AUDIT REPORT

CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
BUREAU OF MANAGEMENT AUDIT
WILLIAM C. THOMPSON, JR., Comptroller

Audit Report on Monitoring and Controls Over The Red Light Camera Program by the New York City Department of Transportation

MH03-117A

May 21, 2003

THE CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
1 CENTRE STREET
NEW YORK, N.Y. 10007-2341
- - - - - - - - - - - - -
WILLIAM C. THOMPSON, JR.
COMPTROLLER

To the Citizens of the City of New York

Ladies and Gentlemen:

In accordance with the Comptroller's responsibilities contained in Chapter 5, § 93, of the New York City Charter, my office has audited the monitoring and controls over the Red Light Camera Program and the processing and issuance of Notices of Liability (NOL) by the Department of Transportation.

Audits such as this provide a means of ensuring that City resources are used effectively, efficiently, and in the best interest of the public.

I trust that this report contains information that is of interest to you. If you have any questions concerning this report, please e-mail my audit bureau at audit@comptroller.nyc.gov or telephone my office at 212-669-3747.

Very truly yours,

William C. Thompson

William C. Thompson, Jr.

Report: MH03-117A
Filed: May 21, 2003

Table of Contents

The City of New York
Office of the Comptroller
Bureau of Management Audit

Audit Report on the Monitoring and Controls over the Red Light Camera Program by the New York City Department of Transportation

MH03-117A

AUDIT REPORT IN BRIEF

This audit reviewed the monitoring and controls over the Red Light Camera Program by the New York City Department of Transportation (DOT). This program records vehicles that run red lights at 50 key intersections throughout the five boroughs. Mulvihill Integrated Control Solutions, Inc., (Mulvihill) is the primary contractor for the Red Light Camera Program and is responsible for servicing and maintaining all of the red-light cameras and related equipment. During Fiscal Year 2002, DOT's total budget for the Red Light Camera Program was $7.9 million, including both Personal Services and Other Than Personal Services budgets.

Audit Findings and Conclusions

Based on our review we determined that DOT effectively monitors Mulvihill's performance. Our testing indicated that Mulvihill is doing a satisfactory job in providing for the uninterrupted, accurate, and continuous operation of the red-light cameras and equipment. Also, Mulvihill has continued to meet or exceed its contract obligations in providing daily readable and useable films or digital CDs to DOT for processing.

This audit also determined that DOT maintains adequate controls over the Red Light Camera Unit's processing and issuance of Notices of Liability (NOL) to ensure that only enforceable NOLs are issued. This is reflected by the fact that in 2002 only 11,687 (3.39 percent)[1] of the total 344,307 NOLs issued were appealed by motorists. Only 15.5 percent (1,811) of those NOLs appealed were deemed unenforceable and were dismissed. Moreover, nearly 85 percent of all motorists issued NOLs remit the fines without an appeal.

Audit Recommendations

[1] This denotes a change from the original report which erroneously stated 15.5 percent.

Since we found no material weaknesses in either DOT's monitoring and controls over the Red Light Camera Program or in Mulvihill's performance under the contract, we make no recommendations in this report.

Agency Response

The matters covered in this report were discussed with officials from the Department of Transportation during and at the conclusion of this audit. On April 10, 2003, we submitted a draft report to DOT officials with a request for comments. We received a written response from DOT officials on May 6, 2003.

DOT stated: "The draft report indicated that the Red Light Camera Program has proven to be an effective deterrent to motorists who ignore traffic-control signals. As reflected in the audit, on of the major reasons for the Program's success is DOT's effectiveness I managing and developing the Program. We agree with these conclusions."

The full text of DOT's comments appear as an addendum to this report.

INTRODUCTION

Background

The mission of DOT is to provide for the safe, efficient, and environmentally responsible movement of people, goods, and vehicles throughout the City. To carry out its mission, DOT performs a variety of transportation-related services, and manages much of the City's transportation infrastructure. In addition, DOT is responsible for promoting traffic safety, improving traffic mobility, reducing congestion by improving and maintaining traffic signals and traffic signs, resurfacing streets, repairing potholes and other street defects, installing and maintaining parking meters and overseeing municipal parking facilities.

In 1993, pursuant to New York State legislation,[2] DOT fully implemented the Red Light Camera Monitoring and Enforcement Program (Red Light Camera Program) that initially allowed the City to install photo-monitoring devices to record vehicles running red lights at 15 key intersections throughout the City. Since the program's inception, as permitted by amendments to the New York State legislation, DOT has expanded the number of intersections where photo-monitoring devices are installed. Currently, there are 50 (30 "wet" film and 20 digital imaging) cameras at key intersections throughout the five boroughs. DOT has also installed 200 "dummy" cameras at various locations.

On November 15, 2000, DOT selected Mulvihill Integrated Control Systems, Inc., (Mulvihill) as the new prime contractor for the Red Light Camera Program.[3] Mulvihill was awarded a 60-month contract to service and maintain all of the red-light cameras and related equipment. This includes servicing all of the cameras and exchanging camera films and digital CDs daily, relocating the cameras as necessary, processing films, maintaining film and maintenance logs, and providing for the continuous operation and connectivity of the computer system. The total cost of the contract is $33,223,339.

During the initial five-month period of the contract, Mulvihill was responsible for providing 50 new cameras as well as equipping and installing 75 (50 active and 25 inactive) fully equipped and wired camera locations citywide.[4] Mulvihill was also responsible for establishing and maintaining office operations at the DOT Queens location to support DOT Red Light Camera Unit staff in the processing and issuing of Notices of Liability (NOL). This included installing and maintaining a fully automated integrated ticket issuing and tracking data processing system (including hardware and software) at the Red Light Camera Unit office, with data entry and access capabilities at Department of Finance Adjudication Centers in Queens, Manhattan, Staten Island, Brooklyn, and the Bronx.

---

[2] Section 1111-a of the New York State Vehicle and Traffic Law, introduced in 1988. The legislation was extended by the New York State Assembly in 1991, 1993, 1995, and 1999. The permitted number of Red Light Cameras were increased in 1991, 1993, and 1995.

[3] From approximately May 1993 through December 2000, Electronic Data Systems, Inc. (EDS) was the prime contractor for the Red Light Camera Program. Under that contract, the Red Light Cameras were owned by EDS and leased by DOT. During that period, with DOT approval, EDS subcontracted with Mulvihill to install and maintain the cameras.

[4] An active location is one that is completely equipped, wired, and has an active camera installed, whereas, an inactive location is one that is completely equipped and wired, but does not have a camera installed.

To ensure that the program is effective and meets expectations, DOT requires Mulvihill to meet specific performance standards. For example, in a given month Mulvihill must ensure that no less than 90 percent of the processed rolls of film and digital CDs for that month must be readable, useable, and delivered to DOT.[5] In addition, in each calendar year a minimum of 64 percent of all photographed red-light violations (also called events) must result in the issuance of no less than 320,000 NOLs issued or $15 million in gross fines each year.

During Fiscal Year 2002, DOT's total budget for the Red Light Camera Program was $7.9 million, including both Personal Services (PS) and Other Than Personal Services (OTPS) budgets. At the time of the audit, DOT had a total staff of 31 employees assigned to the Red Light Camera Unit. Those PS and OTPS costs were covered by $21,396,508 in revenue generated through the issuance of 523,001 NOLs during the same fiscal year.

How the Process Works

In general, the Red Light Camera Program involves three interrelated components:

(1) Camera Technology and Recording of Events

A camera is mounted on or suspended from a pole behind a stop line at an intersection. If, a vehicle enters the intersection as the light turns to red, a photograph is taken as it enters the first magnetic field (loop), recording the place, date and time of the infraction (the red light is visible in the photo). If the vehicle continues through the intersection, passing through a second magnetic field (loop), another photograph is snapped, again recording the location, date, time of day, as well as the interval (in seconds) between the first and second photographs. The second photograph typically shows the violator within or passing through the intersection. The electronic flash produces clear images of vehicles under all light and weather conditions.

(2) Automated Issuing of the Summonses.

Once every 24-hour period, a Mulvihill field technician unloads and reloads films and digital CDs and tests each camera for performance and accuracy. The films and CDs are returned to Mulvihill's office for developing and quality review. Twice each week the processed films and digital CDs are delivered to the DOT Traffic Engineering Division Red Light Camera Program Unit for further processing. DOT uses an integrated computer database system to view, store, process, and track, through to the final disposition (collection or adjudication), NOL information and statistics.

At DOT, the films and CDs are first reviewed by technicians to determine readability and usability. The technicians view the two photographs to determine whether the vehicle ran the red light and whether the license plate is legible. To identify the vehicle owner and registration information, a second technician enters the license number into a computer that is linked to the Department of Motor Vehicles (DMV) database. If the license plate is from out of state, DOT

[5] The actual monthly number of required readable and usable rolls of film and CDs associated with this 90 percent requirement varies and is based on the number of days in a given month. The minimum requirement ranges from 1,215 rolls of film and CDs for a 27-day month to 1,395 rolls of film and CDs for a 31-day month.

checks DMV databases of the other state. Once the vehicle registration information is identified, it appears on the screen, and an NOL is printed.

The NOL contains a reference to the section of the law violated, three photos of the vehicle (the two digitized pictures of the vehicle and the enlarged photo of the license plate), the amount of the fine ($50.00), and instructions for paying the fine or appealing the notice. The NOL is mailed first class to the registered owner of the vehicle. There are several quality-assurance checks built in at each step of the process to ensure that only enforceable NOLs are issued.

(3) **Collection of Fines and Adjudication of Appeals**

NOLs generated through the Red Light Camera Program are remitted to the Department of Finance. Since the collection of Red Light Camera NOL fines and the adjudication of appeals are not under the jurisdiction of DOT, but of DOF, the controls and processes related to the collection of fines for Red Light Camera violations were not part of this audit.

Objectives

The objectives of this audit were to determine whether DOT:

- Effectively monitors the contractor's performance in maintaining and servicing the red light cameras and related equipment to ensure their continuous operation and accuracy, and
- Maintains adequate controls over the processing and issuance of Red Light Camera NOLs.

Scope and Methodology

The audit scope covered Fiscal Year 2002. Our fieldwork was conducted from November 17, 2002, through January 15, 2003. To accomplish our objectives and gain an understanding of DOT's operation of the Red Light Camera Program, we:

- Interviewed DOT officials responsible for overseeing the Red Light Camera program to gain an understanding of the program operations, the job responsibilities of personnel assigned to the unit, the contractor's responsibilities, and the resources available to the program.
- Interviewed officials from Mulvihill to determine the steps, processes, and controls it maintains to ensure continued satisfactory performance as DOT's primary contractor for the Red Light Camera program. We also toured Mulvihill's headquarters, interviewed Mulvihill personnel, and observed the designated areas as well as the processes and practices involved in film processing, equipment repair and maintenance, and quality review of developed films and digital CDs prior to delivery to DOT. We also gained an understanding of the procedures and controls in place pertaining to the supervision and routing of field technicians, and the tracking and reporting of equipment performance and related statistics.

- Reviewed the contract between DOT and Mulvihill and associated documentation, and noted the responsibilities of both parties required under the contract. We also noted the established performance benchmarks and compared them to the program's performance statistics to determine whether Mulvihill was meeting its responsibilities.

- Toured the DOT Red Light Camera NOL processing facilities and viewed the step-by-step processes and quality-assurance checks from the review of photographic images of red-light violations through to the issuance, printing, and mailing of NOLs.

- Reviewed the DOT *Red Light Camera Safety Program Policies and Procedures*, dated June 9, 1999, and the *Technician Checklist for Processing Notices of Liabilities*, dated January 3, 2000, to assess the controls in place and steps to be followed by technicians in reviewing films through to the preparation and processing of NOLs. We also determined whether those procedures and policies were consistently followed throughout the process.

- Evaluated DOT's criteria (rejection code list) for determining which photographic images of events must be rejected—and no NOLs issued—due to poor images, insufficient vehicle owner information, or such other instances as malfunctioning traffic signals.

- Evaluated DOT's program statistics for all events for calendar year 2002 and noted the rate of NOLs issued and the rate of rejected events to determine the program's overall performance. We also assessed statistics tracked by the integrated computer system to determine the rate of NOL fines paid by motorists and the rate of NOLs appealed by motorists and dismissed at adjudication. We then measured the effectiveness of DOT's criteria in processing NOLs.

- Randomly selected the month of June 2002 to test the accuracy of Mulvihill's computerized *Film Delivery Log* by comparing daily film tickets for June 2002 to reports generated from the database for the month.

- Conducted various analytical procedures using the daily film tickets and other program statistics for the month of June 2002 to determine whether camera films and digital disks were loaded and unloaded within a reasonable time once every 24-hour hour period, and whether the cameras were serviced and the appropriate checks and controls carried out by Mulvihill technicians. We also compared the daily film tickets to the *Red Light Camera Traffic Signal Defect Log* to learn whether cameras were moved to alternative sites in the event traffic signals could not be repaired in a reasonable time, and to ensure that the cameras were operational on a daily basis.

Our audit was conducted in accordance with Generally Accepted Government Auditing Standards (GAGAS), and included tests of the records and other auditing procedures considered necessary. This audit was performed in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, § 93, of the New York City Charter.

Agency Response

The matters covered in this report were discussed with officials from the Department of Transportation during and at the conclusion of this audit. On April 10, 2003, we submitted a draft report to DOT officials with a request for comments. We received a written response from DOT officials on May 6, 2003.

DOT stated: "The draft report indicated that the Red Light Camera Program has proven to be an effective deterrent to motorists who ignore traffic-control signals. As reflected in the audit, on of the major reasons for the Program's success is DOT's effectiveness I managing and developing the Program. We agree with these conclusions."

The full text of DOT's comments appear as an addendum to this report.

FINDINGS AND RECOMMENDATIONS

The Red Light Camera Program has proven to be an effective deterrent to motorists who ignore traffic-control signals. According to DOT statistics, since December 1993 the locations where red light cameras have been installed have shown a 41 percent decline in red light violations. As reflected in our audit, one of the major reasons for the program's success is DOT's effectiveness in managing and developing the program.

During our audit, we found that DOT effectively monitors the contractor's performance in maintaining and servicing red light cameras and related equipment to ensure their continuous operation and accuracy. We also determined that DOT maintains adequate controls over the processing and issuance of Red Light Camera NOLs. The following sections of this report discuss our findings in greater detail.

DOT Effectively Monitors the Contractor's Performance

Based on our review, we determined that DOT effectively monitors Mulvihill's performance. DOT maintains detailed statistics that it closely monitors to check Mulvihill's ongoing performance in meeting its contractual responsibilities, as well as the ongoing success of the program.

Our testing indicated that Mulvihill was meeting or exceeding the minimum performance benchmarks established under the contract. Specifically, for our sample period June 2002 we determined the following:

- All of the cameras were serviced (films or CDs changed) and appropriately tested daily.

- No less than 90 percent of the processed films and CDs were delivered to DOT twice each week, ensuring that DOT could adequately review the films and process NOLs in a timely manner.

- The rate of NOLs generated through the program was 64 percent or greater of the total photos of red-light violations.

Based on Mulvihill's ability to continue to meet its contractual obligations, DOT has not had to assess liquidating damages as allowed in the contract.

Mulvihill Provides Satisfactory Maintenance and Servicing of Cameras

Based on Mulvihill's various quality-assurance checks and controls over the servicing and tracking of the red-light camera equipment, we concluded that Mulvihill is doing a satisfactory job in providing for the uninterrupted, accurate, and continuous operation of the red light cameras and related equipment. Mulvihill's servicing and maintenance of the red-light camera equipment includes the following:

- Field technicians service each of the red light cameras once each day, seven days a week. The technicians exchange films or CDs and perform a series of routine

checks on each camera to ensure it is working correctly. They also rotate cameras from one site to another. Furthermore, they record and report back to their supervisor any problems or defects (i.e., broken flash, lens, or loop) requiring repairs.

- A quality-control technician monitors reported problems with the cameras and determines what repairs are required. This technician also performs quality assurance checks on all of the cameras each day and performs any required repairs at the sites that the field technicians cannot resolve.

- Mulvihill's in-house camera technicians perform routine preventive diagnostic checks and maintenance on each camera unit to ensure its continuous and uninterrupted operation. Approximately once every 50 days, a camera unit is removed by a field technician and returned to Mulvihill's headquarters for maintenance. The camera unit is replaced with another, already serviced unit. The cycle continues until each of the 50 camera units have undergone routine maintenance; then the cycle starts over again.

Based on the various checks and controls in place to detect defective equipment, and the daily and routine maintenance of the equipment, we determined that Mulvihill is satisfactorily performing its contractual obligations and providing for the uninterrupted, accurate, and continuous operation of the red light cameras and related equipment.

DOT Maintains Adequate Controls Over the Processing and Issuance of Red Light Camera NOLs

We determined that DOT maintains adequate controls over the Red Light Camera Unit processes and personnel to ensure that only enforceable NOLs are issued. DOT has established strict criteria to ensure that only enforceable NOLs are issued. If a photographed red-light violation fails to meet the criteria, it will be rejected and no NOL will be issued.

According to DOT officials, when films and CDs are reviewed there is a rejection rate of 25 to 30 percent. Most of the rejected events (exceptions) occur when the photographic image does not clearly show the vehicle running the red light. Another frequent cause of rejection is when a license plate is obstructed (often by another vehicle). Other photos of red-light violations may be rejected because the vehicle registration information cannot be identified.

To ensure that a photographed event is not erroneously rejected, all rejected events are reviewed by a second technician. The reason for each rejection is entered in and tracked by the database. The Director and Deputy Director of the Red Light Camera Unit review these rejections to verify whether they are correct. If an event is incorrectly rejected, the Director will send it back to the technician for processing. If the rejection was made in error, the Director or Deputy Director will review the matter with the technician. Furthermore, the Director retains this information to evaluate RLC technicians and determine whether action should be taken against an employee.

Once a photo passes through all reviews and the vehicle registration information is identified, an NOL is printed. All printed NOLs undergo an additional review to ensure that the

plate number that appears in the photographic image matches the plate number printed on the NOL. Once this is completed, the NOLs are mailed first class to the registered owner of the vehicle. The multiple quality assurance checks that are built into each stage of the process ensure that photographed violations meet DOT's definition of an offense and that only enforceable NOLs are issued.

Based on our review of DOT's processing of NOLs and our testing of DOT's program statistics, we are assured that DOT maintains strong controls to ensure that only enforceable NOLs are issued. As previously discussed, no less than 64 percent of all photographed red-light camera events resulted in NOLs in calendar year 2002. DOT's strict criteria ensure that only enforceable NOLs are issued. This is reflected by the fact that in 2002 only 11,687 (3.39 percent)[6] of the total 344,307 NOLs issued were appealed by motorists. Only 15.5 percent (1,811) of those NOLs appealed were deemed unenforceable and were dismissed. Moreover, nearly 85 percent of all motorists issued NOLs remit the fines without an appeal.

Overall, DOT's strong monitoring and controls over the Red Light Camera Program and its commitment to maintaining high standards have led to the ongoing success of the program. DOT's quality assurance process and its willingness not to issue an NOL if criteria are not met ensure continued effectiveness of the program.

Recommendation

Since we found no material weaknesses in either DOT's monitoring and controls over the Red Light Camera Program or in Mulvihill's performance under the contract, we make no recommendations in this report.

[6] This denotes a change from the original report which erroneously stated 15.5 percent

NEW YORK CITY DOT
New York City Department of Transportation
Iris Weinshall, Commissioner

Office of the Auditor General
51 Chambers Street, Rm 420
New York, New York 10007
Tel: 212/788-8160
Fax: 212/788-8159
Web: www.nyc.gov/dot

May 5, 2003

Mr. Greg Brooks
Deputy Comptroller
Policy, Audits, Accountancy & Contracts
The City of New York
Office of the Comptroller
1 Centre Street
New York, NY 10007-2341

Re: MH03-117A

Dear Mr. Brooks:

This is a response to your draft "Audit Report on Monitoring Controls over the Red Light Camera Program by the New York City Department of Transportation".

The draft report indicated that the Red Light Camera Program has proven to be an effective deterrent to motorists who ignore traffic-control signals. As reflected in the audit, one of the major reasons for the Program's success is DOT's effectiveness in managing and developing the Program. We agree with these conclusions.

If you have any questions concerning this response, I can be reached at (212) 788-8162.

Very Truly Yours,

Thomas C. Mathews

Thomas C. Mathews
Auditor General

cc: Iris Weinshall, Commissioner
F/D/C Judith Bergtraum
D/C Michael Primeggia
E/D Steven Galgano
D/D George Davis, MOO