

**AUDIT OF LIRR'S WARRANTY CLAIMS
FOR THE M-7 FLEET**

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The MTA Long Island Rail Road's (LIRR) contract with Bombardier Transportation Corporation for the purchase of M-7 rail cars permits the railroad to perform certain repairs covered by warranty, and to claim reimbursement from Bombardier for the cost of the repairs. The Office of the MTA Inspector General (OIG) reviewed LIRR's warranty reimbursement system¹ and identified weaknesses that resulted in LIRR's failure to claim approximately \$1.2 million in reimbursements for warranty work that it was entitled to recover. Fortunately, all of the M-7 rail cars are still under warranty so the LIRR can still submit claims for the \$1.2 million. We have provided the LIRR with data on the unclaimed work and it has already started to recover the funds.

Agreeing with our findings, LIRR quickly took steps to improve its controls and oversight for the warranty reimbursement system. Specifically, during the audit, the LIRR developed and released its "M-7 Warranty Procedure" for its warranty program that detailed the process for filing M-7 warranty claims. This revised process includes the incorporation of management controls to ensure that the system is operating effectively and efficiently. In addition, it provides for increased oversight of the warranty claim process by adding additional management review and by requiring specific weekly and monthly reports. We believe that, once fully implemented, these changes will enable the LIRR to more effectively seek and receive warranty reimbursements and address most of the recommendations in this report.

SUMMARY OF FINDINGS

Our audit found that the LIRR did not have adequate control and oversight of its M-7 warranty reimbursement system. In brief, the existing process did not ensure that all eligible work is identified for claim, that all identified claims are processed, and that the amount of each claim processed is accurate.

Specifically:

- We identified 3,397 work orders that should have been claimed under the warranty but were not identified by the LIRR and, as a result, the LIRR failed to claim \$918,000.
- Another 1,027 work orders for repairs made during periodic inspections and valued at \$144,000, were not claimed by the LIRR. The contract with Bombardier allows for reimbursement for these repairs.
- 748 claims for over \$120,000 were identified for claim, but were lost during the claims process.

¹ This audit was performed in accordance with Generally Accepted Government Auditing Standards. The full statement of the audit's Objectives, Scope and Methodology is contained in Appendix A.

- The Maintenance Allocation Chart -- the chart that specifies the standard number of labor hours to be charged for replacing a particular part -- is not being accurately maintained by Bombardier or LIRR. Our analysis identified 869 claims -- 12 percent of all claims processed -- where the warranty claims were calculated using an inaccurate or unsupported number of labor hours.

BACKGROUND

Beginning in May 1999, LIRR and Metro-North Railroad (MNR) contracted with Bombardier for the purchase of 1,172 M-7 commuter rail cars -- 836 for LIRR and 336 for MNR -- at a cost of \$2.4 billion. The contract provided that most parts and systems would be under warranty for at least a 2-year period from each car's date of acceptance. In addition, certain parts and systems are covered for extended periods of 3 to 15 years. However, as of August 2007, because of ongoing modifications to the M-7 cars after they began to be delivered, all rail cars in service have only been classified as "conditionally accepted." As a result, the 2-year warranty period has not yet officially begun and cars that were received as early as October 2002 are still covered under the warranty.

While the contract states that warranty work will generally be performed by Bombardier, it allows LIRR to perform warranty work such as the replacement of defective parts and the related inspections required when work is done on certain critical systems. Each time a part is replaced, LIRR initiates a work order and if it is determined that the replacement is Bombardier's responsibility under the warranty, the work order should result in a warranty claim. The contract specifies that replacement parts will be supplied by Bombardier and LIRR will be reimbursed for its labor costs incurred in replacing the parts. Most of this repair work is being performed at LIRR's Holban/Hillside Maintenance Complex in Jamaica. The replacement parts for the warranty work, supplied by Bombardier, are maintained at the Hillside complex by Bombardier in its consignment warehouse. Bombardier is also continuing to make some of the more extensive modifications at LIRR's Arch Street facility in Long Island City.

The amount of each warranty claim is based on LIRR's labor costs. Under the warranty, costs are reimbursed by Bombardier using a blended, negotiated hourly rate which includes direct labor, overhead, and general and administrative costs including an allowance for overtime. The negotiated rate was \$95 an hour for 2002 through 2004. The contract provided for the rate to be adjusted each year based on the Consumer Price Index for the New York Metropolitan area, raising the hourly rate as shown in Table 1.

TABLE 1: LIRR Hourly Labor Rate for M-7 Warranty Work

<u>Year</u>	<u>Adjusted Hourly Rate</u>
2002-04	\$ 95
2005	\$ 98
2006	\$103

The number of LIRR labor hours allowed for replacing each specific part is set in a document called the Maintenance Allocation Chart (MAC). The hours allowed for each part were estimates initially developed by Bombardier and agreed to by LIRR. However, over the course of the contract there have been many revisions to the times in the MAC, based on the actual time it has taken to replace parts.

THE CONTROLS IN THE WARRANTY REIMBURSEMENT SYSTEM WERE NOT ADEQUATE

An effective system of controls for a warranty reimbursement system should ensure that all eligible repairs are identified, that each claim is accurately calculated, and finally that each claim is processed and paid. The controls established by LIRR fell short of these goals. In the sections below, we outline the major processes in the system and note in italics where we found gaps in the controls. The gaps are discussed in full in later sections.

The Warranty Claim System Lacked Essential Controls

The Equipment Engineering unit within the LIRR's Maintenance of Equipment Department (M of E), is charged with ensuring that all eligible repair work performed by LIRR personnel working on M-7 cars is claimed² under the warranty provision in the Bombardier contract. The key control document used throughout the warranty reimbursement process is the "Warranty Defect Tag." Most repairs to an M-7 car involving the replacement of a part should generate a warranty defect tag that flows through the warranty process and is the basis for each claim to Bombardier.

CONTROLS

WEAKNESSES IN CONTROLS & CORRECTIVE ACTION TAKEN

Warranty Defect Tag Initiated

When M of E determines that a part in an M-7 rail car needs to be replaced, a work order is created in LIRR's computerized Rolling Stock Maintenance System (RSMS). A warranty tag is then completed for the part that needs to be replaced. The work order and the defective part with the warranty defect tag attached are brought to Bombardier's consignment warehouse. The basic control here relies on the condition that Bombardier will not issue a replacement part from the consignment warehouse unless the old part and a warranty defect tag are submitted.

We found that a warranty defect tag was not always prepared. As discussed on page 8, buffer stems³ and other related parts were routinely delivered to the shop floor under a system that did not always require a warranty defect tag. As a result, the repairs made without a warranty defect tag, had no mechanism which would initiate a claim. This lapse is addressed by the new "M-7 Warranty Procedure" issued by M of E in June 2007. It requires a warranty defect tag to be prepared for every part removed from an M-7 car.

² It is the responsibility of the Equipment Engineering unit to submit complete and accurate information to a LIRR Procurement Manager, sufficient for him to make a claim under the warranty.

³ A buffer stem unit is installed between two cars allowing passengers to walk between cars when the train is moving.

CONTROLS**Daily FRB Meetings Set Responsibility for Each Repair**

The warranty defect tags are picked up each day at Bombardier's consignment warehouse by LIRR's Warranty Administrator and brought to the daily Failure Review Board (FRB) meeting where LIRR and Bombardier personnel discuss any of the prior day's unusual repairs and determine whether LIRR or Bombardier is responsible for the cost of the repair. A listing of all corrective M-7 work orders in RSMS that were completed the previous day is prepared for use at the meeting. At these meetings, the officials also agree on any changes to the MAC concerning the time needed to complete a repair.

Initial Recording of Warranty Defect Tag Data

After each daily FRB meeting, the tags that were determined to be LIRR's responsibility are logged into RSMS and labeled as "Rejected." All warranty defect tags that are determined to be Bombardier's responsibility are not yet entered into RSMS. Rather, they are first entered into a separate stand-alone database by the M-7 Project Document Control Specialist pending the assignment of MAC hours and Bombardier approval.

WEAKNESSES IN CONTROLS & CORRECTIVE ACTION TAKEN

The warranty defect tags and the list of RSMS work orders both show M-7 work performed on the previous day. Although both are available at the FRB meeting, the Warranty Administrator did not regularly perform a reconciliation to determine if a warranty defect tag had been prepared for each work order. During the course of this audit, M of E established new procedures requiring that a "Warranty Replacement Work Order Report" and a "Warranty Tag Review Report" be prepared each week. At weekly Warranty Claim Review Meetings, Bombardier and LIRR managers will review these reports and identify work orders that do not have a corresponding warranty defect tag.

CONTROLS**MAC Hours Entered for Each Repair**

The warranty defect tags for repairs that were agreed to be Bombardier's responsibility are forwarded to LIRR's Manager of Administration for New Fleet Procurement where the MAC labor hours are entered on the warranty tag for each part.

Bombardier Approval

The warranty defect tags, now showing the number of hours allowed for the work, are submitted to Bombardier's Material/Warranty Administrator for approval. After approval, Bombardier sends a copy of the warranty defect tag to the LIRR Warranty Administrator and a second copy to the LIRR's Procurement Manager

WEAKNESSES IN CONTROLS & CORRECTIVE ACTION TAKEN

After agreement at the FRB to change the number of hours allowed for a part replacement⁴, Bombardier did not update the MAC in a timely manner and the LIRR also did not maintain accurate records of the changes. As a result, many claim calculations were based on a different number of hours -- often a lower number -- than allowed by the MAC. As a result of our audit, M of E established new procedures that now provide for a more formal process for documenting and updating MAC hours.

Some claims may have been lost at this step. LIRR had no process to ensure that all claims sent to Bombardier by the LIRR Warranty Administrator were being forwarded after approval to the LIRR Procurement Manager. This process has been changed. Bombardier's Material/Warranty Administrator now sends both copies of the approved warranty defect tag to the LIRR Warranty Administrator, who will forward one set of copies to the LIRR Procurement Manager.

⁴ Conversations between LIRR and Bombardier personnel at FRB meetings address, among other things, part replacements that are routinely taking a different number of hours than provided for in the MAC. At these meetings, agreements are reached to change the number of hours allowed in the MAC for different replacements. Unofficial records were maintained on the changes and periodically a new MAC would be produced, labeled version A, B, etc.

CONTROLS

WEAKNESSES IN CONTROLS & CORRECTIVE ACTION TAKEN

LIRR Warranty Administrator Process

Upon receipt of the approved warranty defect tag, LIRR's Warranty Administrator has an RSMS clerk enter information from the tag into the RSMS Warranty Claim Tracking System (WCTS) module where it is initially classified as "Open." The Warranty Administrator then verifies the entries in WCTS and changes the status to "Approved." The Warranty Administrator also has the M-7 Project Document Control Specialist record Bombardier's approval in the Warranty Administrator's data base by entering a "Y" signifying the tag was received back from Bombardier.⁵

LIRR did not routinely check to determine whether the tags without "Y"s were ever properly claimed. Now, the new procedures require that the Project Document Control Specialist ensure that every warranty tag distributed to Bombardier is delivered back to LIRR.

LIRR Procurement Manager Process

Using the second approved copy of the warranty defect tag, the Procurement Manager enters the claims into his own Excel database and creates an invoice for the warranty defect tag. Each month he batches the invoices, prepares a list of the claims, and submits them to LIRR Accounting which bills Bombardier for payment.

Monthly Claim List to Warranty Administrator

The Procurement Manager also sends a copy of the monthly claim list to the Warranty Administrator.

The Warranty Administrator did not compare the Procurement Manager's transmittal list of monthly claims to a list of "Approved" and "Open" work orders in RSMS. As of June 2007, the new procedures provide that RSMS Technical Support will generate warranty tracking reports for use in tracking claim status. LIRR stated that a reconciliation of work orders and claims processed will be done on a periodic basis.

Management Oversight Was Inadequate

The LIRR Warranty Administrator informed us that she had minimal supervision from 2005 until her retirement in March 2007. She explained that her immediate supervisor had retired in 2005 and was not replaced. During this period, she reported to the Deputy General Manager for New Fleet Procurement

⁵ On occasion Bombardier's Material Warranty/Administrator rejects the claim for reasons such as duplication or clear LIRR responsibility. In these cases the claim is entered as "rejected" into RSMS.

and only occasionally met with him to discuss the warranty program. As result of this audit and after her retirement, changes were instituted. LIRR officials stated that her replacement will now report directly to a Senior Manager for Schedules, Budgets, and Material Control who in turn will report to the Deputy General Manager. According to LIRR officials, this change will provide additional oversight and control to ensure that the Warranty Administrator is performing her duties in such a manner that all claims are identified and accurately processed.

The Warranty Administrator stated that she did not generate any periodic reports for management to use in order to provide meaningful oversight. No audits or reviews were conducted to verify that personnel were complying with warranty procedures, nor were there reviews that would have identified some or all of the problems noted in this report. The June 2007 "M-7 Warranty Procedure," developed during our audit, will assist management in its oversight by:

- Establishing the responsibilities for each employee involved in the warranty system.
- Requiring the issuance of monthly listings of claims filed for payment.
- Requiring monthly intra-departmental audits of open warranty claims to determine the reasons for delayed processing.
- Requiring regular audits by M of E's Fleet Analysis and Quality Assurance unit to verify compliance with warranty procedures.

OVER \$ 1 MILLION IN CLAIMS WERE NOT IDENTIFIED

Given the lack of supervision and control that we found in the warranty system, along with the errors identified in our initial testing, we obtained and analyzed the database of all work orders in RSMS for the M-7 fleet for the period October 2002 through December 2006. During this period, the LIRR processed over 9,500 claims for \$1.5 million. As shown in Table 2, we identified 4,424 additional work orders where the cost of replacing a part in an M-7 car was not claimed, even though the same part was claimed when it was replaced on other M-7 cars. As discussed below, LIRR officials agreed that most of the work orders should have been claimed.

TABLE 2: Work Orders Not Identified That Should Have Been Claimed		
Work Order Type	No. of Claims	Amount
Replacement Work Orders Not Claimed	3,397	\$ 918,107
Periodic Inspection Repairs Not Claimed	<u>1,027</u>	<u>\$ 144,113</u>
Totals	4,424	\$1,062,220

3,397 Replacement Work Orders for \$918,107 Were Not Identified

As shown in Table 2 above, we found that LIRR failed to claim 3,397 work orders⁶ for repairs to M-7 rail cars. Each of these work orders involved a replacement that was eligible to be reimbursed under the Bombardier warranty. We identified these work orders by obtaining a database of all 255,267 work orders involving an M-7 car in RSMS as of December 31, 2006. From these, we identified 35,420 work orders where a replacement part was required. We analyzed the 35,420 work orders and determined that 12,910 had already been claimed under the warranty, were in the process of being claimed, or had been rejected.⁷ Relying on the premise that a part claimed under the warranty for one car is an indication that it should be claimed whenever it is replaced on other rail cars, we reviewed the remaining 22,510 work orders. Many of these work orders were for replacement parts such as filters, brushes, and light bulbs that are referred to as consumables and are not covered by the warranty. In addition, we eliminated all work orders that were identified as being completed by Bombardier at the Arch Street Shop. We ultimately identified 3,998 parts where a claim was made previously for the part in an M-7 car, but was not claimed when it was replaced in other M-7 cars.

At the completion of our analysis, we provided our database of the 3,998 unclaimed work orders to LIRR officials for review. They subsequently identified 601 work orders that they stated were not eligible for reimbursement because either the work was completed by Bombardier or the work was a LIRR responsibility for reasons such as physical damage caused by accidents or the part was replaced during scheduled life cycle maintenance. We agreed with their rationale and in fact had already eliminated many work orders for these very reasons -- when the work orders were coded as such in the RSMS database. After eliminating the 601 work orders, the total number of replacement work orders that we identified that were not claimed was 3,397. We estimate that the amount of the unidentified claims is \$918,107.⁸

LIRR officials stated that most of the missed claims occurred because the part was not obtained from the consignment warehouse. They explained that while replacement parts are supposed to be obtained by maintenance personnel from the consignment warehouse, certain parts, including the buffer stems described below, are provided directly to the car maintainers, without the parts going through the consignment warehouse. In many of these cases, warranty defect tags were not completed by the mechanic and without a warranty defect tag, a claim for reimbursement generally will not be made.

Buffer Stem Parts Delivered Directly to the Shop Floor Did Not Always Get a Warranty Defect Tag

The unclaimed repairs that led to the largest dollar amount of unidentified replacement work orders were the "buffer stem" and its related parts. The buffer stem is a floor-level apparatus which provides a continuous surface for employees and passengers to walk on when moving between cars. The buffer stem and its plates and bolts were required to be replaced on many M-7 cars purchased by LIRR. Of the 3,397 unclaimed work orders discussed above, 715 work orders valued at \$521,100 were for buffer stem and related parts. We found that the buffer stems were not claimed because these parts did not always go through the consignment warehousing process. Typically, when a part is needed to be replaced, the car

⁶ LIRR officials stated there may be circumstances where a particular repair is their responsibility and will not be claimed. LIRR officials are in the process of reviewing these unclaimed work orders to determine which (if any) are LIRR's responsibility.

⁷ Many warranty defect tags were rejected because the defects or damage to the cars were found to be LIRR's responsibility.

⁸ The \$918,107 was calculated using the pre-established MAC hours for each part and an average labor rate of \$100.

maintainer goes to the consignment warehouse with the defective part and must submit a warranty defect tag in order to obtain a replacement part. However, buffer stems are not replaced with new parts, but were reconditioned by Bombardier personnel on the shop floor at the Hillside facility. We were told that in some instances an LIRR shop foreman would recognize the need for a warranty defect tag and create one, but more typically, the foreman would focus on getting the repair done and overlook the need for a warranty defect tag.

We recommend that LIRR:

- ◆ Ensure its new process identifies and documents with a warranty defect tag, all work that is eligible for reimbursement under the warranty.

In response to our draft report, LIRR reports it has already fully implemented the enhanced M-7 Warranty Procedure that they believe identifies and documents -- with a warranty defect tag -- all work orders eligible for claim under the warranty.

Repairs Made During Periodic Inspections Are Not Claimed Under the Warranty

M-7 train cars are required by Federal Railroad Administration regulations to undergo periodic inspections every 92 days. During these inspections, LIRR employees replace a prescribed number of consumable parts and identify any needed repairs. According to LIRR officials, in many instances the employee performing the inspection will also make minor repairs and replace parts.

During our analysis of unclaimed work orders, we identified 1,027 work orders where parts were replaced during periodic inspections and not claimed⁹. The amount of the potential warranty claim for the 1,027 parts was about \$144,000. OIG found that these repairs should have been claimed.

An M of E official initially told us that LIRR does not normally make a warranty claim for parts replaced during periodic inspections. He explained that if no additional labor is required other than the routine time that the employee needs to perform the periodic inspection, there is no additional cost to LIRR and thus, no need for a claim. We pointed out that 207 of the 1,027 work orders had a MAC time of 2 hours or more and likely required another employee to make the repair. The claim value for the 207 work orders was about \$76,000. We also pointed out that in addition to the 1,027 work orders not claimed, we identified an additional 86 instances where warranty claims were made for parts that were replaced during periodic inspections. LIRR officials were unable to explain this inconsistency in claiming the 86 repairs made during periodic inspection while not claiming the others.

In regard to parts replaced during periodic inspections, OIG asked an MNR official if MNR makes claims in similar circumstances under the contract with Bombardier. He stated that MNR views the replacement of all defective or failed components as falling under the scope of a warranty claim regardless of when found. He reiterated that as long as the part was not scheduled for replacement as part of regular maintenance or because of defects caused by MNR, a claim will be filed. Finally, we reviewed the warranty provisions in the Bombardier contract and determined that LIRR is entitled to claim reimbursement for the cost of parts replaced during periodic inspections regardless of whether it was performed during a periodic inspection.

⁸ These are not consumable parts, but, rather, parts that were previously claimed on other work orders.

We recommend that LIRR:

- ◆ Review and process warranty claims as appropriate for the 3,397 repairs not identified by the warranty claims system and for the 1,027 repairs made during periodic inspections;
- ◆ Change its practice of not submitting warranty claims for eligible parts replaced during periodic inspections.

In its response to our draft report, LIRR stated it is committed to submitting claims for eligible part replacements in cases where appropriate and when doing so does not constitute an undue administrative burden. It reported to us that its staff is continuing to review the remaining 3,397 claims and those found eligible will be claimed. Further they are reviewing and are committed to processing the 1,027 claims for replacements made during periodic inspections. In order to derive maximum benefit from the warranty provisions in the Bombardier contract, LIRR said it will determine when it is cost-effective to submit claims for eligible replacements made during periodic inspections. LIRR assures us that its new M-7 Warranty Procedure is fully implemented and that claims for replacements made during periodic inspections will be submitted, as appropriate, for reimbursement.

OVER \$100,000 OF IDENTIFIED CLAIMS WERE LOST DURING THE WARRANTY PROCESS

As previously described, each warranty claim should be documented on a warranty defect tag, recorded in RSMS, and also tracked in a separate database. However, because essential controls were not in place during processing, we found that even though warranty claims were identified as eligible for reimbursement, many were never processed. As described below, we identified a total of 748 claims for \$120,000 that began the claim process, but were lost and consequently were never claimed.

LIRR Failed To Assure That All Warranty Defect Tags Submitted To Bombardier, Continued to Move through the Claims Process

LIRR's Warranty Administrator stated that her staff maintains a database of all warranty defect tags assigned as Bombardier's responsibility at the FRB meetings. This database was established to ensure that all warranty defect tags submitted to Bombardier for approval are returned. When Bombardier sends the approved warranty defect tags back as approved or rejected, her staff records the return in the Warranty Administrator's database.¹⁰ However, we found that there is no review process to ensure that all claims are returned from Bombardier. We examined the Warranty Administrator's database and identified 165¹¹ warranty defect tags that were submitted to Bombardier, but were never returned and therefore reimbursement was never sought.

We also compared the database of tags approved by Bombardier with a listing of actual claims processed by LIRR's Procurement Manager as of December 2006. This comparison identified an additional 177 warranty tags that were approved by Bombardier but did not have a corresponding claim made by the

⁹ This procedure started in June 2005. A "Y" is entered into the database to indicate that the tag was returned to LIRR by Bombardier.

¹⁰ These claims were submitted to Bombardier after June 2005 and did not have a "Y." Thus, according to the database the tags were never returned from Bombardier.

Procurement Manager. Thus, a total of 342 claims appear to have been lost in the claims process. We estimate the total dollar value of these 342 work orders to be \$54,720.¹²

In light of the lost claims, we also reviewed the complete database of RSMS “Open” and “Approved” claims to ensure that they were processed and claimed by the Procurement Manager.

A Reconciliation of RSMS Warranty Tracking System Data with LIRR Procurement Data Is Not Performed

As discussed earlier, when warranty defect tags are returned with Bombardier approval, the data on the warranty defect tag is entered in the RSMS Warranty Claim Tracking System by an RSMS clerk. At this point, the claim is categorized as “Open” by the clerk. The Warranty Administrator is then charged with reviewing the clerk’s data entries and changing the status to “Approved” to reflect her agreement with the data entered into the system. According to the Warranty Administrator all warranty defect tags in the tracking system categorized as “Open” and “Approved” should be claimed and reimbursed by Bombardier. However, there was no procedure requiring a comparison of the open and approved warranty defect tags in RSMS with warranty defect tag claims processed by the LIRR Procurement Manager.

OIG performed this comparison and initially identified 8,757 “Approved” and 1,184 “Open” warranty claims that were stored in the Warranty Claim Tracking System as of December 31, 2006 -- a total of 9,941 claims. We compared these claims to all claims processed by the Procurement Manager from the inception of the warranty program in December 2002 until April 12, 2007. As shown in Table 3, we found that 105 “Approved” and 301 “Open” claims -- a total of 406 work orders, or 4 percent of all warranty claims in RSMS, had not been submitted as a warranty claim by the LIRR Procurement Manager as of April 2007. The actual work related to these claims was performed by December 2006 with some of the work dating as far back as 2003. Thus, all of the claims should have completed the reimbursement process by April 2007. When we asked LIRR officials why the claims were not processed, they could not explain where or why the system failed. Using an average reimbursement of \$160 per work order, OIG estimates that LIRR failed to request reimbursement for \$64,960 of warranty repair work for this group of claims.

**TABLE 3: “Approved” and “Open” Work Orders
In RSMS That Were Not Claimed**

Status of Work Order	Work Orders	Estimated Value
“Approved” Work Orders Not Processed	105	\$16,800
“Open” Work Orders Not Processed	<u>301</u>	<u>48,160</u>
Total RSMS Work Orders Not Claimed	406	\$64,960

During our audit, we informed LIRR of the 748 claims either lost after approval by Bombardier or not submitted for payment. They agreed to review them and submit claims as appropriate.

¹¹As of December 2006, the LIRR submitted 9,730 warranty tags and was reimbursed \$1,554,663. Therefore, the average reimbursement was \$160. We applied the \$160 to the 342 work orders.

We recommend that LIRR ensure its new processes:

- ◆ Are sufficient to assure that all claims are processed through the system, and
- ◆ Assure all claims are appropriately paid by Bombardier.

In its response to our draft report, LIRR reaffirmed its commitment to review and process all eligible claims among the 748 work orders that had been lost in processing. It further stated that it has fully implemented an enhanced M-7 Warranty Procedure that it believes will assure that all work orders eligible for reimbursement under the warranty are processed through the system and paid by Bombardier.

MAC HOURS WERE NOT ADEQUATELY UPDATED

The MAC hours, the standard number of labor hours allowed to be charged for each repair, are used to calculate the amount of each warranty claim. Our audit showed that these hours were not being routinely updated and disseminated by Bombardier or LIRR. Changes to the number of hours of labor allowed to be charged for a repair when the amount allowable is over \$100 can add up over the life of the warranty. Our analysis identified 869 claims where the amount of reimbursement to LIRR was calculated using an inaccurate or unsupported number of labor hours.

Changes to the MAC Were Not Adequately Maintained by Either Bombardier or LIRR

The initial MAC was established by Bombardier in December 2002 when the first claims were submitted by LIRR. LIRR officials indicated the contract specifications provide that it is Bombardier's responsibility to establish the MAC and update it in accordance with all changes agreed to at the FRB. During the course of the contract, as changes in hours were agreed to by Bombardier and LIRR based on the actual hours used to make the replacements, MAC Revisions A to H were prepared by Bombardier. At the time of our audit, MAC Revision I published in December 2004 was being used. Since then, Bombardier had not formally updated the MAC until Revision J was published in June 2007. Despite the fact that hundreds of additions and changes to the MAC times were agreed to at the FRB meetings, there were no revisions to the MAC for a 2½-year period.

To compensate for Bombardier's not updating the MAC, the LIRR Warranty Administrator maintained various lists of changes to the MAC during the 2½-year period. Her initial list in February 2005 recorded the date of each change and the FRB meeting where agreement was reached. However, the Warranty Administrator did not maintain a consolidated list of MAC changes as approved at the FRB. Instead, she maintained numerous lists of revisions and deletions rather than maintain one single comprehensive listing. Her lists did not always indicate when the changes took place or the dates of the FRB meeting where agreements on the changes were reached. Since no official minutes are kept of the FRB meetings, these various lists serve as LIRR's only record of changes to MAC hours.

MAC Labor Hours and the Hours Claimed Varied

Given the inadequate record of updates to the MAC, we analyzed the 7,262 claims made by LIRR through September 2006 to determine if the MAC labor hours used by LIRR in its warranty claims were accurate. We compared repair hours claimed with the hours indicated on MAC Revision I and the updated schedules provided by the Warranty Administrator. We found that 869 claims -- 12 percent of the total -- were calculated using a different number of labor hours. As explained below, we could not calculate the value of these claims.

Specifically,

- 131 claims covered the replacement of parts that were not listed in the MAC or on the updated schedules maintained by LIRR Warranty Administrator. LIRR officials told us that the repair hours for these parts were approved at FRB meetings, but were not documented and placed on the MAC.
- 641 claims were reimbursed using repair hours that differed from MAC Revision I or the Warranty Administrator's updated schedules. The differences included both over and under reporting of hours claimed.
- 97 claims did not include reimbursement for allowable inspection time of up to 2 hours that is required after certain parts are replaced. In accordance with the warranty, LIRR is permitted to claim for inspection time when parts are replaced in M-7 propulsion and braking systems (system 1), cab signal and automatic train control (system 2), and the automatic door system (system 6).

OIG could not calculate the dollar impact of these claims. Given the inadequate controls regarding updates to the MAC by both Bombardier and LIRR, we could not readily determine whether the MAC was accurate and the claim was incorrect, or whether the claim was accurate and the MAC was not updated. However, the following two examples demonstrate the impact of not maintaining an updated MAC. One example shows an understated claim and one shows an overstated claim, both due to the failure to update the MAC after changes were made at FRB meetings.

- A November 2005 claim for repair to a front-end Propulsion Inverter Box (part #749) was processed properly, reflecting a change from 6 to 32 hours that was made at an FRB meeting in that month. However, the change was never reflected in the MAC or any of the schedules provided to us by the Warranty Administrator.¹³ As a result, in July 2006, a claim for another Front End Propulsion Inverter Box was made and processed claiming only 6 labor hours. We brought this to the attention of the Procurement Manager who indicated that a claim for the additional 26 hours will be processed.
- An agreement was initially reached at a November 2004 FRB meeting allowing the LIRR to claim 2 hours inspection time for the repair of Overhead Display units (part #1194). However, the decision was reversed at a subsequent FRB meeting and the 2-hour inspection was eliminated. The Warranty Administrator sent an e-mail in November 2005 directing her staff to update her MAC schedules, but the change was never made to the schedules LIRR provided to us. Since the change occurred during the 2½-year period when Bombardier failed to issue a new revision to the MAC, we found that 9 of the 11 Overhead Display units claimed from November 2005 were incorrectly charged the 2 additional hours.

M of E's Corrective Action

M of E's new procedures now provide for a more formal process for documenting and updating MAC hours. A "MAC Chart Information Change Form" has been established that is required to be completed for each MAC change agreed to at an FRB meeting. Thus, LIRR will have a record of each change. In addition, the LIRR plans to establish and maintain its own on-line database of the MAC and changes

¹² We found a note in the RSMS documenting the change to 32 hours at a December 2005 FRB meeting.

made to it. However, Bombardier will still have responsibility for periodically preparing a complete updated MAC. This process should ensure that changes agreed to at FRB meetings are accurately reflected in future claims.

We recommend that LIRR:

- ◆ Ensure that a database of MAC hours is established and maintained.

LIRR responded to our draft report that it has addressed this recommendation through its new and fully implemented M-7 Warranty Procedure.

CONCLUSION

During our audit, it became apparent to both the OIG and LIRR that there was an immediate need for management oversight and effective controls in LIRR's M-7 warranty reimbursement system. LIRR's inconsistent practices regarding claims for parts replaced during periodic inspections deprived the railroad of legitimate claims for reimbursement. However, as noted throughout this report, LIRR officials acknowledged the shortcomings of their system and took steps to address many of our concerns as the audit progressed. LIRR has developed and documented a new "M-7 Warranty Procedure", defined the responsibilities of all personnel involved in the warranty system and established controls over the system. Management oversight has been strengthened to better ensure that all future claims are identified, accurately calculated, and processed through the system. In addition, M of E personnel have already initiated the process of recovering the \$1.2 million in missed claims.

LIST OF ALL RECOMMENDATIONS IN THIS REPORT

LIRR should:

1. Review and process warranty claims for the 3,397 work orders that were eligible to be claimed but were not identified by LIRR, and the 748 identified claims that were lost in the system.
2. Change its practice of not claiming for eligible part replacements during periodic inspections and initiate claims for the 1,027 such work orders identified by the OIG.
3. Ensure that the new controls recently put in place are fully implemented and that:
 - a. All work orders eligible for reimbursement under the warranty are identified and documented with a warranty defect tag.
 - b. All eligible claims are processed through the system and paid by Bombardier.
 - c. A database of MAC hours is established and maintained by the LIRR.

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APPENDIX A

OBJECTIVES, SCOPE AND METHODOLOGY

Our overall objective was to determine if LIRR had an effective warranty claims system in place. Specifically, we wanted to determine if:

- all repairs eligible to be claimed under the warranty were identified;
- all identified work orders were submitted to and paid by Bombardier; and
- the amount of each claim was accurately calculated in accordance with the MAC.

To accomplish our objectives, we reviewed relevant portions of the Bombardier contract and all applicable LIRR policies and procedures. We met with the various LIRR and Bombardier officials responsible for managing and operating the warranty system and developed a detailed understanding of the processes and controls in the system.

We initially conducted limited testing to verify that claims were identified, submitted, and accurately calculated and found extensive errors. As a result, we obtained databases of all repair work orders and warranty data histories for M-7 rail cars that were maintained in LIRR's RSMS and performed multiple analyses to reach a more complete understanding of the causes of errors and omissions in the warranty system.

Our primary method of identifying unclaimed work orders involved a comparison of all M-7 repair work orders in RSMS from the inception of the warranty program in October 2002 to December 2006, with a database of all claims processed by LIRR's Procurement Manager. Our analysis relied on the premise that any part claimed under the warranty for one M-7 rail car should be eligible to be claimed when it is replaced on other M-7 cars. We also analyzed the databases to determine if work orders that were identified by the LIRR as eligible to be claimed under the warranty, were processed through the system. Finally, we reviewed the accuracy of the MAC hours used to calculate the dollar amount of all claims from the beginning of the warranty program through September 2006.