

---

---

**Thomas P. DiNapoli  
COMPTROLLER**



Audit Objective.....	2
Audit Results - Summary.....	2
Background.....	3
Audit Findings and Recommendations .....	4
Temperature Standards.....	4
Correcting Air Conditioning Defects.....	5
Temperature Survey Reliability.....	8
Reporting of Results .....	9
<i>Recommendations</i> .....	10
Audit Scope and Methodology.....	11
Authority .....	12
Reporting Requirements.....	12
Contributors to the Report .....	12
Appendix A - Auditee Response..	13

---

**OFFICE OF THE  
NEW YORK STATE COMPTROLLER**

---

**DIVISION OF STATE  
GOVERNMENT ACCOUNTABILITY**

---

**METROPOLITAN  
TRANSPORTATION  
AUTHORITY  
METRO-NORTH RAILROAD**

**RAILCAR AIR  
CONDITIONING**

**Report 2006-S-83**

## AUDIT OBJECTIVE

The objective of our performance audit was to determine whether the Metro-North Railroad's Air Conditioning Monitoring and Reporting Program (A/C Program) ensured that temperatures inside passenger railcars were comfortable.

## AUDIT RESULTS - SUMMARY

With few exceptions, Metro-North's A/C Program ensured temperatures in railcars conformed to standards and were comfortable. We found that the temperatures inside Metro-North's railcars usually comply with its temperature standards, and defects in railcars were repaired within a reasonable time frame. However, there are some opportunities for improvement.

Specifically, the standards allow temperatures inside railcars to exceed 80 degrees, and even be as warm as 85 degrees, when it is very hot outside. We identified more than 100 railcars with reported temperatures of between 80 and 85 degrees, including 8 with a temperature of 85 degrees. We question whether most passengers would be comfortable at these temperatures.

In addition, the standards do not set the thresholds for excessively cold temperatures. We identified some railcars with reported temperatures of less than 64 degrees, including one railcar with a reported temperature of only 43 degrees. We believe it highly unlikely passengers will be comfortable in such a railcar.

In contrast to the railcar temperature standards of Metro-North, we note that the LIRR, in its A/C Program, considers 78 degrees to be the maximum acceptable temperature and 64 degrees the minimum

acceptable temperature inside a railcar. We also note that the MTA Auditor General recommended that Metro-North and the LIRR use the same temperature standards in their A/C programs. We recommend Metro-North modify its temperature standards to set a threshold for uncomfortably cold temperatures and to set a tighter standard for what constitutes uncomfortably warm temperatures. We also recommend that Metro-North officials determine whether it is feasible for Metro-North and the LIRR to adopt uniform temperature standards.

We also found increased risk that action may not always be taken to address a cold railcar situation, and that railcar temperature readings may not always be fully and accurately reported to Fleet Management. We recommend certain improvements in Fleet Management's practices to correct these control weaknesses. We also recommend that information about the A/C Program be reported regularly to the MTA Board and its Metro-North Committee.

Our report contains seven recommendations to improve controls over the A/C Program by changing the temperature standards to make the railcars more comfortable similar to the LIRR's and verifying the accuracy of the temperature readings by the consultant surveyor. Metro-North officials agreed with our recommendations and will take steps to implement them.

This report, dated November 26, 2007, is available on our website at: <http://www.osc.state.ny.us>. Add or update your mailing list address by contacting us at: (518) 474-3271 or  
Office of the State Comptroller  
Division of State Government Accountability  
110 State Street, 11<sup>th</sup> Floor  
Albany, NY 12236

## BACKGROUND

The Metropolitan Transportation Authority (MTA) operates two commuter railroads: Metro-North Railroad (Metro-North) and the Long Island Rail Road (LIRR). Metro-North provides commuter rail service between New York City and nine counties in lower New York State and western Connecticut. Metro-North, which has a total of 384 route miles, goes to 120 stations in these nine counties.

Metro-North is the second largest commuter railroad in the United States. It provides approximately 250,000 customer trips each weekday and some 73 million trips per year. As of September 26, 2006, Metro-North had a fleet of 1,043 passenger railcars.

Metro-North's railcars are provided with air conditioning (A/C). To ensure that the temperature inside the railcars is maintained at a comfortable level, temperature readings are regularly taken and compared with standards established by Metro-North. These standards vary on the basis of the outside temperature. According to the standards, if the temperature outside is less than 88 degrees Fahrenheit (All temperatures in this report are expressed in Fahrenheit.), the temperature inside the railcar should be less than 78 degrees. If the outside temperature is at least 88 degrees but less than 93 degrees, the temperature inside the railcar should be less than 80 degrees, and it should be less than 86 degrees inside the railcar if the outside temperature reached 93 degrees or higher.

If the temperature inside a railcar is found to be unacceptably high (i.e., higher than the standard for the outside temperature at the time of the reading), the railcar's A/C system is to be scheduled for inspection and possible repair by Metro-North's Office of Fleet Management (Fleet Management). The temperature readings are taken by a

contractor. According to the contract, a total of 1,800 temperature readings are to be taken weekly, 7 days a week, between Memorial Day and Labor Day. It is Metro-North's goal that the railcars comply with the temperature standards in at least 98 percent of these readings.

Fleet Management is responsible for monitoring Metro-North's compliance with this goal. This monitoring is performed as part of Metro-North's A/C Monitoring and Reporting Program (A/C Program). The purpose of the A/C Program is to ensure that temperatures inside railcars are maintained at comfortable levels. Fleet Management records all complaints and reported defects in the railcars' A/C systems (including any temperature readings above the standards), schedules the affected railcars for inspection and possible repair, and tracks the time taken to complete the repairs. In addition, all the temperature readings taken by the contractor are reported to Fleet Management, and this information is used to generate daily management reports showing the railcars' performance in complying with the temperature standards. Fleet Management distributes these reports to various interested parties, such as Metro-North's Vice President of Operations and the Maintenance of Equipment Unit.

The MTA is governed by a 17-member Board. The Board also has six rotating non-voting seats held by representatives of organized labor and the Permanent Citizens Advisory Committee, which serves as a voice for users of MTA transit and commuter facilities. The Board has special committees, composed of selected Board members, for each MTA subsidiary. One such committee is the Metro-North Committee.

## AUDIT FINDINGS AND RECOMMENDATIONS

### Temperature Standards

Metro-North established a sliding scale of temperature standards for its A/C Program. Thus, the temperature considered acceptable inside a railcar may increase as the temperature outside the railcar increases. The following table summarizes the temperature standards and related temperature ratings used by Metro-North:

Outside Temperature	Inside Temperature		
	Acceptable	Not Acceptable	
	“Cool”	“Warm”	“Hot”
0 to 82.9	less than 78	at least 78 but less than 82	82 or higher
83 to 87.9	less than 78	at least 78 but less than 84	84 or higher
88 to 92.9	less than 80	at least 80 but less than 90	90 or higher
93 or higher	less than 86	at least 86 but less than 92	92 or higher

To determine whether the railcars meet these standards, the contractor’s surveyors ride the trains and measure the temperature in the front, middle, and rear areas of each railcar. They also measure the outside temperature on the train platform at the beginning of the trip (unless the train is departing from Grand Central Terminal, where platform temperatures are very hot; if this is the case, the temperature is taken at a location outside Grand Central Terminal). The surveyors use thermometers, provided by Fleet Management, to measure the temperatures.

The surveyors record the temperature readings, along with the train numbers and times, on hardcopy forms. They then enter the data from the forms onto Fleet Management’s electronic database. Once the data is entered, an average of the three

temperatures is calculated for each railcar and the appropriate temperature rating (“cool,” “warm,” or “hot”) is assigned to that average. This data is used by Fleet Management to monitor the railcars’ compliance with the temperature standards.

According to this data, in 97.6 percent of the temperature surveys performed in 2006 and in 97.3 percent of the temperature surveys performed in 2005, the railcars were in compliance with the temperature standards. For example, in 2006, a total of 31,622 temperature surveys were performed. In 30,888 of these surveys (97.6 percent), the railcars were found to be “cool;” in 459 of the surveys (1.5 percent), the railcars were found to be “warm;” and in 275 of the surveys (0.9 percent), the railcars were found to be “hot.”

Thus, it appears that the railcars, with few exceptions, comply with the temperature standards and Metro-North is very close to achieving its goal of a 98-percent compliance rate. (As is noted later in the section of this report entitled *Temperature Survey Reliability*, some of the survey data we examined was incorrectly entered, and some data was not entered at all, into Fleet Management’s electronic database. However, the effect of these errors on the reported compliance rates appears to be insignificant.)

The purpose of the A/C Program is to ensure that temperatures inside railcars are maintained at comfortable levels. Thus, compliance with the temperature standards should indicate that the temperature in a railcar is comfortable. However, we found this is not always the case in Metro-North’s railcars, for the following two reasons:

- Metro-North has no standards defining when a railcar is to be considered too cold, even though excessively-cold temperatures are acknowledged by Fleet

Management officials as uncomfortable. The officials told us excessively cold temperatures are the result of mechanical defects in the A/C systems; accordingly, they treat “cold” railcars the same as “hot” railcars. When a “cold” railcar is reported to them by a passenger or staff, they schedule the railcar for repair.

- Metro-North’s standards allow temperatures inside railcars to exceed 80 degrees, and even be as warm as 85 degrees, when it is very hot outside. We question whether most passengers would be comfortable at those temperatures. We note that the LIRR, a commuter railroad with railcars similar to those used by Metro-North, does not use a sliding scale of temperature standards in its A/C Program. In LIRR railcars, the inside temperature is not supposed to exceed 78 degrees or fall below 64 degrees, regardless of the temperature outside.

As a result of Metro-North’s temperature standards, its railcars may at times be uncomfortably cold or uncomfortably warm, and yet still comply with the standards. We applied the temperature standards used by the LIRR in its A/C Program to the railcar temperatures experienced by Metro-North and found less than a 1-percent discomfort error rate for 2006.

The MTA Auditor General audited the A/C programs of the LIRR and Metro-North in 2000, and identified a number of inconsistencies between the programs, such as different temperature standards, different compliance goals, and different data collection methodologies. The Auditor General recommended that the two railroads establish a uniform A/C program that uses the same temperature standards. However, that recommendation was not implemented.

We conclude that it would be an improvement for the two railroads’ to have the same too-hot or too-cold temperature standards.

### *Correcting Air Conditioning Defects*

If temperatures inside railcars are to be maintained at comfortable levels, defects in railcar A/C systems must be corrected in a timely manner. Fleet Management is responsible for responding to all reported defects in railcar A/C systems. We examined Fleet Management’s response to such defects and found that, in most instances, Fleet Management responded promptly to correct the defect. However, we identified some instances in which action may not have been taken to correct a possible defect. We recommend improvements that should reduce the likelihood of such instances.

#### **Warm Railcars**

All operating deficiencies in railcar A/C systems are to be reported to Fleet Management. These deficiencies may be reported by Metro-North staff, the public, or contracted temperature surveyors. For example, Metro-North train crews are supposed to inspect each railcar daily and report any defects that are identified during the inspection. In addition, when Metro-North’s Service Quality Department staff ride the trains, they evaluate the comfort of each railcar. Also, all Metro-North employees are instructed to report any defects they happen to observe when riding the trains. Members of the public can call a special telephone hotline to complain about a railcar’s A/C system. Temperature surveyors submit their readings to Fleet Management daily, where the readings are entered into a database and the “hot” and “warm” readings are automatically identified.

When an A/C defect is reported to Fleet Management, Fleet Management is supposed to create an In-Service Defect (ISD) in its automated Incident Management System (IMS). The IMS is then supposed to automatically generate a shop order in the Asset Management System (AMS). The AMS is used to record all repairs and preventative maintenance activities performed on each railcar. The shop order should remain open in both the IMS and AMS until an entry is made to either of the systems that the railcar was inspected and any required repair was made. Fleet Management is supposed to track open shop orders until they are closed.

Between May 29, 2006 and September 3, 2006 (the 2006 A/C season), a total of 1,138 ISDs were created for A/C defects. We performed various tests to determine whether the A/C defects reported during this period were corrected in a timely manner.

To determine whether an ISD (and thus shop order) was in fact created whenever a “hot” or “warm” temperature was reported by a temperature surveyor, we downloaded the temperature readings entered on the Fleet Management database during the 2006 A/C season and judgmentally selected 50 railcars that were found to be either “hot” or “warm.” We then reviewed the 1,138 ISDs to determine whether an ISD and a shop order had been created in response to each of the 50 “hot” or “warm” temperature readings.

We found that, for 44 of the readings, both an ISD and a shop order were created, as required. However, there was no record of either an ISD or a shop order for the remaining six “hot” or “warm” temperature readings.

Fleet Management officials indicated that corrective action may, in fact, have been

taken in these six instances. They noted that a new ISD will not be created for a railcar when a prior ISD is still open (e.g., a new ISD will not be created in response to a “hot” temperature reading if an ISD has already been created in response to an A/C defect that was identified during the railcar’s daily inspection). Thus, a new ISD would not have been created for the six railcars in our sample if a prior ISD was still open and repairs were still pending.

To determine whether this had, in fact, been the case, we followed up on the six railcars and found that four were rated “cool” the next time they were surveyed by the contractor. It thus appears that corrective action may have been taken on these four railcars. For the fifth railcar, an ISD had been generated the day before that would have been in effect until the railcar was repaired. However, the sixth railcar was surveyed again the next day and was still found to be “hot.” No ISD was generated at that time, either. The railcar was surveyed 15 additional times during the 2006 A/C season, and was found to be “cool” on 13 of those days and “hot” or “warm” the other two times. We concluded that, with limited exception, appropriate corrective action was taken on these railcars.

To further evaluate the adequacy of Fleet Management’s response to “hot” or “warm” temperature readings, we examined the repair records for all the railcars that were found by temperature surveyors to be “hot” during the 2006 A/C season. The purpose of our review was to determine whether a shop order to repair an A/C defect was generated for the railcar shortly before or after the time of the “hot” reading. Thus, if a “hot” temperature reading only confirmed the existence of an A/C defect that was already being addressed, our review would confirm that corrective action had, in fact, been taken on that railcar at that time. There were no written

procedures to describe the various actions in response to such reports.

A total of 275 “hot” temperature readings were reported during the 2006 A/C season. We found that shop orders were generated shortly before or after the time of the “hot” reading in 260 of these 275 readings. However, no shop orders were generated at the time of the remaining 15 “hot” readings. It thus appears that timely correction action was not taken in response to the uncomfortable temperatures inside these 15 railcars.

Fleet Management officials state that while they do not have written procedures for dealing with reported defects, their main charge is to correct defects and they know what needs to be done to accomplish this. However, in the absence of written procedures, specific responsibilities may not always be clear to everyone who is involved in the process of arranging for the repair of a railcar’s A/C system and, as a result, some defective systems may not be scheduled for repair (as we found when we reviewed the 275 “hot” temperature readings for 2006).

We found that, generally, Fleet Management took action to repair defects in the railcars. However, there are some opportunities for improvement, such as:

- preparing formal written procedures for use by current employees as well as future employees;
- prepare uniform reports for all A/C defects and document action taken to correct each defect; and
- reference “hot” and “warm” readings in Fleet Management’s database to a shop order.

## Cold Railcars

To determine whether an ISD (and thus a shop order) was created when an uncomfortably-cold temperature was reported by a temperature surveyor, we judgmentally selected from Fleet Management’s temperature database five railcars that were found to have an average temperature of less than 68 degrees at some point during the 2006 A/C season. We then reviewed the 1,138 ISDs that were created during the 2006 A/C season to determine whether an ISD was created in response to any of the 5 cold temperature readings.

We found that no ISDs were created in these five instances. As a result, it appears that no action was taken to fix the A/C systems producing the uncomfortably-cold temperatures in the five railcars. We believe the results of our test support the need for a standard defining when the temperature inside a railcar is too cold.

Fleet Management officials stated that cold railcars are generally identified during the daily inspection and are usually easy to fix at that time. As a result, the A/C systems in such railcars are more likely to be repaired without an ISD being created. They noted that “hot” railcars are less likely to be detected during the daily morning inspection, because the temperature inside the railcar may not have warmed up yet. As a result, the A/C systems in such railcars are more likely to be repaired in response to an ISD.

We acknowledge that a cold railcar is more likely to be identified during the morning inspection than a hot railcar. However, as previously discussed, Metro-North has no standard for determining an unacceptably-cold railcar. This tends to increase risk that uncomfortably-cold railcars will not result in a repair to address the situation.

## Timeliness of Repairs and Maintenance

To determine whether railcars were promptly repaired once an ISD was created, we reviewed the repair records relating to two separate samples of ISDs. The first sample consisted of ISDs that were created in response to “hot” or “warm” temperature readings. The second sample consisted of ISDs that were created in response to A/C defects reported by Metro-North employees or the riding public. There were a total of 44 ISDs in our first sample (the ones created in response to our judgmental sample of 50 “hot” or “warm” temperature readings in 2006), and there were 30 ISDs in our second sample (we judgmentally selected these 30 ISDs from the total 1,138 ISDs created in 2006).

We found that the railcars in both samples were promptly repaired once the ISDs were created, as follows:

- For the railcars that were repaired in response to a “hot” or “warm” temperature reading, it took an average of five days to repair each railcar, and 48 percent of the repairs were completed in three days or less. Repairs ranged from completion on the same day to 2 that were completed in 16 to 21 days. The repair record for 1 of the 44 railcars could not be located. However, Maintenance of Equipment staff told us that, according to the information on the AMS, the repair on this railcar was minor and would have been completed in the rail yard rather than in the shop. In addition, for all 43 repairs, we verified that the information on the repair record agreed with the data on the AMS for the shop orders (thus confirming that repair work was done on the railcar’s A/C system).

- For the 30 railcars that were repaired in response to A/C defects reported by Metro-North employees or the riding public, it took an average of 4 days to repair each railcar, and 53 percent of the repairs were completed in 3 days or less. Repairs ranged from completion on the same day to nine days. Thus, there were no significant differences in the repair times for the two samples.

Fleet Management does not have standards indicating how long repairs should take to complete. However, the repair times in our two samples appear to be reasonable. Fleet Management officials stated that while they do not have standards for total repair times; their goal is to get railcars with reported defects to a location for review within one day of being notified about the defect.

A/C systems are less likely to perform as intended if they are not properly maintained. Prior to each summer season, all Metro-North railcars are to receive an annual A/C servicing that includes a condenser wash, an evaporator cleaning, and a thorough inspection and test of the entire A/C system. We reviewed the maintenance records for the 50 railcars identified in our judgmental sample of 50 “hot” or “warm” temperature readings in 2006 to determine whether the railcars received the annual A/C servicing prior to the 2006 A/C season. We found that all 50 railcars received the recommended servicing.

---

## *Temperature Survey Reliability*

---

The railcar temperature surveys are performed by a contractor, Lloyd Creative Temporaries (Lloyds). Lloyds was paid about \$90,000 in both 2005 and 2006 to perform the surveys. The data from the surveys is recorded on hardcopy forms that are submitted to Fleet Management. The data on the forms is also entered onto Fleet Management’s electronic

database by the contractor. To determine whether the temperature data on the database was accurate and complete, we compared the data recorded on the hardcopy forms with the data recorded on the database for three days in 2006 (July 15, July 31, and August 31).

For these 3 days, there was a total of 648 railcar surveys recorded on the database. We found that 452 of the surveys (69.8 percent) were correctly entered from the hardcopy forms. We also found that 17 of the surveys (2.6 percent) had at least one input error. Most of these errors appeared to be typos or other mistakes, and in no instance would the rating of the railcar (i.e., "cool" or "warm" or "hot") have changed if the data had been entered correctly. However, we were unable to verify the accuracy of the remaining 179 surveys (27.6 percent) recorded in the database, because Fleet Management could not locate the hardcopy forms.

In addition, we found 26 surveys recorded on hardcopy forms that had not been entered into the database. It should be noted that the railcar was found to be "hot" or "warm" in only one of these 26 surveys. However, these unrecorded surveys show that the temperature database was not always complete.

Fleet Management officials attribute the missing hardcopy forms to poor filing by Lloyds' staff. They also stated that forms may have been lost or misfiled when the work location recently moved. The officials also noted that while they have control procedures in place to verify that the Lloyds' surveyors are actually riding the trains and not just making up the survey results, they do not have control procedures to periodically verify the completeness and accuracy of the data entry done by Lloyds' staff. We recommend Fleet Management implement such control procedures. Since Metro-North uses the temperature surveys to measure the

effectiveness of the A/C Program and to identify railcars that need repair, it is critical that the survey information on the database be complete and accurate.

We also compared the railcars that were surveyed in 2006 with an inventory listing of railcars maintained by Fleet Management. We found that the database contained temperature surveys for 15 railcars that, according to inventory records, had been retired from service. We provided these 15 railcar numbers to Fleet Management officials and they determined that the numbers were entered incorrectly on the database because the handwritten numbers on the hardcopy forms were difficult to read.

We note that the temperature in 1 of these 15 railcars was found to be "hot." However, the railcar could not be scheduled for repair, because the wrong identification number was entered on the database. The database does not have an edit check to prevent the entry of an identification number for a railcar that has been retired from service. We recommend that such an edit check be added.

---

### *Reporting of Results*

---

The MTA Board's Metro-North Committee meets monthly to discuss issues related to Metro-North, and then decides what information will be presented to the full MTA Board. We reviewed Metro-North Committee meeting minutes for the period January 1, 2005, through October 31, 2006, to determine whether the A/C Program was discussed at any of the meetings. We found no direct reference to the A/C Program and only one indirect reference: in December 2005, the Committee received the results of a customer satisfaction survey in which one of the questions showed that 80 percent of the customers were satisfied with the temperature

on the trains (this represented a decline of four percent from the previous year).

Fleet Management officials stated that they provide the Metro-North President and other managers with a monthly report showing the results of the railcar temperature surveys and the status of pre-season A/C system preparation efforts. The officials also noted that the President and other high-level managers have on-line access to daily in-service defect reports and repair statistics that can be broken down by type of defect, such as A/C defects.

We agree that high-level officials within Metro-North are kept adequately informed about the A/C Program. However, information about the Program is not provided to the Metro-North Committee and, consequently, is not provided to the full MTA Board, even though the Board is responsible for overseeing Metro-North's operations. We note that the Board's LIRR Committee receives information about the LIRR's A/C program (the results of railcar temperature surveys) on a monthly basis. We recommend that the same type of information be provided to the Metro-North Committee, along with summary data on the total number of reported defects and the time taken to repair the defects. We believe this type of information, along with trend analysis of the information, would be useful to both the Metro-North Committee and the full MTA Board as they make budget decisions and monitor overall performance.

### Recommendations

To the MTA Board:

1. Modify the temperature standards in Metro-North's A/C Program so that they address uncomfortably-cold temperatures inside railcars and better address

uncomfortably-warm temperatures inside railcars. In making these modifications, determine whether it is feasible for the Metro-North and the LIRR to adopt uniform standards.

(Metro-North officials replied that they are responsible for providing information to the Metro-North Committee regularly and will respond to all of the recommendations. They agreed to change the measurement standard to be identical to the LIRR.)

2. Periodically request information summarizing the performance of various aspects of Metro-North's A/C Program.

(Metro-North officials replied that they will report on the status of all railcar fleets to the Metro-North Committee quarterly.)

To Fleet Management:

3. Develop written procedures describing the actions that should be taken when an A/C defect is reported. Include in these procedures the requirement that all reported A/C defects be recorded in a standard manner and these records indicate when action is taken to correct each defect.

(Metro-North officials replied that they have procedures that guide the actions from reporting defects to correcting the defect. However, to clarify reporting, they will issue an umbrella document to correct all of the separate procedures.)

4. Reference all "hot" and "warm" temperature readings in the Lloyds' database to a shop order number in the IMS.

(Metro-North officials agree and will take action to implement this recommendation.)

5. Implement control procedures to verify, on a sample basis, the completeness and accuracy of the Lloyds' temperature surveys entered into the database. Also verify that all hardcopy forms are being maintained.

(Metro-North officials replied that they take samples on an informal basis, but will formalize the activity with the next AIC session.)

6. Add an edit check to the Lloyds' database to prevent the entry of a railcar that has been retired.

(Metro-North officials agree and will implement this recommendation.)

7. Prepare and present reports summarizing the railcar temperature surveys, the total number of reported A/C defects, and the time taken to repair the defects to the Metro-North Committee.

(Metro-North officials replied they will provide information summarizing railcar temperature surveys as part of the quarterly report to the Metro-North Committee.)

## AUDIT SCOPE AND METHODOLOGY

We audited Metro-North's A/C Program for the period January 1, 2005, through October 31, 2006. To accomplish this objective, we interviewed Fleet Management and Maintenance of Equipment staff and reviewed records, procedures, and practices related to the A/C Program. We also reviewed meeting minutes for the MTA Board and the Board's Metro-North Committee, and attended an MTA Board and a Metro-North Committee meeting. In addition, we reviewed a report issued by the MTA Auditor General in September 2000 addressing the A/C programs

of Metro-North and the LIRR. We conducted our audit in accordance with generally accepted government auditing standards.

To determine whether reported A/C problems were promptly addressed, we obtained a download of Fleet Management data showing reported A/C defects for the period May 29, 2006, through September 3, 2006. We then selected a judgmental sample of 30 reported defects and reviewed the repair records for the affected railcars to determine how long it took for the A/C systems to be inspected and/or repaired. We also obtained a download of Fleet Management data showing all the railcar temperature readings taken by the contractor between May 30, 2006, and September 1, 2006. We then selected a judgmental sample consisting of 50 uncomfortably-warm temperature readings (i.e., above the standards) and five uncomfortably-cold temperature readings (i.e., below 65 degrees), and reviewed the repair records for the affected railcars to determine how long it took for the A/C systems to be inspected and/or repaired.

To determine whether all railcar temperature readings were accurately reported to Fleet Management by the contractor, we judgmentally selected three days on which readings were taken and compared the contractor's records of the readings with the temperature data on Fleet Management's database. We also visited four Metro-North maintenance facilities to review repair and maintenance records and discuss repair and maintenance procedures with Maintenance of Equipment staff.

Some of the railcars owned by Metro-North are used by New Jersey Transit. Since New Jersey Transit is responsible for the repair and maintenance of these railcars, they were not included in our audit. Our audit was limited to the railcars operated by Metro-North.

As is our practice, we notify responsible officials at the outset of each audit that we will be requesting a representation letter in which management provides assurances, to the best of their knowledge, concerning the relevance, accuracy, and competence of the evidence provided to the auditors during the course of the audit. The representation letter is intended to confirm oral representations made to the auditors and to reduce the likelihood of misunderstandings. In this letter, responsible officials assert that, to the best of their knowledge, all relevant financial and programmatic records and related data have been provided to the auditors. The officials further affirm that either the agency (or public authority) has complied with all laws, rules, and regulations applicable to its operations that would have a significant effect on the operating practices being audited, or that any exceptions have been disclosed to the auditors. Metro-North officials provided a representation letter in connection with this audit. However, they modified the letter by removing the paragraph regarding management's responsibility for internal controls over the areas covered by the audit. We requested a revised letter that includes management's responsibility for internal controls. Readers of this report should consider the potential effect of this lack of assurance on the findings and conclusions presented in this report.

In addition to being the State Auditor, the Comptroller performs certain other constitutionally and statutorily mandated duties as the chief fiscal officer of New York State. These include operating the State's accounting system; preparing the State's financial statements; and approving State contracts, refunds, and other payments. In addition, the Comptroller appoints members to certain boards, commissions, and public

authorities, some of whom have minority voting rights. These duties may be considered management functions for the purposes of evaluating organizational independence under generally accepted government auditing standards. In our opinion, these functions do not affect our ability to conduct independent audits of program performance.

## AUTHORITY

We performed this audit pursuant to the State Comptroller's authority as set forth in Article X, Section 5, of the State Constitution and Section 2803 of Public Authorities Law.

## REPORTING REQUIREMENTS

A draft copy of this report was provided to Metropolitan Transportation Authority and Metro-North officials for their review and comments. Their comments were considered in preparing this final report and are included as Appendix A.

Within 90 days after final release of this report, as required by Section 170 of the Executive Law, the Chairman of the Metropolitan Transportation Authority shall report to the Governor, the State Comptroller, and the leaders of the Legislature and fiscal committees, advising what steps were taken to implement the recommendations contained herein, and where recommendations were not implemented, the reasons therefor.

## CONTRIBUTORS TO THE REPORT

Major contributors to this report include Carmen Maldonado, Robert Mehrhoff, Santo Rendon, Wayne Bolton, Nisha Thomas, Nicholas Angel, and Dana Newhouse.

---

## APPENDIX A - AUDITEE RESPONSE

---

347 Madison Avenue  
New York, NY 10017-3739  
212 878-7274 Tel  
212 878-7432 Fax

**Elliot G. Sander**  
Executive Director and  
Chief Executive Officer



State of New York

October 18, 2007

Ms. Carmen Maldonado  
Audit Director  
Office of the State Comptroller  
Division of State Government Accountability  
123 William Street – 21<sup>st</sup> Floor  
New York, New York 10038

**Re: Report #2006-S-83 MTA Metro-North Railroad Railcar Air Conditioning**

Dear Ms. Maldonado:

This is in reply to your letter requesting a response to the above-referenced draft audit report.

I have attached for your information the comments of Mr. Peter A. Cannito, President, MTA Metro-North Railroad, which address this report.

Sincerely,

A handwritten signature in black ink, appearing to read "Elliot G. Sander". Below the signature, the name is printed in a smaller, sans-serif font.

Elliot G. Sander  
Executive Director and Chief Executive Officer

Attachment

C: Peter S. Kalikow, Chairman

*The agencies of the MTA, Peter S. Kalikow, Chairman*

MTA New York City Transit  
MTA Long Island Rail Road

MTA Long Island Bus  
MTA Metro-North Railroad

MTA Bridges and Tunnels  
MTA Capital Construction

MTA Bus Company

# Memorandum



**Metro-North Railroad**

Date October 1, 2007

To Elliot G. Sander, MTA Executive Director and Chief Executive Officer

From Peter A. Cannito

Re NYS Comptroller Draft Audit Report: Railcar Air Conditioning #2006-S-83

Metro-North has reviewed the Draft Audit Report on Railcar Air Conditioning, #2006-S-83. The report concluded that Metro-North complies with our standards and that defects are repaired within a reasonable timeframe. There were seven recommendations made in the report and Metro-North will address all seven recommendations. The first two items were directed to the MTA Board, however Metro-North is responsible for providing this information to the Metro-North Committee regularly and we will respond to all of the recommendations in the Draft Audit Report as follows:

*Recommendation #1: Modify the temperature standards in Metro-North's A/C Program so that they address uncomfortably cold temperatures inside railcars and better address uncomfortably warm temperatures inside railcars. In making these modifications, determine whether it is feasible for the Metro-North and the LIRR to adopt uniform standards.*

**Response:** For all Metro-North fleet equipment classes, Metro-North agrees to change the measurement standard to be identical to the LIRR.

*Recommendation #2: Periodically request information summarizing the performance of various aspects of Metro-North's A/C Program.*

**Response:** Metro-North will report on the status of temperature compliance for all railcar fleets to the Metro-North Committee quarterly.

*Recommendation #3: Develop written procedures describing the actions that should be taken when an A/C defect is reported. Include in these procedures the requirement that all reported A/C defects be recorded in a standard manner and these records indicate when action is taken to correct each defect.*

Response: Metro-North has numerous procedures which guide defect reporting including how to record the action and correction. These procedures include:

- Air Conditioning Performance Measuring Instructions 1997
- MNR Customer Amenity Issues and Resolutions, 7/31/2006
- Section 3.7.1 FMO Definition in the "Yard Manual"
- TMIS users manual
- IMS users manual

In order to clarify reporting and use, Metro-North will generate an umbrella document to connect all of the separate processes under one procedure.

*Recommendation #4: Reference all "hot" and "warm" temperature readings in the Lloyds' database to a shop order number in the IMS.*

Response: Metro-North agrees and will synchronize IMS and AMS data.

*Recommendation #5: Implement control procedures to verify on a sample basis, the completeness and accuracy of the Lloyds' temperature surveys entered into the database. Also verify that all hardcopy forms are being maintained.*

Response: Fleet Management samples the accuracy of the reporting on an informal basis. This sampling will be formalized with the next A/C season. All forms are maintained through the end of the season, and data is maintained as required by the FRA.

*Recommendation #6: Add an edit check to the Lloyds' database to prevent the entry of a railcar that has been retired.*

Response: Metro-North will implement an edit check as recommended.

*Recommendation #7: Prepare and present reports summarizing the railcar temperature surveys, the total number of reported A/C defects, and the time taken to repair the defects to the Metro-North Committee.*

Response: Reports are prepared and presented to the senior staff at Metro-North regularly. This information will be made part of the quarterly report to Metro-North's Committee.

If there are any questions regarding our responses, please contact my office.

C: Peter S. Kalikow, MTA Chairman  
Michael J. Fucilli, MTA Auditor General