hours or as much as a day may pass before the rap sheet is received. This is because of the high volume of information being transmitted to the Center over the CLEAN system, much of which is of minimal importance. Lower Paxton is currently in the process of acquiring its own CLEAN terminal, which would eliminate this problem.

Lower Paxton also has access to the METRO system maintained at the Harrisburg Police Bureau. According to Weisinger and Public Safety Director Joseph Blackburn, METRO does not, however, fully meet the department's needs. They believe that METRO is not very user-friendly, and that the criminal history information it contains is not detailed enough. They plan to develop or adopt their own electronic records system, one that is more user-friendly (with a Windows interface) and tailored to their specific needs. According to Weisinger, the department would nonetheless remain on the METRO system, and would therefore continue to enter arrest information into METRO and utilize the system's criminal history records.

### 2.6 Fingerprint Data Storage and Retrieval at the Pennsylvania State Police Central Repository

The Pennsylvania State Police Central Repository maintains databases of fingerprint records and criminal history information on all suspects ever booked in the Commonwealth. As described in the previous sections, the booking centers send fingerprints and associated suspect information to the Repository in order to obtain a positive identification of the suspect and statewide criminal history information on the suspect. Staff at the Repository accomplish this by searching its databases for matching demographic information and fingerprints. A positive identification of the suspect requires a matching set of fingerprints.

The TENPRINTER machines at the three booking centers (and at Lower Paxton) electronically transmit the fingerprints, personal data, and arrest information on a suspect

over a system of telephone lines to the Repository. To get to the Repository, the data are first transmitted to a local agency router, which, in turn, transmits the data to the node of the regional wide area network, located in Harrisburg. (Additional nodes in the state are located in the following five sites: Pittsburgh, State College, Scranton, Erie, and Philadelphia.) The data are then transmitted from the node to the Pennsylvania State Police's local agency router, which, in turn, transmits the data to a DBI Network at the Repository. The flow of data into the DBI Network is managed by a system of servers that organize the data for each arrest in a queue and transfer the data to the Network Automated Transaction Management System (NATMS). According to Repository staff, 60-65 percent of all fingerprint records they receive are from a Livescan system, while the remainder are inked fingerprint cards. These cards, received at the Repository in the mail (or, in a few cases, by hand-delivery), are manually scanned into the NATMS, creating an electronic record. Four clerks scan the fingerprint images into the system and manually enter the demographic and arrest information for a given suspect.

NATMS is interfaced with both the Computerized Criminal History (CCH) system and the Automated Fingerprint Identification System (AFIS). CCH contains records of the names, other demographic characteristics, and criminal histories of all individuals ever booked in the Commonwealth (referred to as types 1 and 2 data). Each individual's record is assigned a unique identifier, known as a state identification number (SID). AFIS contains electronic fingerprint records for all individuals ever booked in the Commonwealth (referred to as type 4 data). Each fingerprint record is assigned the same SID as that assigned to any demographic record on the individual in CCH.

NATMS first automatically searches the CCH databases to identify any record with a matching name, date of birth, or social security number. If a match is found, NATMS then retrieves the specific fingerprint record associated with the suspect (i.e., with the same SID) from the AFIS databases. A fingerprint technician reviews the set of matched fingerprints and makes a final decision about whether a positive identification

was successfully made. A rap sheet containing criminal history information, including the positive identification of the suspect, is then transmitted to the arresting agency or booking center. The rap sheet is transmitted via the CLEAN system. For fingerprint and arrest information received electronically from a Livescan system, the State Police guarantee that a rap sheet will be transmitted to the arresting agency or booking center within two hours. Some police departments that do not have a CLEAN terminal contact their county communication center -- all of which have a CLEAN terminal -- for the information (as is done in Lower Paxton Township). Most of these departments, however, receive rap sheets from the Repository in the mail.

If no record containing a matching name, date of birth, or social security number is found, a technician edits or "cleans" the fingerprint images that were received. This is done to prepare the fingerprints for a technical search, in which NATMS searches the AFIS databases for sets of fingerprint records that are potential matches. The system identifies potentially matching fingerprints, and transmits them to a technician, who determines which candidate is the best match. Once the technician identifies the correct match, NATMS retrieves any associated demographic and criminal history information on the suspect from the CCH databases. (In some cases, NATMS identifies a potential match, but the technician comparing the matching fingerprints with those received is unable to confirm clearly that the match is correct. In such cases, a positive identification is not made.) A rap sheet containing criminal history information, including the positive identification of the suspect, is then transmitted via the CLEAN system (or mailed) to the arresting agency or booking center. If no fingerprint match is found, a new record is created in both the CCH and AFIS databases, and a message stating that no matching records were found is transmitted (or mailed) to the arresting agency or booking center.

Staff at the Repository estimate that in about 65 percent of all cases, the name search produces an exact match. NATMS performs this search relatively quickly. Although the Repository does not have any quantitative data on turnaround times, staff

estimate that in these cases the arresting agency or booking center often receives a rap sheet within 10 minutes (assuming that the agency or center submitted the fingerprint records via Livescan and has its own CLEAN terminal). A technical search takes longer. Staff estimate that in those cases in which a technical search must be conducted, the arresting agency or booking center receives a rap sheet usually within an hour.

NATMS automatically rates the quality of each fingerprint record, assigning a grade of A, B, or C. A given suspect's fingerprints are assigned ten grades, one for each of ten fingers that were individually printed. If a set of fingerprints are of such poor quality that they are of no use, NATMS automatically rejects them. Rejected fingerprints are transmitted to the DBI Print Server, which prints out cards for them. These cards are then mailed to the arresting police departments (or booking centers), along with a fingerprint rejection notice explaining why the fingerprints were rejected and requesting a new set. Similar notices are sent if demographic and arrest information is incomplete or inaccurate. Fingerprint cards are rarely rejected, however. Repository staff estimate that fewer than 5 out of every 20,000 fingerprint records (0.025 percent) received (both electronically and through the mail) are rejected by NATMS. Repository staff also estimate that of those fingerprint impressions submitted by mail, about 1 percent are of no use, but are not necessarily rejected because the demographic and arrest information is often useful. In such cases, the demographic and arrest information is stored in CCH, but the fingerprints are not stored in AFIS. AFIS Manager William Nearhoof explained that in the past Repository staff rejected a larger share of fingerprint cards. Rarely would the arresting agency re-fingerprint the suspect, however. Thus, staff decided that in most all cases it is preferable to keep cards that are of limited quality.

As the CCH and AFIS databases are being searched, old records in CCH are automatically updated with new demographic and arrest information, and old fingerprint images in AFIS may be updated as well. For example, an old image with a B or C rating would automatically be replaced by a new image with an A rating. NATMS also

transmits the criminal history record for a suspect, including fingerprint images, to a DBI Network Print Server, which prints fingerprint cards that are manually filed in archives. The State Police also has eight remote sites throughout the state that have searchable AFIS databases of latent fingerprint records (those taken from crime scenes where the suspect has not been apprehended).

In addition, the State Police is working with the PCPA and police departments across the state to build a statewide database of digital suspect photographs. Currently, the Commonwealth Photo Imaging Network (CPIN) consists of the Cumberland Booking Center, the Schuylkill Booking Office, ten sites located within the Philadelphia Metropolitan Police Department, and a few other police departments that have Printrak digital mug shot systems electronically linked to the Repository. Several other police departments and booking facilities in the state (including the Harrisburg Center and Lower Paxton Township Police Department) are in the process of acquiring or installing these systems. Each of these police departments and booking facilities has purchased the equipment using a combination of local funds, DCSI funds from the PCPA, and grant funds from other sources. The State Police and PCPA expect the CPIN eventually to consist of 72 sites throughout the state with operational digital mug shot systems.[12] Repository staff plan to clone the database of photographs and disseminate it to each agency in the network. Thus, unlike the AFIS databases of fingerprint records, which are centralized at the Repository, each agency will have its own searchable database of suspect photographs. Repository staff will also periodically update the database, since agencies will continually be adding photographic records to it.

The FBI has recently established an automated network, known as the Integrated Automated Fingerprint Identification System (IAFIS), which links its database of criminal records to the information systems of state police headquarters in 15 states and of certain

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[12] All of these sites will also have TENPRINTER machines that will be integrated with their mug shot systems. (Some of them already have TENPRINTER machines.)

other federal agencies.  The Pennsylvania State Police Central Repository expects to join this network sometime this year.  Currently, it mails fingerprint records to the FBI.  When linked to IAFIS, it will transmit these records electronically to the FBI, which will transmit a federal rap sheet back to the Repository.  The Repository, in turn, will transmit the federal rap sheet, along with the state rap sheet, to the local police agency or booking center.  The FBI expects all 50 states to become linked to this network over the next few years.   Once this is accomplished, the Pennsylvania State Police and local law enforcement agencies will have access to a truly nationwide database of criminal history information.[13]

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[13]For more information on this and related federal efforts to improve the sharing of criminal data among states and between state and federal agencies, see the July 1999 *Report of the National Task Force on Court Automation and Integration*, U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Assistance.

**3.0     Data Collection and Evaluation Methodology**

This section describes the process by which we collected data for our evaluation of the use of automated booking technologies in the three counties, and presents the methodology employed to analyze the data.

**3.1     Data Collection**

Our evaluation is based on information collected during site visits and survey responses from booking agents, police officers, and police chiefs.  We began collecting preliminary data in May 1998, in preparation for our initial site visits to the booking centers.  At that time, we also developed draft versions of data collection protocols to be used to collect cost-benefit and other data relevant to the booking center projects from booking agents and police.  We then contacted those associated with the individual booking center projects to schedule initial site visits for the following month.  The purpose of the site visits was to familiarize the project team with the specific institutions and individuals that were the subject of the evaluation, to obtain feedback on our data collection strategy, and to collect some preliminary data on booking processes.

During June 1998, we conducted site visits to each of the three booking centers. During the initial site visits, detailed information was collected describing the booking process with the use of the automated technologies at the centers.  In addition, we discussed our plans for collecting data with the project site staffs and obtained their feedback concerning the best strategies for collecting the needed evaluation information. All project site staff agreed to help us collect additional detailed information by distributing self-administered questionnaires to booking agents.  Project site staff also provided us with useful advice on the best ways to collect data from police departments.

Subsequent to the site visits, we telephoned individuals designated as site contacts to collect follow-up information.  We also began developing questionnaires for booking

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agents. Initial drafts of these questionnaires were shared with site contacts to obtain their feedback on the appropriateness of the questions and ways in which the questions could be improved. The questionnaires asked for specific information on the level of experience the booking agent has using automated and conventional booking technologies, the amount of training he/she has received, the amount of time it takes to book a typical suspect, and related issues. Copies of the booking agent questionnaires can be found in Appendix A. Site contacts did *not* share these drafts with any booking agents or other staff. The questionnaires were mailed to the site contacts in February 1999. The contacts, in turn, distributed the questionnaires to each booking agent. The respondents returned the completed questionnaires during the months of March, April, and May 1999.

To collect additional information on the booking centers, we also developed a list of specific questions that were sent to the site contacts at each of the three booking centers. These questions asked for specific information on the cost of automated booking equipment, operating and maintenance costs, labor costs, the technical specifications of the equipment, and related items. This list of questions was mailed to site contacts in February 1999, and responses were received from contacts in Pottsville and Harrisburg in April and May 1999, respectively. Despite repeated efforts, we received very little of the requested information from the Lower Allen Processing Center, and received no information on labor, maintenance, or operating costs. Copies of the lists of questions sent to each site contact can be found in Appendix B. Additional information was also obtained through follow-up telephone conversations with contacts in all three booking centers. We also acquired useful information from telephone discussions with contacts in other law enforcement and criminal justice organizations, such as the Pennsylvania Chiefs of Police Association.

In addition, we developed questionnaires for police officers in each of the three counties. These questionnaires asked for specific information on the level of experience

the officer has using conventional booking technologies, the frequency with which the officer uses the booking center, the amount of time the officer typically spends at the booking center, the impacts of the center on suspect processing, problems encountered at the center, and other issues. Copies of the police officer questionnaires can be found in Appendix C. We mailed the questionnaires to the police chiefs of each municipal police department in the three counties in March 1999.[14] Police chiefs were asked to distribute the questionnaires to all patrol officers in their departments. Along with the questionnaires was mailed a list of additional questions for police chiefs, similar to that sent to booking center contacts. These questions asked for specific information on the cost of conventional booking equipment, operating and maintenance costs, labor costs, the kinds of management information systems used, and related items. A copy of the list of questions sent to police chiefs can be found in Appendix D. Completed questionnaires from police officers and responses from police chiefs were received between the months of March 1999 and October 1999. We telephoned some police chiefs to clarify certain responses and to obtain additional information.

We received completed questionnaires from booking agents in all three booking centers. Ten of twelve (83 percent) booking agents at the Cumberland Center completed surveys. From the Schuylkill Booking Office, we received completed surveys from both booking agents (100 percent); from the Harrisburg Center, surveys were received from 20 of 30 agents (67 percent).

Police officers from 13 municipal police departments (81 percent) in Cumberland County returned surveys. Of a total of 206 patrol officers surveyed in Cumberland County, 78 (38 percent) completed surveys. Many police surveys from Schuylkill County

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[14]We did not survey municipalities that do not have their own police department but instead are covered by either another municipal department or the state police. In addition, we did not survey two municipal police departments in Schuylkill County, the Branch Township and East Norwegian Township departments, because these are one-person departments where the lone officer is also the ranking officer in another department. These officers were surveyed with regard to their roles as ranking officers in the other departments.

were returned uncompleted or partially completed, with police chiefs or officers informing us that they chose not to complete them because they very rarely take suspects to the Booking Office. We determined which surveys contained enough information to be of some use, and tabulated the responses from them. In all, useful data were obtained from patrol officers in 13 departments (29 percent) in Schuylkill County. Of a total of 273 Schuylkill patrol officers, only 27 (10 percent) returned surveys with at least some useful information. From Dauphin County, we received surveys from 15 different police departments (68 percent), including Penbrook and Harrisburg. Of a total of 302 Dauphin patrol officers (including those from Penbrook and Harrisburg), surveys were completed by 145 (48 percent). Four of 11 patrol officers (36 percent) from Penbrook completed surveys, as did 23 of 46 police officers and detectives (50 percent) from the Harrisburg Police Bureau.

Police chiefs from 4 departments (25 percent) in Cumberland County responded to our additional list of questions, as did chiefs from 7 departments (16 percent) in Schuylkill County. From Dauphin County, police chiefs from 9 departments (41 percent), including Penbrook, provided responses.

Data obtained from the booking agent and police officer questionnaires, as well as data provided by booking center contacts and police chiefs, were coded and entered into computer files in Microsoft Excel format. The electronic data was then used as the basis of our analysis of the conventional and automated booking processes.

## 3.2    Evaluation Methodology

Our analysis focused primarily on comparing survey responses from booking agents at each booking center with survey responses from police officers in the same county. Since not all police officers in the three counties are using the booking centers, or are not using them all the time, we were able to collect reliable data against which the

responses from booking agents could be compared. Survey responses were compared to assess the differences between conventional booking methods (used by police officers, with the exception of those in Lower Paxton Township) and the automated methods used at the centers. Comparisons focused on suspect processing times; frequencies of having to re-fingerprint or re-photograph a given suspect; frequencies with which fingerprints are rejected by the Central Repository; the amount of time police or booking agents typically wait for a rap sheet; and differences in responses to open-ended questions concerning the effects that automated booking technologies have had on suspect processing.

To ensure that comparisons would be reliable, we first examined the data to identify outliers or otherwise unusual responses. As discussed above, we determined that most surveys received from Schuylkill County were of no use because they were largely incomplete. In some cases, Schuylkill police officers answered that they have booked suspects themselves and completed the section inquiring about the booking process. The only other case in which responses were problematic involved the Lower Paxton Township Police. In response to the question concerning the amount of time that typically passes before a rap sheet is received (see Appendix C), a few officers answered that several days or weeks pass. Most, however, stated that they receive rap sheets in an hour or less, responses that seem more reasonable since Lower Paxton has a TENPRINTER machine. In discussing this issue with staff at the Lower Paxton Police Department, we learned that the department never waits for several days or weeks to obtain a rap sheet. Certain officers are simply unaware of when rap sheets are received. Thus, we excluded their responses from our analysis.

We aggregated the data from police officers to the County level. Processing times for Cumberland County police were compared with processing times for Cumberland booking agents. The same was done for police and booking agents in Schuylkill County.

Processing times for Harrisburg booking agents were compared with processing times for all Dauphin County police, and separately with those for Penbrook and Lower Paxton police. Upon reviewing the frequency distribution of responses from each type of respondent in each county, we decided that mean processing times were a reasonable basis for comparison. Similar comparisons were made between police and booking agent responses regarding the frequency of having to re-fingerprint or re-photograph suspects, the frequency with which fingerprints are rejected by the Central Repository, and the amount of time police or booking agents typically wait for a rap sheet.

We also reviewed all responses to open-ended questions concerning the perceived impacts of automated booking technologies on suspect processing. Both police and booking agents were asked whether and how the use of automated technologies has affected the booking of suspects in general. Next, respondents were asked specific open-ended questions about whether the use of automated technologies has affected (1) the amount of criminal history information received on suspects; (2) the quality of that information; and (3) the usefulness of criminal history information in successfully identifying and handling suspects (see Appendices A and C). Police officers and booking agents provided a variety of responses, and many of these responses did not correspond with the specific question under which they were listed. An example would be a respondent who mentioned that automated technologies have improved the *quality* of criminal history information in response to the question concerning the *amount* of information obtained. Hence, these responses were combined, and a coding frame was developed that captured the full range of responses concerning the ways in which automated technologies have affected the booking of suspects. In analyzing these responses, we focused on identifying patterns of responses and differences in these patterns between police officers and booking agents. Coding frames were developed for other open-ended questions as well, and these responses were analyzed in similar fashion.

We employed a basic cost-benefit framework to analyze the costs and benefits of the automated booking center in each county. We attempted to capture the major costs associated with the use of each center, including capital (TENPRINTER machines, digital mug shot systems, computers, etc.), labor (the hourly wage or salary rates of booking agents), and recurring costs (ongoing operating and maintenance costs).[15] For the purposes of this analysis, the benefits of the centers were defined to be the costs that would be borne by all municipal police departments in a given county if the booking center did not exist. In other words, these are the costs the county avoids by having a centralized booking center.[16] Specifically, these avoided costs include capital (booking counters, ink, slabs, etc.), labor (the time police officers spend booking suspects themselves using conventional methods), and recurring costs (ongoing operating and maintenance costs). In addition to comparing the costs and benefits of each of the three centers, we conducted a breakeven analysis to estimate the volume of suspects that would need to be processed for total costs to equal total benefits. A breakeven volume of suspects was calculated for four hypothetical counties, each representing a particular scheme for funding a centralized, automated booking center (see Section 4.3).

Finally, we examined the frequency with which police departments use the booking centers. For Cumberland, Schuylkill, and Penbrook police, this involved analyzing the responses to a question concerning how often officers use their respective centers (see Appendix C). For Dauphin police that do not use the Harrisburg Center, we

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[15]Although we collected data on the costs associated with the digital imaging system currently being used by the Harrisburg Center, the analysis assumes that it already has the new digital imaging system. This assumption was made because the Center expects to install the new system soon, and because the costs associated with the new technology more accurately reflect those that would be faced by a police department or booking center presently considering the purchase of a digital imaging system.

[16]The benefits of the Harrisburg Center were defined as the costs avoided by the Harrisburg and Penbrook police departments.

analyzed responses to an open-ended question asking why they do not do so.[17]   This

question was also asked of Cumberland, Schuylkill, and Penbrook police (in addition to a

question asking why they *do* use their respective centers), and the responses were

analyzed in similar fashion.   We also examined responses to a question asking police

officers to identify problems that they have encountered at their respective booking

centers.

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[17]Prior to administering the survey, we knew that these departments did not use the Center as a matter of policy.  Nonetheless, we decided that police officers might be able to shed light on the reasons why those departments on the METRO system have made this choice.

## 4.0 Results

The results of the analysis set out in Section 3.0 are presented in this section. First, the impact of automated booking technologies on the amounts of time police officers must spend processing suspects is described. Second, results pertaining to the cost-effectiveness of the automated booking centers are presented. Third, the impacts of automated booking technologies on the quality and accuracy of fingerprints, photographs, and other information are discussed. Fourth, the impacts of these technologies on the timeliness of receiving positive suspect identifications and criminal history information from the Central Repository are described. Fifth, the degree to which municipal police departments are utilizing the booking centers is examined. Finally, other impacts of the three automated booking centers are discussed briefly.

## 4.1 Time Savings for Police Officers

One of the primary impacts of automated booking technologies in each of the three counties included in this analysis has been time savings for police officers involved in booking criminal suspects. This time savings, in turn, is a key factor in affecting the cost-effectiveness of the booking centers. To estimate the time savings for police officers, we surveyed police officers and booking agents about the amount of time required to book a typical suspect using automated booking technologies and conventional booking methods.

The survey results are summarized in Table 1, which presents the average amount of time saved per suspect booked in each of the three counties as a result of the use of automated booking technologies. This is time that the officers would have otherwise spent fingerprinting and photographing suspects, as well as recording demographic and related information on fingerprint

**Table 1:   Time Savings for Police Officers**

| | Cumberland | Schuylkill | Penbrook | Harrisburg* | Other Dauphin Police^ |
|---|---|---|---|---|---|
| Average Time Savings Per Officer Per Suspect Booked (Hours) | 1.46 | 1.14 | 2.50 | 1.37 | 1.31 |
| Average Number of Police Officers Involved in Booking a Suspect | 1.25 | 1.21 | 1.38 | 1.51 | 1.52 |
| Average Total Time Savings Per Suspect Booked (Hours) | 1.83 | 1.38 | 3.45 | 2.07 | 1.99 |
| Total Suspects Booked Per Year | 1100 | 1944 | 200 | 4300 | 3690 |
| Total Time Savings Per Year (Hours) | 2008 | 2682 | 690 | 8895 | 7348 |
| Dollar Value of Time Savings Per Year** | $42,298 | $36,362 | $12,323 | $189,917 | $142,395 |

* Because Harrisburg police officers have not booked suspects using the conventional method for several years, we did not survey them about processing times or the number of officers involved. These estimates are based on average processing times and numbers of officers involved across all municipal police departments in Dauphin County except Lower Paxton Township.

**Calculated by multiplying total hours saved per year by the average hourly wage rate for police officers (excluding fringe benefits) in the county or police department.

^Time savings that would be achieved if other Dauphin County municipal police departments utilized the Harrisburg Center; excludes Harrisburg, Penbrook, and Lower Paxton Township Police.  Total suspects booked is an estimate based on Uniform Crime Reports data for 1997.

cards and arrest reports, if conventional booking technologies had been used.[18]   In Cumberland County, the central Booking Center saves municipal police officers an estimated total of 2,008 hours per year.  The value of this time savings is an estimated $42,298, based on the average labor costs of police officers in Cumberland County.  The central Booking Office in Pottsville saves Schuylkill County police officers an estimated 2,682 hours per year.  This translates into an estimated savings in labor costs of $36,362.  Similarly, the Harrisburg Booking Center has saved Penbrook[19] and Harrisburg police officers an estimated 9,585 hours per year, (i.e., 690 hours for Penbrook and 8,895 hours for Harrisburg).  Table 1 also shows that the time savings that could potentially be achieved if other Dauphin County municipal police departments (except Lower Paxton Township) utilized the Harrisburg center is an estimated 7,348 hours.  Currently, these police departments do not use the Harrisburg Booking Center.  This estimates the potential time savings that could be achieved if the other Dauphin County police were to begin using the Center.

These time savings reflect estimates of the reduction in time spent by police officers on booking activities.  The use of automated booking technologies allows police officers to spend less time booking suspects, and more time on other police duties.  Therefore, our estimates of labor cost savings indicate the financial accounting of the time savings incurred by the police departments.  A police department would only realize actual cost savings if they were to reduce the number of hours worked by police officers accordingly.  We further examined the issue of time savings by asking police officers whether they have experience booking suspects themselves and, if so, whether taking a

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[18]If two officers (or booking agents) are involved in processing a suspect, CONSAD assumes that both officers spend an equal amount of time performing processing-related activities, and that the total processing times reported by police officers apply to *each* officer.  Thus, if it takes an hour to book a suspect, and two officers are involved, the *total* amount of officer time consumed is two hours.  This assumption is based on discussions with contacts in each of the three counties.

[19]All results presented for Penbrook should be interpreted with appropriate caution.  These results may not be reliable because only 4 of 11 Penbrook patrol officers completed our survey.

typical suspect to the booking center allows them to return to patrol more or less quickly. In our survey form, respondents could choose from the following five answers: "much less quickly," "less quickly," "in an equal amount of time," "more quickly," and "much more quickly" (see the survey form reproduced in Appendix C). The majority of police officers across all three counties responded that taking a suspect to their respective booking center enables them to return to patrol either "more quickly" or "much more quickly." Specifically, the average response in Cumberland County, Schuylkill County, and Harrisburg was "more quickly." Among the four Penbrook respondents, the responses were evenly split between "more quickly" and "much more quickly."

| **Table 2: Processing Times of Conventional vs. Automated Booking Methods** | Cumberland | Schuylkill | Harrisburg |
|---|---|---|---|
| Average Time to Book Typical Suspect at Police Station (Minutes)* | 87.45 | 68.68 | 150.00 |
| Average Time to Book Typical Suspect at Booking Center (Minutes) | 47.25 | 35.00 | 27.63 |
| Difference (Minutes) | 40.20 | 33.68 | 122.37 |

* For Harrisburg, this refers to the average time reported by Penbrook Police. This estimate may not be reliable, however, since only 4 of 11 Penbrook Police Officers completed our survey.

A separate impact associated with the use of automated booking technologies is the effect on the amount of time required to book a typical suspect. The data in Table 2 depict the amount of time police officers using conventional booking methods require to

book a typical suspect, versus the amount of time required by agents of the three booking centers to book a typical suspect. On average, booking agents using the automated booking technologies in Cumberland and Schuylkill Counties can process a suspect in nearly half the time required by police officers using conventional booking methods in their respective counties. Agents at the Harrisburg Booking Center process a suspect in about one-fifth of the amount of time needed by a Penbrook police officer.[20] All other Dauphin County police reported an average processing time of 78.82 minutes, which corresponds more closely with the times reported by police in Cumberland and Schuylkill Counties.

Interestingly, Lower Paxton police, which have their own TENPRINTER machine, have an average processing time of 85.75 minutes, a much higher estimated time than that for the three booking centers. Lieutenant Gary Weisinger, Systems Administrator at Lower Paxton, attributes this high estimate to the difficulty that several officers have using the METRO records system. He hopes to improve processing times by introducing a more user-friendly records system, as described in Section 2.5.

Both booking agents and police officers were also asked whether they think the use of automated booking technologies has affected the processing of suspects and, if so, in what ways. Most all booking agents in all three counties indicated that the use of automated technologies has had some effect on suspect processing. Several agents, including 55 percent of those in Harrisburg and 30 percent of those in Cumberland County, mentioned that they are able to process suspects much more quickly. Other

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[20]This estimate may not be accurate because, in our view, the average processing time reported by Penbrook police seems to be unusually high. However, these are the results of the survey responses we received.

responses pointed to the ease and convenience that TENPRINTER machines and digital cameras offer relative to conventional technologies. Although booking agents may have an incentive to exaggerate these effects, their perceptions are similar to those of many of the police officers who use the booking centers. Twenty-four percent of Cumberland County police, 26 percent of Schuylkill County police, 26 percent of Harrisburg police, and 50 percent of Penbrook police stated that they think suspects are booked more quickly using the automated technologies.

## 4.2    The Cost-Effectiveness of Automated Booking Centers

In order to compare the total costs associated with the booking centers with their total benefits in each of the three counties, we conducted a cost-benefit analysis comparing the costs of the conventional booking method in each county with the costs of the booking centers in each county. For the purposes of this analysis, the benefits of the centers are taken to be the avoided capital, labor, and recurring costs associated with the conventional booking method.[21] The costs of the booking centers are taken to be the capital, labor, and recurring costs associated with operating them.

The analysis is based on cost data provided by the three booking centers and those police chiefs in the three counties who responded to our survey. We obtained detailed data from the Schuylkill and Harrisburg booking centers on the various capital, labor, maintenance, and operating expenses they incur. However, the Cumberland Booking Center did not provide us with any data on recurring or labor costs. In order to estimate the amount of recurring cost at the Cumberland Booking Center, we have used the average recurring cost of the Schuylkill and Harrisburg centers. To estimate labor costs

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[21]Recurring costs refer to ongoing operating and maintenance costs.

for the Cumberland Center, we have used wage and salary information provided by the Center in a 1997 grant proposal submitted to the PCCD.

The results of this cost-benefit analysis are summarized in Table 3.  As shown, of the three booking center projects, only Schuylkill County has experienced a positive net annual benefit associated with its Booking Office.  In Cumberland County and Harrisburg, the total annualized costs of the automated booking facilities exceed the total estimated annualized costs that would be incurred if the booking centers did not exist. The positive cost-effectiveness of the Schuylkill Booking Office is due primarily to the large number of municipal police departments in Schuylkill

**Table 3: The Costs of Conventional and Automated Booking Methods**

| Total Annual Costs of Conventional Method | 1 Time Capital Costs | Annualized Capital Costs* | Recurring Costs^ | Cost of Officers' Time^^^ | Suspect Fees | Total Cost |
|---|---|---|---|---|---|---|
| Cumberland | 29024.00 | 4132.36 | 10320.00 | 42298.00 | 0.00 | 56750.36 |
| Schuylkill | 81630.00 | 11622.28 | 29025.00 | 36362.00 | 0.00 | 77009.28 |
| Hbg/Penbrook | 3628.00 | 516.55 | 1290.00 | 202240.00 | 0.00 | 204046.55 |

| Total Annual Costs of Automated Booking Center | 1 Time Capital Costs | Annualized Capital Costs** | Recurring Costs^^ | Labor Costs^^^ | Suspect Fees | Total Cost |
|---|---|---|---|---|---|---|
| Cumberland | 10173.34 | 2481.18 | 22906.08 | 202606.00 | -74800.00 | 153193.26 |
| Schuylkill | 10173.34 | 2481.18 | 22494.00 | 44525.00 | -54918.00 | 14582.18 |
| Hbg/Penbrook | 14535.34 | 3545.03 | 23318.04 | 245952.00 | 0.00 | 272815.07 |

| Calculation of Net Annual Benefit | Conventional Total Cost | Booking Total Cost | Net Annual Benefit |
|---|---|---|---|
| Cumberland | 56750.36 | 153193.26 | -96442.90 |
| Schuylkill | 77009.28 | 14582.18 | 62427.09 |
| Hbg/Penbrook | 204046.55 | 272815.07 | -68768.53 |

Notes:

*Assumes a 10-year expected economic lifetime for capital equipment and a 7% interest rate.
**Assumes a 5-year expected economic lifetime for capital equipment and a 7% interest rate.
^Includes the costs of ink, film, and related items.
^^Includes the costs of maintenance agreements, telephone lines, toner cartridges, and related items.
^^^Excludes fringe benefit costs.

County, and the fact that this booking office relies on a relatively small staff. Schuylkill's capital and recurring costs under the conventional scenario are substantial because there are 45 police departments in the county. The labor costs associated with operating the Booking Center are quite low compared to the other two booking centers, reflecting its smaller staff and lower wage rates. Moreover, the revenue generated by suspect fees at the Schuylkill Booking Office further improves its cost-effectiveness.

In contrast, Cumberland County has a much smaller number of municipal police departments. This makes the avoided costs of conventional booking equipment and its operation and maintenance relatively low. The labor costs associated with this booking center, however, are quite high, dwarfing the avoided costs of police officers' time. Similarly, because the Harrisburg Center serves only two municipal police departments, the avoided capital and recurring costs are rather low. Although the avoided costs of officers' time in Harrisburg are high because of the large number of suspects arrested by these two departments, the labor costs associated with the Booking Center are even greater.

It is important to note that our analysis does not indicate that the booking facilities in Cumberland County and Harrisburg are not worthwhile. The results of the cost-benefit analysis presented above only consider the financial costs associated with automated technologies used at the booking centers versus the avoided costs of the conventional booking process that the booking centers have replaced. This cost-benefit analysis does not consider the positive impacts of the centers on public safety, the quality and timeliness of suspect information, and other benefits to which a monetary value cannot be easily attached. The results of our analysis indicate that automated booking centers, even

centralized centers that serve several police departments, may have a higher financial cost than conventional booking methods. However, the non-monetary benefits of these centers may be well worth the additional resources required. Any prospective decision regarding whether creating a new booking center with automated technologies is worth the cost must consider all the benefits of such a center, including the improvements in processing efficiency and effectiveness that are described elsewhere in this section.

One way in which Cumberland County could offset the total costs of automated booking would be to raise the fee charged to suspects. It seems unlikely, however, that a higher fee could raise the estimated additional $96,443 that would be needed in Cumberland County to bring the total costs of automated booking in line with the costs that would prevail under the conventional approach. The $200 fee in place there already is quite high, and a higher fee might reduce the payment rate.

Similarly, Harrisburg, which currently does not charge a fee to suspects, could introduce a fee to offset booking costs. The introduction of a fee could potentially raise enough revenue ($68,769) to make automated booking as cost-effective as the conventional alternative. This appears to be quite feasible, considering that Cumberland County raises more than that amount from a much smaller number of suspects. Assuming a payment rate of 50 percent, a suspect fee of only $31 would raise the required $68,769. Assuming a payment rate of just 34 percent (the approximate rate in Cumberland County), the required fee would be $45. In addition, if the Harrisburg Center were to serve a larger number of police departments, and thereby book a greater number of suspects, it would be more cost-effective.

### 4.3     Breakeven Analysis of Four Hypothetical Booking Centers

One conclusion of the results of the cost-benefit analysis presented above is that as the number of suspects booked in a county increases, *ceteris paribus*, the cost-effectiveness of the use of a central booking center improves. To further explore this relationship, we considered four scenarios characterized by different hypothetical counties that have established a centralized, automated booking center. All four scenarios assume that the hypothetical county has 16 municipal police departments (the state average) that use a centralized, automated booking center with one Livescan TENPRINTER system and one Printrak MultiCapture digital mugshot system. All scenarios also assume that this center has capital, labor, and recurring costs that equal the average costs of the three booking centers considered in this evaluation. For each scenario, to calculate the conventional booking costs that would be borne if the center did not exist, we assumed that police wages and processing times also equal the average costs and times for police departments in the three counties studied. We then conducted breakeven analyses to determine the number of suspects that would have to be booked annually, under alternative funding schemes, for the booking center to be cost-effective in each of the four scenarios. In other words, this breakeven analysis establishes the conditions under which the costs of operating an automated booking center would just equal the costs of utilizing conventional booking methods under four hypothetical funding scenarios.

For scenario 1, we assume that the booking center receives no outside funding for capital or other expenses and does not charge a fee to suspects. As shown in Table 4,

under this worst-case scenario, the center would have to book 6,240 suspects per year for total benefits to offset total costs.

For scenario 2, we assume that the center receives a level of outside funding equivalent to that provided to the Lower Allen and Schuylkill Centers for the capital expenses associated with the TENPRINTER machines, digital imaging systems, and related equipment. This offset in capital funding reduces the center's total annualized capital expense from $22,882 to $2,683. In this scenario, we also assume that the center charges no fee to suspects. Under this scenario, the center would have to book 5,596 suspects per year for total benefits to offset total costs.

**Table 4:  The Costs of Conventional and Automated Booking Methods (Scenarios)**

| Total Annual Costs of Conventional Method | 1 Time Capital Costs | Annualized Capital Costs* | Recurring Costs^ | Cost of Officers' Time^^^ | Suspect Fees | Total Cost |
|---|---|---|---|---|---|---|
| Scenario 1 | 29024.00 | 4132.36 | 10320.00 | 195696.50 | 0.00 | 210148.86 |
| Scenario 2 | 29024.00 | 4132.36 | 10320.00 | 175497.48 | 0.00 | 189949.84 |
| Scenario 3 | 29024.00 | 4132.36 | 10320.00 | 149908.64 | 0.00 | 164361.00 |
| Scenario 4 | 29024.00 | 4132.36 | 10320.00 | 129709.62 | 0.00 | 144161.98 |
| **Total Annual Costs of Automated Booking Center** | 1 Time Capital Costs | Annualized Capital Costs** | Recurring Costs^^ | Labor Costs^^^ | Suspect Fees | Total Cost |
| Scenario 1 | 93820.00 | 22881.82 | 22906.04 | 164361.00 | 0.00 | 210148.86 |
| Scenario 2 | 11000.00 | 2682.80 | 22906.04 | 164361.00 | 0.00 | 189949.84 |
| Scenario 3 | 93820.00 | 22881.82 | 22906.04 | 164361.00 | -45787.86 | 164361.00 |
| Scenario 4 | 11000.00 | 2682.80 | 22906.04 | 164361.00 | -45787.86 | 144161.98 |
| **Calculation of Net Annual Benefit** | Conventional Total Cost | Booking Total Cost | Net Annual Benefit | Breakeven No. of Bookings | | |
| Scenario 1 | 210148.86 | 210148.86 | 0.00 | 6,240 | | |
| Scenario 2 | 189949.84 | 189949.84 | 0.00 | 5,596 | | |
| Scenario 3 | 164361.00 | 164361.00 | 0.00 | 4,780 | | |
| Scenario 4 | 144161.98 | 144161.98 | 0.00 | 4,136 | | |

Notes:

*Assumes a 10-year expected economic lifetime for capital equipment and a 7% interest rate.
**Assumes a 5-year expected economic lifetime for capital equipment and a 7% interest rate.
^Includes the costs of ink, film, and related items.
^^Includes the costs of maintenance agreements, telephone lines, toner cartridges, and related items.
^^^Excludes fringe benefit costs.

Scenario 1: Assumes a county with 16 municipal police departments; the average wage rate and average processing time across the three counties; booking center recurring and labor costs equal to the average of the three centers; no outside funding for capital costs; and no fee charged to suspects.

Scenario 2: Assumes a county with 16 municipal police departments; the average wage rate and average processing time across the three counties; booking center recurring and labor costs equal to the average of the three centers; outside funding for capital costs; and no fee charged to suspects.

Scenario 3: Assumes a county with 16 municipal police departments; the average wage rate and average processing time across the three counties; booking center recurring and labor costs equal to the average of the three centers; no outside funding for capital costs; and a fee charged to suspects that raises enough revenue to offset total annualized capital and recurring costs.

Scenario 4: Assumes a county with 16 municipal police departments; the average wage rate and average processing time across the three counties; booking center recurring and labor costs equal to the average of the three centers; outside funding for capital costs; and a fee charged to suspects that raises the same amount of revenue as in Scenario 3.

Under Scenario 3, we assume that the booking center receives no outside funding but raises enough revenue from suspect fees to offset its total annual capital and recurring costs ($45,788). This amount of fee revenue seems reasonable, especially considering that it is less than the amounts raised by the Cumberland and Schuylkill Centers. In this case, the center would have too book 4,780 suspects per year for total benefits to offset total costs. Assuming a suspect payment rate of 34 percent (the approximate rate in Cumberland County), the corresponding suspect fee must equal $28 per suspect.

For scenario 4, we assume a level of outside capital funding equivalent to that provided to the Cumberland and Schuylkill Centers and the same total amount of fee revenue as in Scenario 3. Under this best-case scenario, for total benefits to equal total costs, the center would have to book 4,136 suspects per year. Assuming a suspect payment rate of 34 percent, the suspect fee must be set at $33 per suspect.

Thus, depending on the funding sources in place, a centralized, automated booking center in the hypothetical counties would need to process between 4,136 and 6,240 suspects a year in order for total benefits to equal total costs. Obviously, the number of potential funding schemes is greater than the four considered in this analysis. In addition, wage costs, average processing times, and the number of police departments or other agencies[22] that would use a central booking center might vary significantly from the figures assumed here. However, this breakeven analysis indicates the volume of booking that must occur at a booking center under different funding scenarios for its total benefits to equal its total costs. The analysis highlights the need for a relatively large

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[22]This analysis focuses exclusively on local or municipal police departments. If state police, attorneys general offices, or other law enforcement agencies utilize a central booking center, the number of suspects booked will be greater, and the cost-effectiveness of the center will improve.

number of suspects (which raises the level of cost savings to police officers) to justify the significant fixed costs involved in operating an automated booking center.

## 4.4 The Quality and Accuracy of Fingerprints, Photographs, and Other Information

To assess the impact that automated booking technologies have had on the quality and accuracy of suspect fingerprints, photographs, and other information, we surveyed both booking agents and police officers in the three counties. We asked police officers if they ever book suspects themselves at the police station. If the officers responded yes, they were then asked to answer several questions concerning the booking process. Most of the same questions were also asked of booking agents.

Specifically, respondents were asked how often they must re-fingerprint a suspect because they consider (or, in the case of booking agents, the TENPRINTER machine considers) the initial fingerprint images to be "unacceptable." Respondents were provided with five possible answers: "almost never or never," "rarely," "sometimes," "often," or "almost always or always" (see survey forms in Appendices A and C). The same question was asked regarding photographs. In addition, police officers were asked how often their police department sends fingerprint cards to the Pennsylvania Central Repository, and how often the Repository rejects fingerprint cards. Most Schuylkill County police officers did not complete this section of the survey because they very rarely book suspects themselves. Nonetheless, some of them reported that they at least occasionally book suspects themselves, and their responses were included in our analysis.

Across all three counties, we received very similar responses from both police officers and booking agents regarding how often they must re-fingerprint or re-photograph a suspect. Most all respondents reported that they "rarely" need to do so. In addition, virtually all police officers and booking agents indicated that they either "almost never or never" or "rarely" send suspect photographs to the Central Repository, confirming what we learned during various site visits and telephone interviews with site contacts.[23] In general, police officers reported that they usually send fingerprint cards to the Central Repository. Cumberland County police indicated, on average, that they "almost always or always" submit fingerprints, as did Dauphin County police, and all four Penbrook police respondents. Schuylkill County police officers responded that, on average, they "sometimes" or "often" submit fingerprints. These results may exaggerate the extent to which police submit fingerprint cards, since some officers may not wish to admit that their departments do not always do so. We did not ask booking agents this question because *all* fingerprint images captured at the three booking centers are electronically submitted to the Repository.

In response to the question concerning the frequency of fingerprint rejections by the Repository, booking agents in all three counties (as well as Lower Paxton police), reported that the Repository either "almost never or never" or "rarely" rejects the fingerprints they submit. Responses from police officers did not differ significantly from those of booking agents, with most officers reporting that their fingerprint cards are "rarely" rejected. However, more police, especially those at the Penbrook Police

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[23]With the new digital mug shot system, Cumberland and Schuylkill booking agents now electronically submit all suspect photographs to the Repository (as will the Harrisburg Center once it installs the new system). However, the booking centers did not have the new system when they responded to our survey.

Department, were inclined to respond that their fingerprint cards are rejected "sometimes." In general, these responses reflect the Central Repository's current policy of rarely rejecting fingerprints, even if they are of relatively poor quality, because of the unlikelihood that the police will ask the suspect to return to be processed a second time. Thus, these responses tell us little about the actual quality of fingerprint images.

In response to the open-ended questions concerning the effects of automated booking technologies on suspect processing, some booking agents and police officers stated that they believe these technologies have improved the quality of fingerprints and photographs. A few agents and police officers also mentioned that they think the quality and accuracy of the criminal history information they receive from the Repository has improved. However, their statements point more to other kinds of impacts, such as the capability to book suspects and receive rap sheets more quickly.

To examine this issue further, we obtained data from the Pennsylvania State Police on electronic fingerprint quality for the three booking centers, as well as for inked fingerprint cards for the entire state. As discussed in Section 2.6, the Network Automated Transaction Management System (NATMS) automatically rates the quality of each fingerprint record, assigning a grade of A, B, or C (with an A being the highest quality). A given suspect's fingerprints are assigned ten grades, one for each of ten fingers that were individually printed. The system identifies specific police departments or booking centers, so long as they submit fingerprints electronically over the AFIS system. It does not, however, identify individual police departments that send fingerprint cards. Rather, data for these departments (and other law enforcement agencies) are only available in the aggregate, for the entire state.

Table 5 summarizes fingerprint quality data from two time periods (August 1998 and August 1999) for the three booking centers and for all fingerprints rolled manually and therefore submitted on cards from throughout all of Pennsylvania. For manual fingerprints in August 1999, about 41 percent received an A rating, whereas about 7 percent were assigned a C rating. Fingerprints submitted by the Schuylkill Booking Office are of dramatically higher quality, with 70.5 percent receiving A ratings, and only 1.5 percent receiving C ratings. Fingerprints from the Cumberland County Booking Center, while not rated as high as those from Schuylkill County, are nonetheless of higher quality than those captured manually. In contrast, Harrisburg's fingerprints are generally of lower quality than those captured manually. Moreover, their quality actually appears to have declined between 1998 and 1999. In August 1999, only 18.5 percent of Harrisburg fingerprints were assigned A ratings, while more than a quarter received C ratings.

**Table 5: Quality of Manual vs. Electronic Fingerprint Images**

**August 1999**

| | Total fingers | A fingers | % of total | B fingers | % of total | C fingers | % of total |
|---|---|---|---|---|---|---|---|
| Manual* | 75,700 | 31,168 | 41.17% | 38,930 | 51.43% | 5,582 | 7.37% |
| Harrisburg | 3,130 | 580 | 18.53% | 1,751 | 55.94% | 799 | 25.53% |
| Cumberland | 2,390 | 1,090 | 45.61% | 1,227 | 51.34% | 73 | 3.05% |
| Schuylkill | 1,370 | 966 | 70.51% | 383 | 27.96% | 21 | 1.53% |

**August 1998**

| | Total fingers | A fingers | % of total | B fingers | % of total | C fingers | % of total |
|---|---|---|---|---|---|---|---|
| Manual* | 69,200 | 26,433 | 38.20% | 36,945 | 53.39% | 5,822 | 8.41% |
| Harrisburg | 3,040 | 832 | 27.37% | 1,776 | 58.42% | 432 | 14.21% |
| Cumberland | 1,520 | 735 | 48.36% | 741 | 48.75% | 44 | 2.89% |
| Schuylkill | 1,530 | 991 | 64.77% | 521 | 34.05% | 18 | 1.18% |

*Totals for all law enforcement agencies in the Commonwealth that submitted fingerprint cards to the Central Repository.

Source: NATMS Livescan Quality Reports provided by the Pennsylvania State Police Central Repository.

These data suggest that electronic fingerprint images are generally of somewhat better quality than those rolled manually. However, Central Repository staff caution that there are overriding factors, particularly the level of training and experience of booking agents or police officers. A well-trained police officer who manually rolls fingerprints will often submit fingerprint images that are of better quality than a poorly trained booking agent using a TENPRINTER machine. This fact may explain why fingerprints

submitted by the Harrisburg Center are of lower quality than those submitted by the other two booking centers and by agencies using conventional methods.

## 4.5    The Timeliness of Criminal History Information

It is important for police departments and booking centers to submit fingerprint information to the Central Repository in a timely fashion.  The sooner the Repository receives this information, the sooner it can return a rap sheet to the arresting agency or booking facility.  The police or booking agents cannot verify the suspect's identity or know about his/her past criminal activities until they have a rap sheet in hand.  Yet police in many departments must wait weeks for a rap sheet, in part because fingerprint cards sit at the police station for days before being mailed.  Moreover, in some cases police departments *never* submit fingerprint cards (as discussed in Section 2.1).  A quick turnaround also requires Repository staff to process the fingerprint information and send a rap sheet to the arresting agency or booking center in a timely manner.  The Repository often receives inked fingerprint cards at a faster rate than it can process them, creating a backlog that lengthens turnaround times.

In this evaluation study, we investigated whether and to what extent the use of automated booking technologies has improved such turnaround times.  In our survey of police officers in the three counties considered in the evaluation, we asked about the amount of time that typically passes before a set of fingerprints are sent to the Repository (once the fingerprints have been prepared).  In addition, we asked police officers about the amount of time that typically passes before a positive identification and any criminal history information on the suspect is received (once the fingerprints have been sent).  We

posed the latter question to booking agents as well. Booking agents were not asked the former question since they transmit fingerprint information to the Repository immediately after the suspect is processed.

The survey responses reveal the tremendous advantages of a system that electronically links automated fingerprinting machines with the Repository's computer systems. Cumberland County police reported an average of 7.6 days[24] passing before fingerprint cards are typically mailed to the Central Repository. In Schuylkill County, police indicated an average 4.7 days; and Penbrook police reported that an average of 4.8 days pass when they process suspects themselves. Other Dauphin County police (excluding Lower Paxton Township) indicated an average of 8.6 days.

In addition, much time typically passes before the Repository can return a rap sheet to arresting agencies in these counties. Cumberland County police indicated that, on average, 2.7 weeks pass before a rap sheet for a typical suspect is received. In sharp contrast, Cumberland County booking agents reported that, on average, they receive a rap sheet (electronically via the CLEAN system) in approximately 38 minutes.

In Schuylkill County, police receive a rap sheet for a typical suspect in 4.8 weeks, on average. A rap sheet is received at the CLEAN terminal in the Schuylkill County Sheriff's Office within about 20 minutes. In most cases, the rap sheet is transported by a sheriff's deputy to the Booking Office the following day. As mentioned in Section 2.4, if the booking agents are eager to obtain a particular rap sheet, a deputy can usually bring it to them on short notice or call them with the information.

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[24]In this analysis, 1 day refers to 24 hours, and 1 week refers to 7 days.

Penbrook police usually receive a rap sheet in 4 weeks if they book suspects themselves. In contrast, the Harrisburg Booking Center typically receives a rap sheet in 20 minutes. For other Dauphin County police (excluding Lower Paxton Township), 3.5 weeks usually pass before a rap sheet is received. Most Lower Paxton police officers, which have their own TENPRINTER machine, report receiving a typical rap sheet in 20 minutes, although a few mentioned that it can take several hours or a day. These responses reflect the fact that Lower Paxton does not have its own CLEAN terminal, and must rely on the County Communication Center to fax rap sheets. So long as the arresting officer remembers to notify the Center about a particular rap sheet that he/she is awaiting, the officer should receive it in less than an hour and, in most cases, within 30 minutes.

In response to the open-ended questions concerning the ways in which automated technologies have impacted the processing of suspects, many booking agents (80 percent in Cumberland County, 75 percent in Harrisburg, and 50 percent in Schuylkill County) mentioned that the AFIS system enables them to receive rap sheets (including a positive identification and statewide criminal history information) for a greater number of suspects. Whereas under the conventional approach some fingerprint cards are not sent to the Repository at all, the automated approach ensures that all are sent. In addition, many booking agents stated that the waiting time for these rap sheets has been reduced substantially.

According to Central Repository staff, automated booking has also indirectly improved turnaround times for police departments that use conventional booking methods. Specifically, as the share of fingerprints submitted electronically has increased

throughout the state, the backlog of inked fingerprint cards at the Repository that need to be scanned into the AFIS system has been reduced.[25] Repository staff are therefore able to process these cards and send rap sheets to police departments more quickly than before. Although Repository staff were unable to provide a specific estimate of the extent to which the backlog of cards has declined, or of the exact change in turnaround times, they believe the impact has been substantial. Hence, the turnaround times that police reported to CONSAD may actually be an improvement over those experienced in past years.

## 4.6    Utilization of the Three Booking Centers

To evaluate the extent to which municipal police departments are utilizing the three booking centers, we interviewed contacts at each of the three centers and asked police officers directly in our police surveys. In Cumberland County, all 16 police departments use the Booking Center at least some of the time. They differ, however, in their frequency of utilization. The most important determinant is distance, with police from nearby jurisdictions (such as Lower and Upper Allen) reporting the highest frequencies of utilization. Police from those departments furthest from the Center, such as Middlesex and Mid-Cumberland Valley Regional, report the lowest frequencies of utilization. In addition, police are less likely to use the Center if they must travel a great distance from the location of the arrest. Carlisle police also report relatively low frequencies of utilization, in part reflecting the fact that they now have their own

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[25]In recent months, the backlog of inked fingerprint cards has actually increased. This has occurred because the State Police have been upgrading the AFIS system software, which has temporarily slowed the system's ability to quickly process fingerprints.

videoconferencing facility (which is also the case for Mid-Cumberland Valley Regional).[26]

Police were asked to list some of the reasons why they have not taken suspects to the Booking Center. Of those who gave reasons, most (58 percent) stated that the distance to travel is too great. An additional 17 percent reported that taking suspects to the center is inconvenient or time-consuming, also reflecting the large distance that some officers have to travel. Conversely, when asked why they do use the Center, 51 percent of all Cumberland County police responded that doing so allows them to return to patrol more quickly. The closer the officer's jurisdiction to the Center, the sooner he/she can get back on patrol.

In contrast, police in all 45 of Schuylkill County's municipal police departments report high levels of utilization. The distances they must travel to the Booking Office are generally not as great as in Cumberland County. Moreover, Schuylkill County police rarely transport suspects to the Office. As discussed in Section 2.4, for most all custodial arrests, police take suspects to the county prison, where groups of suspects are later taken to the Booking Office by corrections officers. Thus, although police rarely transport suspects to the Booking Office, they rely on the Office to book the vast majority of suspects they arrest.

As mentioned in Section 2.3, the only municipal police departments that utilize the Harrisburg Center are Harrisburg and Penbrook. Any other Dauphin County police department on the METRO system could use the Harrisburg Center if it paid for the

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[26]As noted in Sections 1.0 and 2.2.2, the videoconferencing site in Carlisle has just recently added a TENPRINTER machine and digital imaging system, and therefore police from Carlisle and other departments in the western half of the county will take suspects there for processing. When officers completed our survey, however, suspects were not being processed at this site.

service.[27]  Thus far, only Penbrook (as well as the  Harrisburg International Airport Police Department), which is relatively close to the Harrisburg Center, considers the service to be worthwhile.  In our survey of Dauphin County police, we asked why they do not use the Center.  Not surprisingly, more than half of the respondents (56 percent) simply stated that it is not department policy to use it.  Others provided specific reasons why their departments prefer to book suspects themselves.  Thirty-six percent stated that taking suspects to the Harrisburg Center would be too time consuming or inconvenient, and 22 percent said specifically that the distance to travel is too far.  Twenty-four percent also stated that the staff at the Center are unfriendly or uncooperative.  Many of these officers do have exposure to the Booking Center staff because they utilize the Center's holding cells.  It is also important to note that 8 of these municipal police departments cannot use the Harrisburg Center because they are not on the METRO system.

We also asked police about any problems they have encountered at the booking centers -- problems that may discourage more frequent utilization.  Most Cumberland County police either skipped this survey question or said that they have had no problems.  Of those who said they have had problems, the problems they mentioned varied.  Some stated that booking agents have made mistakes in processing suspects, such as entering incorrect on incomplete information into an arrest report, or taking poor mug shots.[28]  Others mentioned problems with the intoxilizer or that the Center is sometimes backlogged or understaffed.  All Schuylkill County police either skipped this question or

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[27]The Harrisburg Police Bureau would like all police departments using the Center to be linked to the METRO system because the system is used to generate arrest reports (see Section 2.3.2).

[28]When police were surveyed, the Cumberland Booking Center was still using a Polaroid camera to take mug shots.

answered that they have had no problems at the Booking Office.  Three of the four Penbrook officers who responded to the survey said they have had problems.  All three stated that booking agents at the Harrisburg Center have at times been uncooperative, sometimes refusing to book a suspect because they are too busy.  Just over half (52 percent) of Harrisburg police officers said they have had problems.  Twenty-five percent of those who said they have had problems explained that the Center is sometimes backlogged or understaffed.  In addition, 25 percent mentioned that the TENPRINTER machine sometimes malfunctions.  One-third described unruly or combative suspects, a problem that would likely occur regardless of whether they used the Booking Center or processed suspects themselves.

**4.7     Additional Impacts of Automated Booking Centers**

### 4.7.1   Impact on the Effectiveness of Criminal Investigations

As a result of automated booking, police departments and prosecutors are better able to conduct criminal investigations. This impact is generally a by-product of the fact that police departments and prosecutors are getting rap sheets *more quickly and for a greater number of suspects*. In addition, to the extent (however minor) that automated booking technologies improve the completeness and accuracy of available information on suspects, law enforcement officials and members of the criminal justice system are better able to perform their jobs. Police, prosecutors, district justices, and judges are better informed to make decisions regarding the release, detainment, charging, and sentencing of suspects.

### 4.7.2   Level of Integration With Management Information Systems of Municipal Police Departments

In each of the three counties, the information on suspects and crimes collected by an arresting police officer is generally entered into the suspect records system of the officer's department. Many of these records systems are electronic databases. However, municipal police departments across the three counties, as well as within a given county, utilize a variety of different systems, and therefore cannot easily share information with each other. Those departments in Cumberland and Dauphin Counties that utilize the METRO records system do have access to a large regional database of suspect records. Yet even many of these departments maintain a separate records system of their own. In addition, for a typical police department, the statewide criminal history information received from the Central Repository is not entered into the department's records or management information system.

### 4.7.3    Conformance With Industry or Government Standards

The American National Standards Institute (ANSI) and the Computer Systems Laboratory (CSL) of the National Institute for Standards and Technology (NIST), an agency of the U.S. Department of Commerce, developed a standard in 1993 that establishes the format of electronic file records used to exchange information associated with digital fingerprints.  This standard, ANSI/NIST-CLS 1-1993, *Information Systems - Data Format for the Interchange of Fingerprint Information*, allows different fingerprint systems used by different members of the criminal justice system to readily exchange their fingerprint images with one another.  The Automated Fingerprint Identification System (AFIS) used by the Pennsylvania Central Repository to store, retrieve, and identify fingerprint images, as well as the Livescan TENPRINTER fingerprint equipment used by the three counties included in this evaluation study comply with ANSI/NIST-CLS 1-1993.  Thus, these systems can readily exchange electronic records of fingerprint images with other systems that are compliant with this standard, including the U.S. Federal Bureau of Investigation and numerous other state and federal agencies.

In 1997, an addendum to ANSI/NIST-CLS 1-1993 was created by ANSI and NIST to establish standards for the exchange of electronic records to characterize Mugshots, and Scars, Marks, and Tattoos (SMT).  This addendum was integrated with the original standard to form ANSI/NIST-ITL 1a-1997, *Data Format for the Interchange of Fingerprint, Facial & SMT Information*.   The Printrak digital mugshot systems used by the Cumberland and Schuylkill Booking Centers, and soon to be used by the Harrisburg Center, comply with this standard.

It should be noted that the original ANSI/NIST-CLS 1-1993 and ANSI/NIST-ITL 1a-1997 standards were replaced by a new standard in December 1999 as part of ANSI's established procedures to review standards every five years to determine if they need to be modified, replaced, or maintained.  This revised standard, ANSI/NIST-ITL 1-1999, is the current standard for the exchange of fingerprint, facial, and SMT information.  Since this new standard did not change any existing features of ANSI/NIST-CLS 1-1993 or ANSI/NIST-ITL 1a-1997, but only added formats for the exchange of additional fields of information, all systems that comply with the original two standards also comply with the current standard.  Thus, the Livescan TENPRINTER and Printrak digital mugshot systems comply with ANSI/NIST-ITL 1-1999.

**5.0    Conclusions**

The use of automated booking technologies in Cumberland County, Schuylkill County, and Harrisburg has had several positive impacts on the effectiveness and efficiency of the process of booking criminal suspects. Most significantly, it has dramatically improved the speed with which fingerprint images and associated arrest data are sent to the Pennsylvania State Police Central Repository, and the speed with which rap sheets are returned by the Repository to the booking agencies. By obtaining rap sheets quickly, in a matter of minutes instead of weeks, booking agents and arresting officers have additional information regarding a suspect's true identity (assuming he/she has a prior criminal record), and are aware of the suspect's complete statewide criminal history at the time of the arrest. This information is especially important when police officers are deciding whether to release or detain the suspect. Automated booking has significantly reduced the likelihood that a dangerous suspect (perhaps wanted for a serious crime elsewhere in the state) will be released prematurely.

Police officers in the three counties are able to return to patrol or other duties much more quickly after making an arrest as a result of the use of the automated booking technologies. We estimate that, on average, automated technologies save an arresting officer between 1 and 2.5 hours per suspect. This translates into approximately 2,008 additional hours per year on patrol or performing other duties for Cumberland County police, 2,682 extra hours per year for Schuylkill County police, and 9,585 additional hours per year for Harrisburg and Penbrook police.

The use of automated booking technologies may have modestly improved the quality and accuracy of fingerprint images and photographs. However, other factors -- particularly the level of training and experience of police officers and booking agents -- continue to have a great impact on the quality and accuracy of these materials. While the fingerprint images captured by Cumberland and Schuylkill booking agents are of significantly higher quality than those captured by conventional methods, this is not true for fingerprints recorded by Harrisburg agents.

We found that the automated booking technologies used in Cumberland County and Harrisburg cost more to operate than conventional booking methods. Nonetheless, the additional resources required may be well worth the benefits offered by automated fingerprinting machines and digital mug shot systems, and by having a booking center that relieves police officers of the duty of processing suspects. The question of whether or not the improvements in efficiency and effectiveness associated with the use of automated booking technologies in these demonstration projects outweigh the additional costs is a subjective one and is not addressed here. However, the greater the number of suspects arrested in a county (or other geographic area), the more cost-effective a centralized, automated booking center becomes. In Harrisburg, the increased costs associated with the use of automated booking technologies could be offset by imposing a fee on suspects.

CONSAD also found varying but growing levels of utilization of the Cumberland Center and very high levels of utilization of the Schuylkill Booking Office. The most significant barrier to use in Cumberland County is the long distance that police officers in several jurisdictions must travel. With the recent addition of a second center in Carlisle,

officers will be better able to take advantage of automated booking technologies. Penbrook police rely heavily on the Harrisburg Center, and Harrisburg police officers have no other option but to use the Center. Police in each of the three counties did identify some problems they have encountered at the centers, such as too many suspects in need of processing at once and sometimes uncooperative booking agents. Nonetheless, many police officers pointed out the advantages that the centers offer, and many stated that they prefer using them over booking suspects themselves.

Our evaluation also indicates that the use of automated booking technologies in these three counties may be resulting in fingerprint records being created and submitted to the Repository for a greater number of suspects. Although survey responses from police indicated that they nearly always submit fingerprint cards to the Central Repository when they process suspects themselves, several booking agents reported that a greater number of rap sheets are being received now, compared to previously, when conventional booking methods were used more often.

Finally, this evaluation suggests that the use of automated booking technologies has indirectly improved the effectiveness of criminal investigations, and that the information police officers collect on suspects and crimes is generally entered into police departments' management information systems. In addition, the automated technologies used at each booking center conform with ANSI/NIST standards. However, municipal police departments in the three counties use a variety of different records systems, and therefore opportunities for sharing suspect data among different police departments currently is limited.

# 6.0 References

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Appendix A:   Booking Agent Surveys

Appendix B:   Booking Center Administrator Surveys

Appendix C:   Police Officer Surveys

Appendix D:   Police Chief Survey