INFORMATION TECHNOLOGY:

Progress Made Installing Video Surveillance Systems, But Coverage and Performance Could Be Improved

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Memorandum

To: Susan Reinertson
Vice President, Emergency Management and Corporate Security

From: Stephen Lord
Assistant Inspector General, Audits

Date: August 9, 2016

Subject: *Information Technology: Progress Made Installing Video Surveillance Systems, But Coverage and Performance Could Be Improved* (OIG-A-2016-010)

Since 2005, Amtrak (the company) has invested about $91 million[1] to install video surveillance systems (VSS) to enhance its anti-terrorism capabilities and to help ensure the safety and security of passengers, employees, and property. Recent terrorist attacks on transit systems around the world have illustrated the importance of VSS in identifying and investigating terrorist activity. These systems typically include surveillance cameras, video recorders, display monitors, video management software, and networking hardware. Other countermeasures that can help mitigate security risks and protect critical rail infrastructure include fencing, vehicle barriers, access control systems, intrusion detection systems, and security awareness campaigns.

Our objective for this report was to assess the outcome of the company's efforts to install an integrated and effective national VSS network. For a detailed discussion of our scope and methodology, see Appendix A.

SUMMARY OF RESULTS

The Emergency Management and Corporate Security (EMCS) department has made progress installing VSS. As of May 2016, they helped implement VSS at ▮▮ key locations, which included installing about ▮▮▮▮▮ cameras, enabling ▮▮ locations for remote viewing, and establishing ▮▮ viewing centers in ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ ▮▮▮▮▮▮▮▮▮▮▮▮▮▮ and ▮▮▮▮▮▮▮▮▮.

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[1] This amount only includes funds expended for purchase and installation of video equipment by the Emergency Management and Corporate Security department or its predecessors.

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However, EMCS and its predecessors have not taken a strategic approach to planning the design and implementation of the VSS network. This ad hoc approach has led to gaps in coverage in high-risk stations, such as ██ ████████████████████████████ ███████████████ and █████████████████ This approach has also led to a lack of:

- remote viewing capability at some high-risk locations, such as ████████████ ███████

- integration with cameras installed by other Amtrak departments or business partners, such as local transit agencies, to provide critical remote viewing capability

- continuous monitoring of cameras to increase situational awareness and reduce response times in an emergency

Also, the capability of the national network has been limited by technical, operational, and security issues. For example, during the September 2015 ███████████████████ ███████████ heavy video usage overloaded the network and caused the failure of some remote viewing capabilities. EMCS officials stated that a lack of dedicated funding was a significant contributing factor for their approach and the limitations of the national network.

Taking a more strategic approach to future design and implementation of the network could help address these issues. EMCS's December 2015 strategic plan is a positive step, but the plan does not address the lack of integration of video systems of other company departments and business partners into the EMCS system to enhance video coverage. It also does not include outcome-based performance metrics to measure the success of the plan, or provide cost estimates to fully implement the plan.

We recommend that EMCS update their December 2015 strategic plan to address these issues. The Vice President, EMCS, agreed with our recommendation.

BACKGROUND

Implementation of VSS has evolved as responsibility for its management changed hands. Three company offices and departments have had responsibility for installing VSS. Initially, the Office of Security Strategy and Special Operations was responsible for installing VSS equipment. This office was disbanded in 2009, and the Amtrak Police

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department (APD) assumed responsibility for VSS management. In 2012, EMCS
department assumed responsibility from APD for installation of VSS equipment and
implementation of a national VSS network.

Funding for VSS came from various sources. From fiscal year (FY) 2005 through
FY 2015, EMCS and its predecessors relied primarily on federal grants to design and
build VSS. The source of these funds and the amounts expended on VSS are shown in
Table 1.

Table 1. *Expenditures for EMCS-Installed Video Surveillance Systems as of
January 31, 2016 (in millions)[a]*

Funding Sources	Expenditures
Department of Homeland Security Grants	$ 48.6
American Recovery and Reinvestment Act Grants	34.6
Amtrak Capital Funds	0.4
Amtrak Operating Funds	7.2
Total	**$ 90.8**

Source: Expenditures reported to OIG by EMCS
Note: [a] Excludes video systems expenditures by other departments without EMCS involvement, such
          as Mechanical and Engineering.

Initially, the company used Department of Homeland Security grant funds to design
and install stand-alone VSS systems at key sites. When American Recovery and
Reinvestment Act[2] funding was provided in 2009, EMCS officials said the company
decided to design and build a secure network to share security-sensitive information
with external law enforcement agencies via video teleconferencing. The company later
decided to use this network to integrate the stand-alone VSS systems across the country
to create a national video network.

PROGRESS MADE INSTALLING A NATIONAL VIDEO NETWORK

As of May 2016, EMCS has helped implement VSS at ▮ key locations of the more than
500 destinations, 18 tunnels, and 1,414 bridges used by the company. EMCS officials
said these sites were generally selected based on triennial, enterprise-wide security risk
assessments that were first completed in 2009 to systematically identify and evaluate
the risks and how they could be mitigated. The assessment included a review of various

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[2] Public Law 111-5, American Recovery and Reinvestment Act of 2009.

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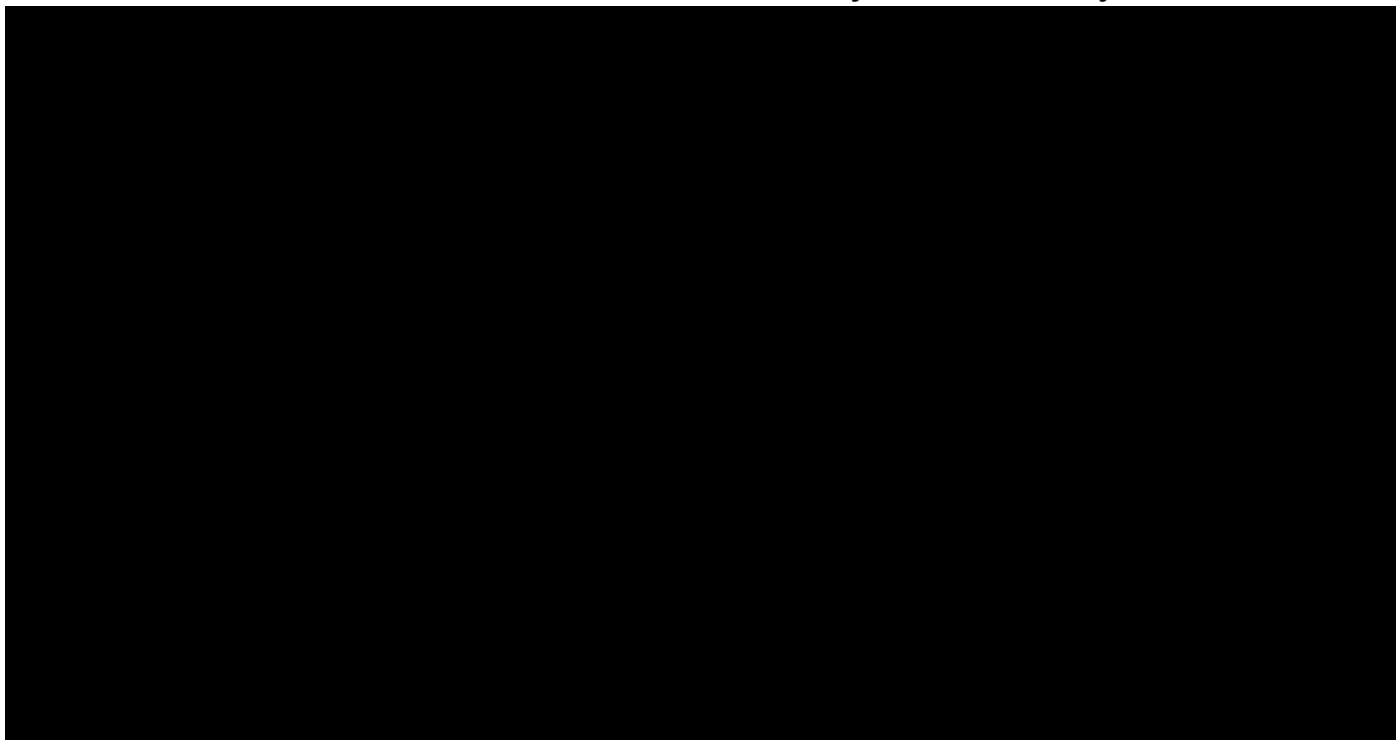OIG-A-2016-010, August 9, 2016

countermeasures to mitigate risk and protect critical rail infrastructure, including VSS, fencing, vehicle barriers, and controlled access points.

These VSS systems are used by a variety of company departments. Although EMCS staff use these systems to help the company respond to security incidents and related emergencies, APD routinely uses the equipment to review day-to-day safety and security incidents. Further, Law department staff told us they use VSS to review incidents related to employee and passenger injury claims, and the Operations department uses it to monitor train and passenger movements.

This national system includes about ████ cameras, ██ end-user workstations, and ████ viewing centers in ████████ — ████████, ████████ ████████████ ████████ and ████████████ —to provide remote viewing capability of cameras at key sites. EMCS officials told us, and we observed, that the viewing centers are rooms set up with large television monitors to allow remote viewing of VSS for incident response and situational awareness, but are ████████████████████████.

Table 2 below shows all VSS locations installed by EMCS and its predecessors, and whether they are connected to the video network and enabled for remote viewing.

Table 2. *EMCS-Installed Video Surveillance Systems as of May 2016*[a, b]

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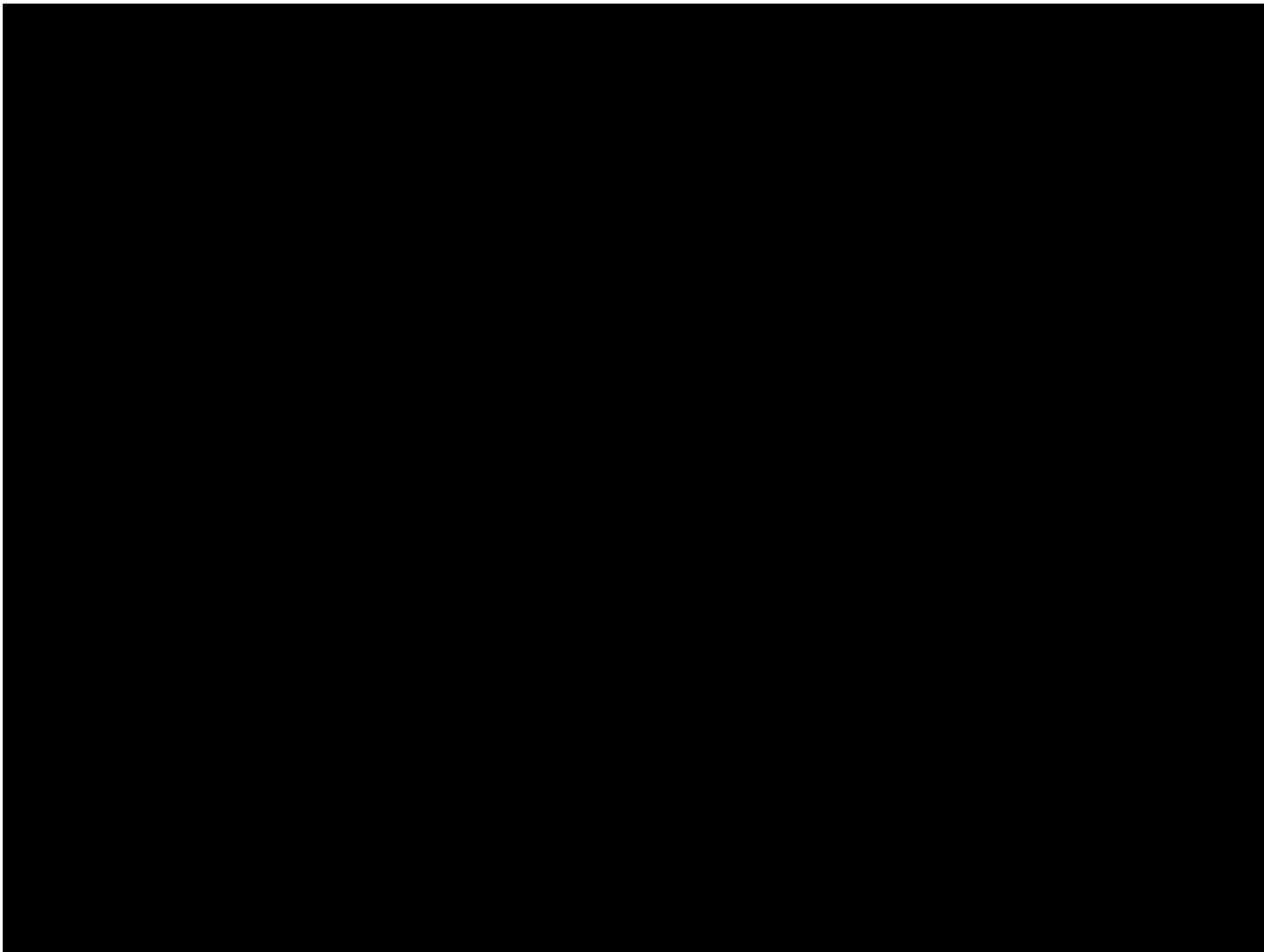
Source: Information reported to OIG by EMCS
Notes: [a] Excludes video systems installed by other company departments without EMCS involvement,
such as Mechanical and Engineering.
[b] The locations of the end-user workstations are not shown in the table.

A dedicated video network transmits video data from connected sites to the viewing
centers and other designated workstations in real time. EMCS has connected ▇ of
these sites to the video network, enabling the transmission of video data from these
sites across the network to other locations. EMCS has also enabled remote-viewing
capability for ▇ of the ▇ sites, and for ▇ end-user workstations.

In December 2015, during our audit, EMCS developed a strategic plan to continue the
implementation of VSS. Part of this plan includes a goal to optimize the functionality of
the network by implementing software that will provide remote viewing capability for

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the remaining ██████ connected to the network. However, EMCS officials said there are no plans to link the ████████████ that are not currently connected to the video network because of a lack of funding and limited network capacity. Since FY 2012, annual grants from DHS have been EMCS's main source of funding for all security projects, including VSS—a total of $15.2 million from FY 2012 through FY 2015. EMCS officials also stated they have not yet received any funding for FY 2016 to address these issues.

KEY GAPS IN COVERAGE AND MONITORING

Some key gaps exist in the system, including gaps in camera coverage at individual locations, lack of remote viewing capabilities at some high-risk sites, and inconsistent monitoring of installed cameras. The existence of these gaps can be partially attributed to EMCS and its predecessors not taking a comprehensive strategic approach to planning the design and implementation of an integrated VSS capability across the company's facilities, tunnels, and bridges. EMCS officials stated that the uncertainty of annual grant funding and the requirement to expend funds within two to three years limited their ability to take a more strategic, integrated approach. Nonetheless, the new strategic plan does not identify cost estimates of the funds needed to address the weaknesses we identify below.

Gaps in Coverage

Officials at some of the company and business partner facilities we visited identified gaps in coverage of entrances, platforms, station areas, and tunnels. Business partners include state and local transit agencies (such as ████████████████████████ ██) and property management companies located in the stations (such as ████████████ ██ . For a list of the ████ facilities we visited, see Appendix A.

The following are examples of critical gaps in video coverage that were identified in company risk assessments and by local staff during our site visits:

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These gaps can be attributed to limited resources and a lack of collaboration between EMCS and other company departments, such as APD and Operations, to identify VSS user needs at different company locations. In contrast, several business partners we visited, such as ████████████████████, told us they had collaborated closely with end-users to identify and address video coverage gaps. This is consistent with leading practices in the private and public sectors that promote collaboration to achieve organizational goals. EMCS officials told us they are working to improve cross-departmental collaboration through two working groups that include officials from EMCS, APD, IT, Law, Operations, and other departments. However, EMCS's new strategic plan does not address the company's existing gaps in coverage.

Lack of Remote Viewing

EMCS officials told us that they do not have any cameras installed at ███████████ ███████ and ██ ███████████, and they do not have remote-viewing access to any of the cameras installed by other entities. These are important assets: EMCS has determined that ██ of the top ██ high-risk terrorism scenarios in the company's ███████████████████ ████████████ ████████████████████████████████.

████████████████████████ is divided into ██████ parts, each operated by a different railroad: ████████████████, ██████████████████ ████████████. APD has remote viewing capability for ████████████████ cameras that cover ██████████████ of the station and ████████████████████████ To view and obtain video footage of incidents that happen in other parts of the station and ████████████████████ shared with ████ ████████████, APD staff said they must physically go to ████████████████████ ██████████████████████ or the locations of other company departments. In an emergency, company officials who are unable to get to these sites will not have access to the video system cameras. In comparison, ████████████████ network includes remote-viewing capability for all of their VSS cameras.

EMCS and APD officials said that the lack of direct video access and remote viewing capabilities could cause a lack of situational awareness, emergency response delays, and

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other inefficiencies in responding to an emergency. Nonetheless, EMCS officials cited two reasons for not using limited funds to cover these sites: (1) the high costs of installing new camera systems as identified in the risk assessment and (2) the large presence of law enforcement personnel and extensive video camera systems installed by other entities in ██████████████████████

Other Video Networks Not Integrated

Extending EMCS's coverage to ███████████████████ by installing its own video cameras and/or integrating other company and business partner cameras into its video network would provide critical remote-viewing capability for many types of incidents. This could help the company detect and respond effectively to significant security events, such as terrorist attacks and criminal activity, and assess injury claims at the company's busiest rail station.

EMCS's strategic plan does not address how to integrate video systems of other company departments and external business partners to enhance remote viewing capability at high-risk locations. For example:

- **Some video systems are owned by other company departments, such as** ████████████████████████. These video systems are not connected to the EMCS-managed video network and can be viewed only locally at the facility. These systems have been installed without EMCS involvement at multiple stations, tunnels, and maintenance facilities to meet the particular operational needs of those departments. EMCS does not know how many company departments have video systems, but is working to establish an inventory of these sites and the type of equipment installed. This inventory will (1) help EMCS identify coverage gaps, (2) determine whether additional cameras are needed, and (3) determine whether other company departments' video surveillance equipment is compatible for integration into the video network. Integrating maintenance facility cameras and cameras owned by the ███████ ████████████████████ departments at other locations—such as stations, tunnels, and bridges—would expand coverage of company assets and leverage company resources.

- **Some video systems are owned by business partners.** Officials from the company's business partners such as local transit agencies told us they have extensive camera systems already installed that the company could use to

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provide additional coverage in stations, platforms, bridges, and tunnels. These officials stated that they were willing to give the company access to their video systems, and they believed that their systems and the company's video network would be generally compatible.

Lack of Continuous Monitoring of Cameras

During our site visits, APD and Operations staff told us that EMCS-installed VSS was not routinely monitored at ███████████ (except at ████████████████ or in the viewing centers (such as ███████████████████████████ ████████████████████████████ to proactively identify security threats in real time. The senior APD staff person at the ██████████████████ said they have used VSS proactively in some instances, such as the ████████████ in May 2015, to ensure the safety and security of the company's operations and assets. Otherwise, they do not continuously monitor camera feeds at any company sites, including the high-risk sites identified by the Department of Homeland Security.

During our visits, we also found that six of the company's transit agency business partners[3] had implemented continuous monitoring of camera feeds by dedicated personnel to enhance their security capabilities—sometimes using intelligent video analytics software.[4] Officials at business partner facilities we visited said that routine monitoring of video cameras using intelligent video analytics increases situational awareness and reduces incident response times.

EMCS officials said that continuous monitoring would lead to increased labor costs, but agreed that continuous monitoring would enhance situational awareness and reduce response times in an emergency. They also noted that they can reduce video monitoring costs and increase effectiveness by using intelligent video analytics software to alert staff at ████████████████████████████████████ ████████████████████ of events needing their immediate attention. EMCS officials said they are working to implement video analytics software later in 2016 to assist in analyzing video data after an incident occurs, but they have not conducted a cost-benefit assessment to determine whether continuous monitoring using intelligent video

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[3] These business partners are the ██ ██ ██

[4] Intelligent video analytics software identifies events, attributes, and patterns of behavior through video analysis of monitored environments.

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analytics would be cost-effective for high-risk sites. They also have not integrated these issues into their strategic plan.

VIDEO NETWORK CAPABILITY LIMITED BY TECHNICAL, OPERATIONAL, AND SECURITY ISSUES

The capability of the national video network has been limited by multiple issues. Instead of following leading practices by strategically collaborating with other departments nationwide to identify user requirements and to define technical standards and operational processes,[5] the company relied on outside contractors with minimal input from the end-users and the Information Technology (IT) department. This ad hoc approach has led to a number of technical, operational, and security challenges. Although EMCS's strategic plan identifies actions to address some of these areas, the plan does not identify outcome-based performance metrics to measure the success of these activities.

Installed Systems Face Technical Compatibility and Capacity Issues

The company purchased multiple VSS systems and used contractors to install them without consideration for system compatibility nationwide, according to EMCS and IT staff. This resulted in systems that were not always technically compatible with the network and remote-viewing software. When EMCS started integrating existing VSS into the video network, they discovered that some of these systems were not compatible. For example, at least five different types of video systems were initially installed at various company locations. Also, when initial remote-viewing software was introduced for the viewing centers, EMCS discovered that at least ▮▮▮▮▮▮▮▮▮ were not compatible with the viewing software.

EMCS has been working to standardize and reduce the number of different types of video systems from ▮▮▮▮▮▮▮ by upgrading or replacing incompatible hardware and software. This is a positive step that will allow video systems to be connected to the network and viewed remotely at viewing centers and workstations. These hardware

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[5] According to the *Law Enforcement Tech Guide*, the success of technology projects depends on user involvement, strong project management, and a sound structure for project planning and decision-making. Department of Justice, *Law Enforcement Tech Guide, How to Plan, Purchase and Manage Technology*, August 2002.

and software compatibility issues have limited EMCS's ability to remotely view all ████ sites that are connected to the video network, as discussed above.

To help standardize and ensure the compatibility of future systems, EMCS developed technical planning guidance in 2013 to direct the design and installation of VSS equipment within the company, which we also view as a positive step. However, EMCS has not issued this guidance company-wide. During our audit, EMCS revised and issued its corporate policy on the use of VSS[6] to include enhanced procurement and implementation procedures, but this document does not include the technical planning requirements that they developed in 2013. Leading practices show that new systems must be designed in concert with the company's hardware and software standards. Without clearly defined and consistently applied company-wide technical standards, other company departments are at risk of continuing to purchase incompatible camera equipment that cannot be connected to the video network or viewed remotely. This detracts from the company's goal of spending funds in a cost-effective manner.

The video network also has capacity issues that limit the network's performance and reliability and also affect the ability to remotely view and record video data. For example, ███████████ during ███████████████████████████ in September 2015 overloaded the network and caused the failure of some remote-viewing capabilities. Since this incident, EMCS officials said they have made technical changes to help stabilize the network's performance and reliability. EMCS plans to further optimize the performance and reliability of the video network, but its strategic plan does not identify specific outcome-based performance metrics to measure success.

EMCS officials also told us that grant funds are not currently available to fully address the compatibility and capacity issues. Additionally, EMCS has not explored the possibility of leveraging the company's business network[7] operated by the IT department to enhance and expand the video network to additional sites.

Lack of Operational Processes to Identify, Repair, and Replace Video Network Equipment

EMCS did not have a process to identify non-working or aging VSS equipment that needs repair or has reached the end of its useful life. Instead, EMCS relied on the end-

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[6] *Use of VSS for Security and Safety Policy* (P/I Number 3.24.1, October 6, 2015).

[7] Business network refers to the data network used to run the company's day-to-day operations.

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users to identify and request that non-working cameras and recording equipment be repaired or replaced.

EMCS officials noted they purchased software in 2014 to systemically identify and proactively report on the operating condition of the network and the VSS equipment. The software, however, has not been fully utilized because of problems identifying all the VSS devices on the video network. EMCS is working to identify these devices, such as cameras and recorders, and plans to complete this work in late 2016. EMCS officials told us they are also working to determine who will be responsible for reviewing reports on the condition of the equipment and for ensuring that all non-working equipment is repaired. These actions are consistent with leading practices for internal controls in the private and public sectors that underscore the importance of clearly identifying roles and responsibilities, and establishing monitoring processes for key systems and activities.

Similarly, four of the other company departments we visited did not have a consistent or clearly defined process for identifying, repairing, or replacing VSS equipment. For example, Mechanical and Operations staff at these sites said no person or office had been designated with the responsibility to routinely check the working condition or coordinate repairs for the VSS equipment. In its October 2015 policy update, *Use of VSS for Safety and Security*, EMCS included a requirement that departments designate staff to be responsible for monitoring and maintaining the VSS equipment they plan to install; however, the policy does not require a designation of responsibility for existing systems.

To address the maintenance and repair issue, EMCS officials told us they are working with the Operations department to use Engineering staff to maintain and repair video equipment in the ███████████████ The company has finalized agreements with two vendors that include design and installation for new VSS systems, as well as repair services for existing systems. Furthermore, most of the VSS equipment purchased before 2010 is nearing the end of its useful life, and EMCS has not identified equipment that needs to be replaced. Without this information, EMCS cannot accurately estimate the funding needed to replace the aging equipment.

Network Poses a Potential Security Risk

The company chose to follow the security standards of the Federal Information Security Management Act (FISMA) of 2002[8] because the video network uses the federal government's secure network services, according to EMCS officials. The last FISMA assessment, completed in June 2015 by an IT contractor, showed that the video network is not fully compliant with federal security standards, and that EMCS has made little progress in addressing the security control weaknesses identified in previous assessments—such as change management, software patch management, and continuous monitoring. These security control weaknesses leave the video network and the company's business network potentially vulnerable to cybersecurity attacks. EMCS officials cited at least one known failed attempt to penetrate the network's firewall in October 2014.

EMCS officials recognize the importance of adhering to information security standards in accordance with leading practices in the private and public sectors. However, they stated that the FISMA standards are very cumbersome and costly to implement given the relatively small size of the video network. They also stated that the technical controls and documentation requirements are both time-consuming and resource-intensive. Consequently, EMCS officials said they are working to move away from using the federal government's secure network services; they plan to identify equally stringent, risk-based security measures to help ensure the video network's security. EMCS is in the process of migrating from FISMA to other applicable information security standards, such as the National Institute of Standards and Technology's[9] Framework for Improving Critical Infrastructure Cybersecurity. However, EMCS has not developed a schedule to complete this activity.

CONCLUSIONS

EMCS has helped implement VSS at ▮ key locations, but it has not yet taken a comprehensive strategic planning approach to guide the design and implementation of the VSS network. This has resulted in an incomplete national network that is limited by

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[8] Public Law 107-347 Title III, Section 301–Information Security provides a framework ensuring the effectiveness of information security controls over information resources that support federal operations and assets.

[9] The National Institute of Standards and Technology is the federal technology agency that works with industry to develop and apply technology, measurements, and standards. The IT department uses this standard to manage its cybersecurity risk.

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technical, operational, and security issues, which EMCS officials primarily attributed to a lack of dedicated funding that limited its ability to fully develop the national network. Taking a more strategic approach to future design and implementation could help address these issues. In December 2015, during our audit, EMCS finalized a strategic plan to enhance the deployment and utilization of the company's VSS assets. This plan is a positive step because it addresses several of the technical and operational issues we identified in our audit.

However, the plan does not address other critical issues we identified, such as gaps in coverage and the lack of remote viewing capabilities of key sites. It also does not address opportunities to integrate video systems installed by other company departments and business partners into the VSS network or whether continuous monitoring of cameras would be cost-effective. Additionally, the plan does not identify actions needed to update the company's VSS policy or when new security standards will be adopted. Further, the plan does not discuss estimates of the funds needed and the source of these funds to implement the plan, and it does not include outcome-based performance metrics to measure progress. Taking additional actions to address these issues as a management priority will enhance the company's national VSS network and its ability to detect and respond to a significant security event.

RECOMMENDATION

We recommend that the Vice President, EMCS update the December 2015 strategic plan to address the following issues:

- Identify existing gaps in video coverage at key locations, and develop a risk-based plan to ensure that all key VSS locations are connected to the video network and can be viewed remotely.

- Determine whether the video systems of other departments and external business partners can be integrated into the video network to enhance and expand critical video coverage and provide remote-viewing capabilities.

- Assess the cost-effectiveness of providing real-time, continuous monitoring of video cameras at select viewing centers to enhance the company's ability to detect and respond to a significant security incident at high-risk stations.

- Identify actions to update the company's VSS policy to (a) include technical planning guidance and standards to help ensure system compatibility between

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the video assets owned by EMCS and other departments, and (b) identify who
will be responsible for maintenance and repair of existing as well as planned
video systems.

- Identify the status of efforts and a schedule for migrating the video network from
  the Federal Information Security Management Act to other applicable
  information security standards.

- Develop cost estimates and a plan for obtaining additional funding to achieve
  planned goals and objectives, and identify performance metrics to measure the
  success of the strategic plan.

MANAGEMENT COMMENTS AND OIG ANALYSIS

In commenting on a draft of the report, the company's Vice President, EMCS, agreed with our recommendation and noted steps the company has taken or plans to take to address the recommendation. The response stated that the VSS strategic plan will be updated by December 2016. Implementation of all six steps outlined in our recommendation will help improve the capability of the national video network and meet the intent of our recommendation.

EMCS officials also provided technical comments on the draft report that we incorporated into the final report, where appropriate.

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APPENDIX A

Scope and Methodology

This report provides the results of our audit to assess the outcome of the company's efforts to install an integrated and effective national VSS network. The scope of our work focused on the company's efforts to install and manage video cameras, recorders, viewing centers, and video network from FY 2005 through FY 2015. We conducted our work from January 2015 to May 2016 primarily in ████████████ and the field locations identified below. Certain information in this report has been redacted due to its sensitive nature.

To assess the efficiency and effectiveness of the company's management of VSS, our methodology included comparing the company's policies, procedures, and practices to leading practices in program management. To identify the company's practices, we met with personnel from EMCS, Police, IT, Law, and Operations departments. We also conducted site visits and interviewed company and business partner officials at the following facilities:

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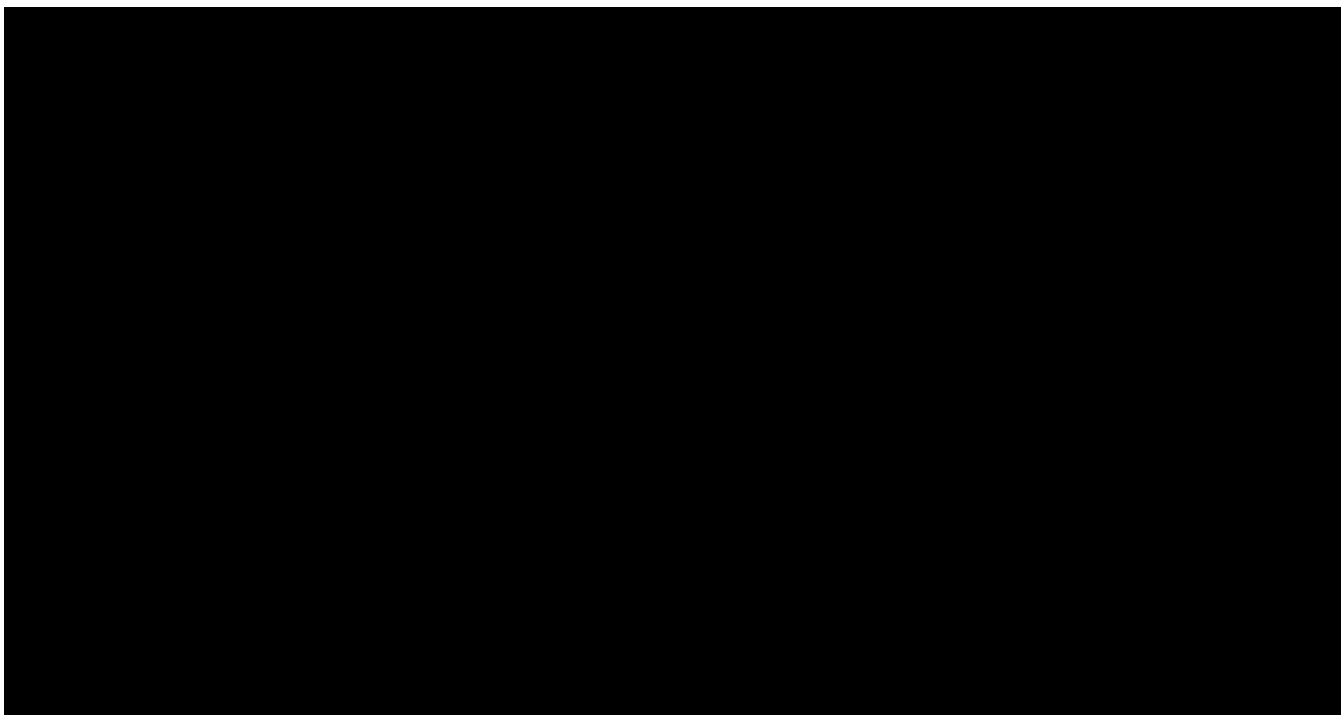
[10] We also visited the ████████████████████████, which is located in ████████████████████
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In addition, we reviewed key project documents, including:

- EMCS planning, policy, project, and financial documents related to the video network and the implementation of VSS at key sites

- DHS Transit Security Grant Program award documents from FY 2005 to FY 2015

- ARRA award documents from FY 2009 to FY 2010

- EMCS Award Project Status Reports submitted to DHS from FY 2005 to FY 2014

To identify leading practices used to establish and manage technology projects, we reviewed the following documents:

- Government Accountability Office, *Standards for Internal Control in the Federal Government*, GAO-14-704G, September 2014

- Committee of Sponsoring Organizations of the Treadway Commission, *Internal Control – Integrated Framework*, May 2013

- Project Management Institute, *Project Management Body of Knowledge, Fifth Edition*, 2013

- *PMO Playbook Project Management Methodology*, July 2010

- Department of Justice, *Law Enforcement Tech Guide, How to Plan, Purchase and Manage Technology*, August 2002

- Urban Institute, *Using Public Surveillance Systems for Crime Control and Prevention: A Practical Guide for Law Enforcement and Their Municipal Partners*, September 2011

We conducted this performance audit in accordance with generally accepted government auditing standards. 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 objective. We believe that the evidence

obtained provides a reasonable basis for our findings and conclusions based on our
audit objective.

Internal Controls

We reviewed overall management controls, but we did not review the individual
project management controls regarding VSS implementation. Further, we did not
review controls for systems used to track or report data related to procurement,
installation, or repair of equipment. Therefore, our findings apply to the specific
management practices we address in the report and not to the overall system of internal
controls.

Computer-Processed Data

We received computer-processed data from EMCS on the cost expenditures to
implement VSS from October 1, 2006, to January 31, 2016. EMCS obtained this data
from the company's previous and current financial systems of record, FinGate, and the
SAP Enterprise Resource Planning system. This data was used for background
purposes; therefore, we did not verify the accuracy, completeness, or reliability of the
data. We determined that it was generally reliable for how it was used in the report.

Prior Audit Reports

We identified and reviewed the following reports by our office and the Department of
Homeland Security Office of Inspector General as being relevant to this audit:

Amtrak OIG

- *Safety and Security: Opportunities to Improve Controls Over Police Department
  Workforce Planning* (OIG-A-2015-006, February 12, 2015)

- *ARRA: Fewer Security Improvements than Anticipated Will be Made and Majority of
  Projects Are Not Complete* (914-2010, June 16, 2011)

Department of Homeland Security Office of Inspector General

- *DHS Grants Used for Mitigating Risks to Amtrak Rail Stations*
  (OIG-11-93, June 27, 2011)

APPENDIX B

Abbreviations

APD	Amtrak Police Department
EMCS	Emergency Management and Corporate Security
FISMA	Federal Information Security Management Act of 2002
FY	Fiscal Year
IT	Information Technology department
the company	Amtrak
VSS	Video Surveillance System

Amtrak Office of Inspector General
Information Technology: Progress Made Installing Video Surveillance Systems, But Coverage and Performance Could Be Improved
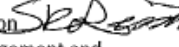OIG-A-2016-010, August 9, 2016

APPENDIX C

Comments from the Vice President, EMCS

NATIONAL RAILROAD PASSENGER CORPORATION

Memo

AMTRAK

Date	July 19, 2016	From	Susan K Reinertson
To	Stephen Lord, Assistant Inspector General, Audit	Department	Emergency Management and Corporate Security (EMCS)
		Subject	Information Technology: Progress Made Installing Video Surveillance Systems, But Coverage and Performance Could Be Improved
		Cc	Polly Hanson, Matthew Gagnon, Ron Baklarz, Rhonda Seegal, William Herrmann, John Carroll, Brian Schwab

This memorandum provides the Emergency Management and Corporate Security (EMCS) department's response to the Amtrak Office of Inspector General's *Audit Report for Project No. 007-2015, Information Technology: Progress Made Installing Video Surveillance Systems, but Coverage and Performance Could Be Improved* issued June 23, 2016.

EMCS agrees with the recommendation provided to improve Amtrak's video surveillance systems (VSS) and has outlined an approach in this memorandum to implement the recommendation. In addition, EMCS has already made progress addressing several issues noted in the audit, specifically EMCS:

EMCS chose a new video surveillance system for the Amtrak VSS platform in order to establish a common base for system development across the enterprise.

- EMCS is developing a comprehensive system-wide maintenance plan to be completed in September, 2016.
- EMCS is currently evaluating a ▮▮▮▮▮▮▮▮▮▮ solution to improve and expand network connectivity. This is the first step toward integration with external business partner and provides a cost effective solution for integrating additional Amtrak locations into the system.
- EMCS has significantly improved management of the ▮▮▮▮ network connections and servers by implementing new network management software. Additionally, EMCS Electronic Security Systems group has hired a VSS administrator to manage the network and camera infrastructure.
- EMCS has significantly improved bandwidth throughput for all live video streams by redesigning the video architecture. This resulted in increased remote video viewing capability with decreased bandwidth. EMCS is also increasing the network bandwidth pipes in ▮▮▮▮▮▮ and ▮▮▮▮▮▮ to support ▮▮▮▮▮, and ▮.
- EMCS is presently reviewing IT security controls in preparation of implementing updated/revised security controls under the NIST Cybersecurity Framework in coordination with the office of the Chief Information Security Officer to implement.

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Amtrak Office of Inspector General
**Information Technology: Progress Made Installing Video Surveillance Systems, But
Coverage and Performance Could Be Improved**
OIG-A-2016-010, August 9, 2016

NATIONAL RAILROAD PASSENGER CORPORATION

Recommendation 1:
*We recommend that the office of Emergency Management and Corporate Security update their
December 2015 strategic plan to address the following issues:*

- *Identify existing gaps in video coverage at key locations, and develop a risk-based plan to ensure
that all key VSS locations are connected to the video network and can be viewed remotely.*

  Management concurs with this recommendation and will take appropriate steps accordingly.
  Implementation and integration of VSS at key locations and remote viewing of those systems
  will be contingent upon Amtrak providing dedicated funding for execution of the strategy. This
  task has been assigned to the Deputy Chief, Administration, Finance and Emergency Logistics.
  EMCS expects to complete this task by December, 2016.

- *Determine whether the video systems of other departments and external business partners can
be integrated into the video network to enhance and expand critical video coverage and provide
remote viewing capabilities.*

  Management concurs with this recommendation and will take appropriate steps accordingly.
  Implementation of integration and remote viewing capabilities will be contingent upon Amtrak
  providing dedicated funding and resources.
  This task has been assigned to the Deputy Chief, Administration, Finance and Emergency
  Logistics. EMCS expects to complete this task by December, 2016.

- *Assess the cost-effectiveness of providing real-time, continuous monitoring of video cameras at
select viewing centers to enhance the company's ability to detect and respond to a significant
security incident at high-risk stations.*

  Management concurs with this recommendation and will take appropriate steps accordingly.
  Implementation of continuous monitoring capabilities at select viewing centers will be
  contingent upon Amtrak providing dedicated funding and resources. This task has been assigned
  to the Deputy Chief, Administration, Finance and Emergency Logistics. EMCS expects to
  complete this task by December, 2016.

- *Identify actions to update the company's VSS policy to (a) include technical planning guidance
and standards to help ensure system compatibility between the video assets owned by EMCS and
other departments, and (b) identify who will be responsible for maintenance and repair of
existing as well as planned video systems.*

  EMCS will revise its VSS Strategic Plan to outline an approach to (a) identify and document
  technical planning guidance and standards to help ensure system compatibility between the
  video assets owned by EMCS and other departments, and (b) identify who will be responsible
  for the maintenance and repair of existing and planned video systems. In addition, the VSS
  Policy will be updated once guidance and departments responsible for maintenance have been
  identified. This task has been assigned to the Deputy Chief, Administration, Finance and
  Emergency Logistics. EMCS expects to complete this task by December, 2016.

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- *Identify the status of efforts and a schedule for migrating the video network from the Federal Information Security Management Act to other applicable information security standards.*

    EMCS will revise its VSS Strategic Plan to outline an approach and schedule for migration of the video network from FISMA to other applicable information security standard. This task has been assigned to the Deputy Chief, Administration, Finance and Emergency Logistics. EMCS expects to complete this task by December, 2016.

- *Develop cost estimates and a plan for obtaining additional funding to achieve planned goals and objectives, and identify performance metrics to measure the success of the strategic plan.*

    EMCS will revise its VSS Strategic Plan to develop cost estimates and, subsequently, an approach to obtain funding to achieve planned goals and objectives, and identify performance metrics to measure the success of the strategic plan. This task has been assigned to the Deputy Chief, Administration, Finance and Emergency Logistics. EMCS expects to complete this task by December, 2016.

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APPENDIX D

OIG Team Members

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Mission

The Amtrak OIG's mission is to provide independent, objective oversight of Amtrak's programs and operations through audits and investigations focused on recommending improvements to Amtrak's economy, efficiency, and effectiveness; preventing and detecting fraud, waste, and abuse; and providing Congress, Amtrak management and Amtrak's Board of Directors with timely information about problems and deficiencies relating to Amtrak's programs and operations.

Obtaining Copies of Reports and Testimony
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800-468-5469

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Certain information in this report has been redacted due to its sensitive nature.