

# CITY OF PHILADELPHIA PENNSYLVANIA

## OFFICE OF THE CONTROLLER

*Promoting honest, efficient, and fully accountable government*

### REPORT ON THE VIDEO SURVEILLANCE SERVICE PROJECT

MAY 2012



City Controller  
**ALAN BUTKOVITZ**



# CITY OF PHILADELPHIA

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June 19, 2012

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The Office of the Controller commissioned and oversaw an independent review and evaluation, conducted by the accounting firm of EisnerAmper LLP, of Philadelphia's video surveillance assets. The purpose of this review was to assess the current status of these assets. This review was conducted pursuant to Section 6-400 (d) of the Home Rule Charter, and the results of the independent accountant's review are summarized in the executive summary attached to this report.

We discussed our findings and recommendations with you and your staff at an exit conference and gave you the opportunity to provide a written response to our recommendations. However, you chose not to submit a written response to the report. We believe the recommendations in the attached report, if implemented, will improve the effectiveness of the city's video surveillance assets.

We would like to express our thanks to you and your staff, as well as the staffs of the Office of Innovation and Technology and the Philadelphia Police Department for the courtesy and cooperation displayed during the conduct of our work.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Alan Butkovitz', written over a horizontal line.

ALAN BUTKOVITZ  
City Controller

cc: Honorable Michael A. Nutter, Mayor  
Honorable Darrell L. Clarke, President  
and Honorable Members of City Council  
Members of the Mayor's Cabinet



# VIDEO SURVEILLANCE SERVICE PROJECT

## EXECUTIVE SUMMARY

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### Why The Controller's Office Conducted the Examination

In May 2006, the citizens of Philadelphia approved a change to the Home Rule Charter requiring the city to consider the use of video surveillance as part of its anti-crime, anti-violence program. From its commencement in June 2006 through April 2012, expenditures for the resulting Video Surveillance Service Project have exceeded \$13.9 million. To assess the current status of the project, the Controller's Office commissioned and oversaw an independent review and evaluation, conducted by EisnerAmper LLP (EA), of the video surveillance assets whose purchase, installation and maintenance are overseen by the city's Office of Innovation and Technology (OIT).

### What The Controller's Office Found

Some of the more significant observations are listed below. We believe these conditions, and others described in the report, warrant the immediate attention of management.

- City records indicated that only 47 percent of video surveillance cameras (102 of 216) were properly functioning. Observations made by EA disclosed that video images could be viewed for only 9 of 20 randomly selected cameras, thus confirming the reasonableness of the records as to the working status of the cameras.
- At a cost of approximately \$136,000 per functioning camera, expenditures to date appeared excessive when compared to the estimate of \$3,017 per camera in the planning stages of the project. Although it appeared that a measurement of project success against original project goals was not performed, and the costs incurred seemed excessive, additional contracts in the amount of \$3.2 million have been awarded for the installation of new cameras and the repair and maintenance of existing ones.
- Both OIT and the PPD independently maintain spreadsheets containing detailed information about the inventory of video equipment including the number of cameras, their locations and condition. Aside from the obvious duplication of effort, we noted the two sets of records were not always in agreement.
- Warranty information and maintenance records for cameras and other video surveillance equipment had not been maintained consistently, and remained in need of organization. As a result, the city may have paid outside vendors to repair cameras that were, and still may be, under warranty.
- In October 2009, OIT reached an agreement with a vendor to purchase video cameras that were acquired but not installed prior to the termination of the vendor's contract. The cameras were delivered to a Streets Department warehouse where, through the end of fieldwork for this review, they still remained. It could not be determined whether these cameras are compatible with those already in use.

### What The Controller's Office Recommends

Given the large number of video cameras that are non-functional and the related costs incurred to date, management should evaluate whether the added benefits, if any, expected to be derived from additional project expenditures, justify the extra costs. Records for all video equipment should be reconciled, and recordkeeping duplication eliminated where possible. Warranty and maintenance records should be updated and kept current to mitigate the possibility of incurring unnecessary repair costs. Finally, all warehoused video equipment should be evaluated to determine its utility, and any obsolete equipment should be sold or scrapped. These and other proposed actions are more fully described in the recommendation section of the report.

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**INDEPENDENT ACCOUNTANT'S REPORT**

**City of Philadelphia**  
**Office of the Controller**  
**Video Surveillance**  
**Service Project**

May 2012

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## ENGAGEMENT OBJECTIVE

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The City of Philadelphia Controller's Office commissioned and oversaw an independent review and evaluation of the video surveillance assets for which the City of Philadelphia's Office of Innovation and Technology ("OIT") has purchased and installed in various locations within the city limits.

Accordingly, EisnerAmper LLP ("EA") evaluated the following in regard to the City's video surveillance crime deterrent program:

- Correlation of the goals of the video surveillance crime deterrent program to actual results;
- Inventory of the video surveillance program's assets and their current state of operation;
- Analysis of the records of the video surveillance program's asset maintenance and repair history;
- Review of the records related to the funding received and disbursed for the video surveillance program.

We inspected video surveillance program documentation, conducted interviews with City of Philadelphia employees who work directly with the program, and observed video surveillance program assets at the OIT offices, the City of Philadelphia's Police Department ("PPD") Video Monitoring Unit ("VMU"), as well as in a sample of video surveillance camera locations.

The Observations, Conclusion and Recommendations presented in this report reflect the results of our review of relevant documentation, interviews with and inquiries of key personnel from the PPD and OIT, random sampling of cameras and investigation of the physical location and status of video monitoring for the sample selected. Our work was conducted in accordance with Government Auditing Standards issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit observations. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.



### **History of the Project to Date**

At the May 16, 2006 primary election, the electors of the City of Philadelphia approved a change to the Home Rule Charter requiring that the City consider the use of video surveillance as part of its anti-crime, anti-violence program. Accordingly, Resolution No. 060456 by the Council of the City of Philadelphia, dated May 18, 2006, called upon the Mayor to “appoint a Public Safety Video Surveillance Task Force”.....”to develop and advise the City regarding policies and guidelines for the use of video cameras, in a manner that protects civil liberties and legitimate privacy interests, as part of the City’s anti-crime, anti-violence program.”

As a result of the resolution and as part of the “Operation Safer Streets” initiative, the City of Philadelphia launched a city-wide video surveillance program, with the objective of the project being to make Philadelphia neighborhoods safer by providing Police with another tool for fighting crime, while protecting the civil liberties and legitimate privacy interests of citizens. Since commencing in 2006, the Video Surveillance Service (“VSS”) Project has progressed through several phases, with the concept testing of two cameras taking place in June and July of that year. The first phase after concept testing involved the development of a Request for Information for soliciting vendors experienced in camera installation, infrastructure and equipment for participation in a larger City pilot. Specifically, the pilot program, which was awarded to SST/ADT, involved the installation of 10 video surveillance cameras and eight Portable Overt Digital Surveillance Systems (“PODSS”) throughout the City in a period of 30 days. The PODSS devices, which were intended to be used for portable video surveillance and are currently maintained by the Philadelphia Streets Department, were found to be too heavy to be easily moved, as well as expensive to maintain. Consequently, these units have remained in the original locations they were installed in.

The next phase began in early 2007 with the posting of a Request for Proposal (“RFP”) in April 2007 by the Mayor’s Office of Information Systems (“MOIS”), now known as OIT, for the purpose of soliciting a managed turnkey vendor solution that included the provision, installation and maintenance of video camera hardware and software to be placed throughout the City at locations specified by the City. Around the same time, a Business Case document with a publication date of June 19, 2007, was prepared by MOIS, the purpose of which was to identify the core benefits, costs and risks involved in the implementation of a city-wide video surveillance camera

program. The Business Case assessed the various risks associated with the project. Risks were segregated into five categories: External Dependency Risk Factors, Organizational Risk Factors, Planning Risk Factors, Business Case Risk Factors, and Technical Environment Risk Factors. The risk associated with external dependencies (i.e., dependency on external vendors, including factors such as poor vendor support), was assessed as low. Business Case risk, including factors such as possibility of major cost increases, incomplete definition of scope/requirements, ill-defined benefits and others was assessed at high. All other risk categories were assessed at moderate risk. The Business Case concluded that a managed turnkey vendor solution should be sought which would include the transmission and transport of real-time video to a predetermined city demarcation, and would also require the prospective vendor to provide, install and maintain the video camera hardware and software to be placed throughout the City. Effective October 22, 2007, Unisys Corporation was the vendor awarded the project. 2008 began with a promise to the City by the Mayor that 70 cameras would be installed by the end of that year. Due to Unisys' inability to make its proposed wireless design work properly through June 2008, only 35 cameras were actually installed. Of those 35 cameras, only five were accepted by the PPD as meeting the goals of the program. The remaining 30 cameras required remediation due to a variety of issues that negatively impacted the quality of the video, such as ghosting, pixilation, and bad lighting.

In July 2008, the VSS project entered a phase in which the infrastructure strategy was changed from one of pure wireless to a hybrid solution including both fiber optic cabling and wireless mesh. As a result, by December 2008, the original 30 cameras were remediated and an additional 61 were installed, bringing the total number of cameras successfully installed and operational to 91, with all 91 cameras connected via fiber optic cabling.

In January 2009, Unisys created a network design for 250 cameras, which included the original 91 plus 159 additional cameras. The design document consisted of 20 sub-projects, the first eight of which were termed the "Top 8 Project," as it encompassed the placement of cameras in eight key police districts considered the places of most concern and importance to the PPD. By November 2009, an additional 97 cameras were installed throughout the eight key police districts, resulting in the total number of cameras installed under the Unisys contract to 188. However, due to the inoperability of 77 of the 188 installed cameras encountered during the course of the VSS project, the decision was made by the City not to renew the Unisys contract when it expired in October 2009, but rather, to have the City's OIT Team take over and manage the project. At the termination of the Unisys

contract, OIT was able to reach an agreement with Unisys to purchase all remaining cameras and related accessories that had been purchased but not installed for \$50,000. These cameras and accessories were delivered to a City of Philadelphia Streets Department warehouse and have remained there to the date of this report.

Accordingly, by late November 2009, OIT became responsible for ordering and overseeing all services related to the maintenance and replacement of cameras for the VSS project. In the absence of having a contracted vendor, OIT needed to establish a means to troubleshoot, repair and replace the installed cameras. With the aforementioned reduction in funding, OIT began using subcontractors, through the issuance of emergency orders, for any work to repair or replace non-functioning cameras and a combination of OIT personnel and the City of Philadelphia's Streets Department personnel to repair or replace the fiber optic cable infrastructure and VMU.

The first emergency order was placed in 2010 with Unisys' sub-contractor on the original project, IBS Communications, Inc., for the purpose of repairing and redeploying failing cameras that were already placed in the field. The second emergency order was placed in mid-2011 with two separate sub-contractors: IBS for service and DBS (Decisive Business Systems, Inc.) for equipment. This second emergency order was placed to exchange previously installed but non-functioning cameras with new replacements. Accordingly, as part of the 2011 emergency order, 20 cameras were replaced and currently remain on-line. An additional 10 cameras were replaced but are not yet on-line as they are wireless, and neither subcontractor has been able to perform wireless maintenance and/or installation.

It should be noted that, throughout the course of the video surveillance project to date, OIT has relied on the Streets Department in addition to members of OIT's own staff, to run the fiber optic cable at the various camera locations citywide. For the "Top 8 Project" noted above, OIT paid the Streets Department overtime to lay the fiber optic cable when Streets' employees worked after hours. Currently, OIT has an unwritten agreement with the Streets Department to lay cable upon OIT's request with no impact on either Department's budget. It was reported that this may be changing in the future.

In mid-2011, a Master Bid prepared by OIT to procure a replacement for Unisys was, after an approximate 1 ½ year wait, finalized and issued by the City of Philadelphia's Procurement Department for the purchase, installation and maintenance of the video surveillance cameras. The intent of this Master Bid was to provide new additions to the City's Video Surveillance network as well as to provide repair and

maintenance of equipment currently installed in the City's Video Surveillance network, and/or provide substitute equipment as may be needed in the network. Under the Master Bid, the Contractor will be required to furnish equipment or furnish and install video surveillance equipment on a "Requirements Basis". The responsibility for running the fiber optic cabling will continue to be OIT's, with assistance by the Streets Department, as needed.

As of the date of the Master Bid, July 6, 2011, a total of 192 cameras were reported as being installed throughout the City and were in varying states of operability. In an effort to have more of the installed cameras functioning while the Master Bid was in process, another emergency order had been prepared and awaited approval from Procurement. This order was intended to cover everything from replacing equipment to the triaging of unreliable cameras. The only item that was not to be covered under the emergency order was the running of any fiber optic cable. This emergency order was, however, subsequently cancelled in favor of awaiting the outcome of the Master Bid which, as of early March, 2012, has been awarded to two vendors: Carr & Duff has been awarded the equipment and installation portion of the bid, and Federal Signal has been awarded the connection, repair and other maintenance services portion.

Actively used video surveillance equipment, including the 192 installed cameras, are currently in place at three different locations: (1) in the field, (2) at the police-staffed VMU at 8<sup>th</sup> & Race, and (3) at the OIT Video Surveillance System ("VSS") Unit located in the 1234 Market Street building. Equipment in the field consists of cameras, antennas, aggregation points, high sites, mini-high sites, media converters, switches, PODSS, and fiber optic cables. Equipment at the PPD's VMU includes a video wall consisting of 6 cubes of video and 2 flat screen televisions. The VMU also has a mini data center with 14 project-dedicated PCs. The video wall and 14 projected dedicated PCs are owned and maintained by OIT. Equipment at OIT's VSS consists of a 46-inch flat screen television, 33 servers with Pivot3 storage, optical time-domain reflector ("OTDR"), and Network Video Recorder ("NVR"). Occasionally, damaged cameras and camera housings are stored at the VSS Unit while they are awaiting repair.

On a daily basis, Philadelphia Police Department personnel at the VMU, monitor the camera images to determine which are operational, and send a report of each camera's operating status to the OIT's Configuration/VMU/VSS Technician each morning. OIT personnel at the VSS Unit also review the camera images daily. The VSS project monitoring software, named "What's Up Gold," has been configured to send monitoring alerts to OIT personnel notifying them of camera outages.

Additionally, video images are compressed using TimeSite software so that 30 + 1 days' worth of data is stored and available for review at any given time. Access to the images is restricted to OIT's Configuration/VMU Technician and the Network Engineer.

Inventory for the video surveillance project is stored at 11<sup>th</sup> & Reed (The Radio Shop) and falls into one of two categories: inventory purchased by the city, or inventory received from Unisys at the end of their contract. Although still in original packaging, the usability of the inventory received at the end of the Unisys contract has yet to be determined. The Unisys purchased inventory consists of Axis brand cameras; which, during the course of the project, this brand of camera has been replaced by Sony cameras due to the better quality of the Sony brand. OIT's VSS Operations Project Manager believes that 30 of the Sony cameras are covered under current warranty, and that even more may be covered but that additional research is needed to confirm the exact number. It is possible the City may have paid for maintenance on cameras that were under warranty at the time.

In order for a new camera location to be approved, it must be thoroughly vetted by the PPD. New camera location requests may come from the weekly meetings between the PPD and the Video Surveillance team, City Council member requests, Community Organizations, or Deputy Mayor Everett Gillison. Any changes are tracked by the OIT's Configuration/VMU Technician. While locations for approximately 140 new cameras have been approved by the PPD, the cameras have not, to date, been purchased or installed, due to budgetary constraints. It is anticipated that the recent awarding of the Master Bid will result in a renewed effort to purchase and install cameras in these pre-approved locations as directed by the PPD.

## **Cost of the Project to Date**

From inception through April 2012, expenditures for the Video Surveillance Project have been identified as having surpassed \$13.9 million, as follows:

- Total payments to Unisys = \$13,848,439. Specifically, the original base contract was in the amount of \$8,970,305 for Year 1 (2007-2008), followed by an amendment in the amount of \$4,000,000 for Year 2 (2008-2009), and another amendment in the amount of \$565,775 for Year 3 (2009-2010) less reductions in that encumbrance totaling \$34,974, for total payments in Year 3 of \$530,801. Shortly after the Year 3 amendment, the City and Unisys agreed to the mutual termination of all obligations under the Base Contract, except for those stated in the final contract amendment, which extended the base contract through an additional year (2010-2011); to settle liabilities at or before the termination of the contract, Unisys was awarded an additional \$347,333.
- Cost of repairs, maintenance and emergency orders issued to IBS during the fiscal year ended 6/30/2011 and through 4/30/2012: \$120,420.

In addition to the \$13.9 million spent on the City's video surveillance project, contracts recently awarded under the July 2011 bid for the Purchase, Installation and Maintenance of Video Surveillance Cameras include the following:

- Contract awarded to Carr & Duff, Inc., effective January 2012, for the provision of video surveillance cameras, maintenance/service, supplies and installation in the amount of \$2,947,179.
- Contract awarded to Federal Signal Corp. in Spring 2012 for the repair and maintenance of video surveillance cameras = \$312,020.

There is no evidence that any measurement of success of the surveillance project against original goals had been performed prior to the recent awarding of the additional \$3.2 million.

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## DETAILED OBSERVATIONS

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### **Observation #1:**

An inventory listing of camera locations and the status of cameras at those locations is maintained in a spreadsheet by OIT's VSS Operations Project Manager. The PPD also maintains a separate camera inventory listing in another spreadsheet, which is used to track the status of cameras and crime statistics associated with camera locations. OIT and the PPD each maintain their own camera ID numbering scheme and track different data elements on their respective inventory listings. The Police prepare a "Daily Camera Report" which lists the status of each camera as determined by the police who monitor the video images via the TimeSite software. This report is emailed to a number of PPD and OIT individuals involved with the VSS project. OIT's VMU/VSS Technician attempts to reconcile to the PPD reports at least twice per week.

In addition to the duplication of effort and increased risk of inconsistency in data currently being expended by PPD and OIT in maintaining their own set of records, inherent to the use of spreadsheet applications is the lack of internal controls within the spreadsheets, and in particular, a lack of input controls essential to reducing risk of error during data entry.

**Note:** The OIT spreadsheet indicates a total of 216 existing cameras (which includes the statuses of (1) in production and active, (2) bagged and awaiting activation, or (3) in need of repair) and the PPD spreadsheet lists a total of 220 existing cameras installed and present in the TimeSite application. Both of these numbers differ from the 192 cameras reported as existing per the July 2011 bid opening, however, this difference could be due to the lag time between the dates the number of cameras were reported (July 2011 versus March 2012), as it is possible that an additional 20+ cameras could have been repaired and installed during that time.

## **Observation # 2:**

As of February 2012, the status of 367 camera locations (installed and potential) was being tracked by OIT's VSS Operations Project Manager in an Excel spreadsheet. The following summarizes the status of these 367 locations:

- 102 of the 367 locations are listed as having cameras installed, placed in production and active (i.e., cameras are physically at the location and are functioning).
- 20 locations are listed as having cameras “bagged and awaiting activation.” Specifically, “bagged” cameras are those which have been physically installed at the location but have not been placed in operation, primarily due to connectivity issues, i.e., there has either not been enough funds to run fiber optic cabling to them or there has been no available expertise to install the wireless device. Upon initial installation at the location, these cameras had been wrapped with plastic bags for protection, although the PPD has since ordered the removal of the bags. These 20 “bagged” cameras are cameras physically at the location but not in operation.
- 94 locations are listed as having cameras in need of repair. All but four of these locations appear to have cameras physically installed at the location, but none of the installed cameras are currently functioning.
- 16 locations have been designated as “dropped”; these are locations that were initially requested/approved by PPD but later eliminated due to technical issues preventing the ability to install cameras at those locations, i.e., the inability to mount the camera on a pole or other viable mounting asset, lack of a clear field of view when mounted, or another camera already in operation has a field of view able to cover the same location.
- 135 locations have been requested/approved by the PPD and have a status of either: a) permits pending (107), b) permits received with installation pending (20), c) site in need of survey



(7), or d) status unassigned (1). None of these locations have had cameras purchased or installed, to date.

In reviewing the spreadsheet used by OIT's VSS Operations Project Manager to track the status of cameras and camera locations, it was noted that some of the data within the spreadsheet itself is contradictory. Specifically, while there is a "Status" column which assigns one of several status values to each location entry, the color coding of data in another column headed "Pole Location" is also used to track the status of the camera and location and, for several entries, the data in these two columns is inconsistent. Additionally, it was difficult to ascertain which locations actually had cameras installed at the location versus locations at which cameras had not yet been installed.

### **Observation # 3:**

EA selected a random sample of 20 video surveillance cameras from a list of the total population of 220\* cameras contained on the camera inventory listing maintained by the PPD. While the PPD shared the total population of cameras with EA on-site at its Video Monitoring Unit, we were only able to select a random sample from PPD's list of 220, but otherwise were not permitted to remove, copy or analyze the list at that time.

As a part of this review, EA verified that the locations of the 20 randomly selected cameras were recorded in the City's TimeSite system and that a video image from the camera was visible in TimeSite. Additionally, EA visited the 20 camera locations to verify that the camera was physically present at the site listed in TimeSite. (Refer to Exhibit 1 in Appendix A).

The following are EA's findings in regard to the 20 cameras sampled:

- 45% (9 of 20) were found to be working properly, i.e., the camera was present at the expected location and a video image was available from the camera.
- 40% (8 of 20) were found to not be working properly, i.e., the camera was either not present at the physical location (3 of 20) or the camera was physically present but no image was displayed in TimeSite (5 of 20). It was noted that the 3 locations where cameras were not found to be physically present, show in OIT's inventory listing as having been installed and in need of repair, with no notation that the camera was not present at the location.
- 15% (3 of 20) were not found in TimeSite and accordingly, no video image was available for view. The physical presence of two of the three cameras at the locations, was visually verified by EA. One location address was invalid, however the camera number was found to be associated with a different, valid location address on the OIT spreadsheet. These three cameras were noted as being "bagged" (i.e., physically present but not operational) on OIT's inventory listing.

Accordingly, over 50% of the cameras selected in a random sample were found to be either in need of repair, not physically present at the designated location, or

“bagged” (not in use). While the exact location of the cameras is confidential in nature, the breakdown of the 20 cameras sampled by section of Philadelphia is as follows:

- (1) – Police District 3,
- (2) – Police District 14,
- (2) – Police District 15,
- (4) – Police District 16,
- (1) – Police District 18,
- (1) - Police District 19,
- (5) – Police District 22,
- (2) – Police District 24,
- (1) – Police District 26, and
- (1) – Police District 35.

Of the 40% (8 of 20) found to not be working properly, 1 was located in Police District 15, 1 in Police District 16, 1 in Police District 18, 1 in Police District 19, 3 in Police District 22 and 1 in Police District 24. The three “bagged” cameras were located in Police District 3, Police District 16 and Police District 35.

\* - See note in Observation #1 regarding the number of cameras.

#### **Observation #4:**

Crime statistics for 2011 were obtained from a report entitled “Murder and Shooting Analysis January 1, 2011 – December 31, 2011” which was prepared by the Philadelphia Police Department’s Research & Planning Unit and was available from the PPD’s Web site. Crime statistics for 2009 and 2010 were also obtained from a report available from the PPD’s Web site entitled “Murder Analysis, Philadelphia Police Department 2007-2010. These reports listed the number of murder victims and shooting victims in 2011 and 2009/2010 by Police District, respectively. EA compared murder and shooting victim statistics per District to the number of cameras installed in each district. The results of our analysis are summarized as follows:

- While Police District 12 had 20 murder victims, or 6.2 % of all murder victims in the City in 2011, and 83 shooting victims, or 5.8 % of all shooting victims in the City in 2011, there are no cameras installed in District 12. In 2009 and 2010 respectively, murder victims in the district totaled 32 and 24, and shooting victims totaled 44 and 48. NOTE: In the PPD’s “Murder Analysis 2007-2010” report, it was acknowledged that District 12 is one of 3 police districts in which “1 out of every 3 murder victims met their demise.”
- Conversely, District 9, in which there was 1 murder victim in 2011 (.31 % of the total) and 6 shooting victims (or .42 % of the total) has a total of 7 cameras installed, although, according to OIT’s spreadsheet, only 1 camera is in operation. Murder victims in 2009 and 2010 totaled 1 and 3 respectively, and shooting victims totaled 11 and 9.
- Compare District 9 to District 25, another district with 7 cameras installed, 6 of which are in operation, which has had a total of 32 murder victims (or 9.88 % of the total) and 181 shooting victims (or 12.74 % of the total) in 2011. For a historical comparison, in 2009, District 25 had 33 murder victims and 160 shooting victims, and in 2010 had 27 murder victims and 154 shooting victims. NOTE: In the PPD’s “Murder Analysis 2007-2010” report, it was acknowledged that District 25 is one of 3 police districts in which “1 out of every 3 murder victims met their demise.”

- District 3, with 15 cameras installed, 13 of which are operating, had 7 murder victims (2.16 % of the total) and 35 shooting victims (2.46 % of the total) in 2011, 9 murder victims in both 2009 and 2010, 38 shooting victims in 2009 and 58 in 2010.
- Compare District 3 to District 39, which had 27 murder victims (8.33 % of the total) and 114 shooting victims (8.02 % of the total) in 2011, 18 murder victims and 94 shooting victims in 2009, 25 murder victims and 117 shooting victims in 2010, and 5 cameras installed, with 3 of those in operation.

## **Observation #5:**

Warranty information and maintenance records for cameras and other video surveillance equipment are not consistently maintained by OIT. During the extent of the Unisys contract, the Axis brand cameras were under warranty from the manufacturer for a period of one year. During the course of the VSS project, some of the Axis cameras have been replaced with Sony brand cameras that were purchased with warranty coverage of up to one year. EA was not able to determine the extent to which subcontractors awarded work under emergency orders during the VSS project were paid when equipment was eligible for repair under warranty. Additionally, OIT was unable to provide any definitive information regarding warranty information on existing cameras, although an effort is currently underway to compile such information, particularly in preparation for managing the newly awarded video surveillance project bid.

OIT meets regularly with the subcontractor(s) to determine the status of inoperable cameras and attempt to repair or replace those cameras as quickly as possible. Budget constraints are a factor in whether a camera is brought back online as well as availability of parts and environmental factors (i.e. a camera in that location has been vandalized in the past). Vandalism has occurred over the course of the project and OIT strives to avoid subjecting cameras to damage where possible. While some instances of vandalism have been recorded in OIT's spreadsheet, there is no known central repository where historical information regarding the vandalism of camera equipment is being maintained and accordingly, EA was not able to determine how many cameras have been subjected to vandalism during the course of the VSS project.

In regard to the keeping of camera maintenance records, while OIT's spreadsheet lists all known and pending camera locations and tracks the status of the cameras in regard to whether they are in operation or in need of repair, maintenance records related to each individual camera are not maintained in an organized fashion. The OIT VSS Project Manager has begun to create a maintenance record history of cameras in a spreadsheet, however, to date, the spreadsheet only contains a few cameras and is being updated only as time permits in the Project Manager's schedule.

### **Observation #6:**

The VSS project is dependent on OIT personnel and City of Philadelphia Streets Department personnel for the installation, maintenance and replacement of fiber optic cable to the cameras installed throughout the City. Only two OIT employees and one Streets employee possess the skills to work with the fiber optic cable so that it operates correctly. While a new Master Bid has been awarded to two contractors for the VSS project, no provision for installing, maintaining and repairing the fiber optic cabling necessary to operate the cameras was included. As mentioned in the background section of this report, a handshake agreement exists between the OIT and Streets Department to employ personnel in the activities related to fiber optic cabling. These personnel are not able to devote full-time effort to the needs of the VSS project due to their other responsibilities and budget constraints.

Additionally, an original design of the VSS project included the use of wireless communication mechanisms. The establishment, maintenance and repair of wireless communication requires a unique skillset with regard to these cameras that does not presently exist in the OIT or Streets Departments. Any work required of the project on wireless equipment will need to be fulfilled by a subcontractor.

**Observation #7:**

EA observed the camera equipment maintained by the Street Department at the 11<sup>th</sup> and Reed warehouse. The vast majority of this equipment (90%+) was from the initial Unisys contract. The equipment has been kept in a locked room, inventoried, documented, well organized and maintained in its original packaging. It was not determined whether the equipment is able to be utilized under the newly approved Master Bid nor whether it is compatible with current state equipment that may have been purchased and installed since the inception of the project.



### **Observation #8:**

During the course of the audit, it was noted that VSS project personnel in the OIT and Streets Department have numerous responsibilities external to the project. All of the OIT and Streets personnel work on various projects to support the City's residents and employees which requires them to prioritize their daily activities based on the severity and nature of the tasks.

Due to the fact these individuals have to prioritize their activities, they have not been able to develop all of the records that would normally be present in a project of this size as they might if they were able to devote a larger portion of their time to this project.

It was also noted that OIT has experienced management and personnel changes which have resulted in VSS project responsibilities to be delegated to individuals, within OIT and outside of OIT, who may not have the time or skills necessary to adequately manage a project of this size and complexity.

## **Observation #9:**

From inception through April 2012, the cost of the Video Surveillance Project has exceeded \$13.9 million, with another \$3.2 + million currently under new contracts.

While an initial Business Case analysis was prepared to identify the core benefits, costs and risks involved in the implementation of a city-wide video surveillance camera program, there is no evidence that success of the surveillance project was measured against original goals, or that an updated Business Case analysis to re-evaluate the benefits, costs and risks involved with continuing to dedicate resources to the project was performed prior to the recent awarding of the additional \$3.2 million.

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## CONCLUSION

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While the City of Philadelphia has spent in excess of \$13.9 million over the past six years on the video surveillance project, to date, only 220\* cameras have been installed, and of those, only 102 are in operation. Accordingly, this translates to a cost of approximately \$63,000 per existing camera, and an estimated \$136,000 per working camera. It should be noted that the initial Business Case analysis estimated the cost per camera to be \$3,017.

In hindsight, it is evident that the initial Business Case analysis was flawed in its assessment of risk and costs. Unsatisfactory performance of the selected vendor, which resulted in contract termination and the necessity for the City - with its limited human resources - to internally take over and manage the project, has combined to negatively impact the overall outcome of the video surveillance project, to date. Furthermore, the quality of internal management of the project, particularly in regard to inventory and maintenance recordkeeping, is at issue.

As mentioned previously, there is no evidence that the outcome of the surveillance project has been measured against original goals, or that an updated Business Case analysis to re-evaluate the benefits, costs and risks involved with continuing to dedicate resources to the project was performed. With the success of a project with an initial expenditure in excess of \$13.9 million dollars unknown, the awarding of an additional \$3.2 million to continue the project is in question.

\* - See note in Observation #1 regarding the number of cameras.

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## RECOMMENDATIONS

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### Short term

- The city should consider evaluating the business case for allocating \$3.2 million to this project against the expected benefits before a large percentage of these funds are actually expended.
- A concerted effort, which may require temporary human capital expenditures, to update and evaluate the maintenance records for the installed cameras should be performed to determine 1) whether some cameras are still covered under original warranties, 2) whether any specific cameras have been repeatedly repaired and the cause of those repairs, 3) whether specific causes of camera failure are evident from the maintenance records and 4) whether repaired cameras have been operational after being repaired or were “swapped” for a different brand or type of camera due to continued failure of the repaired camera.
- Coordination of the spreadsheet data used by the VSS personnel and PPD personnel to evaluate the functionality of cameras may prove useful in the evaluation of camera locations and their functional status (e.g. on, out of use, no Pan, Tilt and Zoom (PTZ), etc.)
- An evaluation of the usefulness of the VSS equipment at the 11<sup>th</sup> and Reed warehouse should be made to 1) determine the need to store the equipment in its original state, 2) to determine whether any of the equipment can be put to immediate use to repair existing cameras or add to the current installed camera numbers and 3) to determine whether the equipment, if determined to be obsolete, has any salvage value.

### Long term

- The city should consider developing a means to measure the success of the VSS project against the original project goals. The measurement parameters should be evaluated on a regular, periodic basis and provided to city officials for their evaluation of whether the project is meeting the original goals.
- As begun by PPD, the city should begin to use the data obtained in the VSS project as a means to “predict” potential crime locations and have that data shared amongst appropriately determined city departments.

- The city may want to consider using the VSS project in ways that have not been discussed to assist the city with solving other issues. Some examples are:
  - Using cameras to monitor:
    - Vacant properties for evidence of misuse or vandalism
    - Properties with unpaid utility or real estate tax bills for evidence of tampering or occupancy to assist with contacting owners to collect overdue balances
    - Suspected, or known, locations in the city suffering instances of repeated vandalism, theft or other crimes.

# APPENDIX A

## Exhibit 1

