State of New York
Office of the State Comptroller
Division of Management Audit

METROPOLITAN TRANSPORTATION AUTHORITY

LONG ISLAND RAIL ROAD

SELECTED INVENTORY PRACTICES

REPORT 94-S-73

H. Carl McCall
Comptroller

State of New York
Office of the State Comptroller

Division of Management Audit

Report 94-S-73

Mr. Thomas F. Prendergast
President
MTA - Long Island Rail Road Company
Jamaica Station
Jamaica, New York 11435

Dear Mr. Prendergast:

The following is our report on selected inventory practices of the Long Island Rail Road Company. The audit was performed pursuant to the State Comptroller's authority as set forth in Article X, Section 5 of the State Constitution.

Major contributors to this report are listed in Appendix A.

Office of the State Comptroller
Division of Management Audit

September 15, 1995

Executive Summary

Metropolitan Transportation Authority
Long Island Rail Road
Selected Inventory Practices

Scope of Audit

The MTA-Long Island Rail Road Company (LIRR), an affiliate of the Metropolitan Transportation Authority (MTA), operates a rail system from Penn Station in Manhattan and Flatbush Avenue in Brooklyn to points in Queens, Nassau and Suffolk counties. In 1993, the LIRR had $660 million in operating expenses and $312 million in operating income. The deficit was financed by Federal and State subsidies.

The responsibility for managing and controlling inventory levels lies with the LIRR's Inventory and Materials Management Section (Materials Management) of the Procurement Department (Procurement). Staff in this section set reorder levels for materials that are continually replenished, and review and approve all operating departments' purchase requisitions. In 1993, Materials Management approved approximately 15,400 requisitions for stock inventory purchases. Over the past three years, the LIRR has reduced the value of its inventory from $60.2 million to $44.6 million.

Our audit asked the following question about LIRR inventory operations for the period January 1, 1991 through May 31, 1994:

- Does the LIRR maintain appropriate levels of inventory?

Audit Observations and Conclusions

We found that the LIRR is not effectively ensuring that inventory levels are appropriate for economic and efficient operations. The LIRR also needs to monitor vendor performance to ensure that inventory supplies are available when needed.

LIRR officials have stated that their inventory management goal is to reduce inventories to achieve more efficient and economic operations. However, we found that current practices have sometimes resulted in stock shortages and surpluses. For example, LIRR officials stated that Materials Management should maintain a three to six-month supply of regularly used (Category 1) and occasionally used (Category 2) items. However, we found that the LIRR had not achieved this goal for 20 percent of a judgmental sample of Category 1 items or for 80 percent of a sample of Category 2 items. We also found that operating departments can decide whether they need certain manual (Category 3) request items

ordered to suit specific needs. Such items make up almost 50 percent of inventory value and 60 percent of the items in the slow-moving and inactive inventory. The LIRR should establish comprehensive guidelines to help Materials Management staff determine appropriate order quantities, require documentation and management review of purchase decisions and use forecasting methods to anticipate future needs. (See pp. 3-6)

While the LIRR has reduced the value of its inventory, management should further improve operating economy by establishing criteria for reducing its slow-moving and potentially obsolete inventory. One example is the LIRR's reported four-year supply of 400 items worth over $12 million. The LIRR also needs to improve controls over its rebuilt parts (pool) inventory, which makes up 16 percent of inventory value. Since operating departments do not track work-in-process inventory at all or adequately account for other pool inventory under their control, these assets are at risk of loss, waste or misuse. (See pp. 7-8)

To ensure the availability of critically needed items, the LIRR should expand its use of a Qualified Products List (QPL) to establish vendor sources of items that meet specifications. Ready access to suitable parts can help the LIRR avoid delays that result from testing to obtain an acceptable part when the part is needed. (See pp. 9-10)

To improve operating efficiency, the LIRR should also monitor vendors to ensure they deliver the correct quantities of ordered goods on time. When we reviewed a sample of 164 deliveries of items the LIRR deems critical, we found that only 35 percent were on time. Operating department officials report that poor vendor performance has resulted in stock shortages and inefficiencies. For example, these officials claim that, to keep some trains running, employees must at times repair them with parts taken from trains waiting for routine maintenance. The LIRR should terminate contracts with unreliable vendors and pursue damages, when appropriate, against vendors who default on their delivery contracts. (See pp. 11-12)

Comments of LIRR Officials

Draft copies of this report were provided to MTA-LIRR officials for their review and comment. They indicated they were in general agreement with the report's recommendations and indicated that corrective actions were underway.

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Introduction

Background

The MTA-Long Island Rail Road (LIRR), an affiliate of the Metropolitan Transportation Authority (MTA), operates a rail system from Penn Station in Manhattan and Flatbush Avenue in Brooklyn to points in Queens, Nassau and Suffolk counties. In 1993, the LIRR had revenue of $312 million and operating expenses of $660 million. The $348 million deficit was financed by Federal and State subsidies.

The LIRR reports that it reduced the total value of its inventory from $60.2 million in 1991 to $44.6 million as of December 1993. (The December 1993 inventory balance reflects the effect of the LIRR's revaluation of its rebuilt stock, which resulted in a $7.6 million reduction.) In 1993, the LIRR authorized more than 9,100 purchase orders for stock inventory. Receipts and issuances for 1993 totaled $43.5 million and $41.9 million, respectively. The LIRR maintains about 34,000 different stock inventory items at six separate storehouse locations. Inventory is received, issued and secured by the Stores Department (Stores). Most inventory is stored at the Holban Hillside Maintenance Facility.

Data pertaining to inventory receipts, issuances and adjustments is maintained in the LIRR's Material Maintenance System (MMS), which monitors inventory balances, initiates purchase orders for certain inventory items and maintains purchase order information. The Inventory and Materials Management Section (Materials Management) of the Procurement Department (Procurement) reviews and approves all purchase requisitions from operating departments before they are submitted to other Procurement officials. In 1993, Materials Management staff approved approximately 15,400 requisitions for stock inventory purchases.

Audit Scope, Objective and Methodology

We audited selected LIRR inventory practices for the period January 1, 1991 through May 31, 1994. Our objective was to determine whether the LIRR maintains appropriate levels of inventory. To accomplish our objective, we reviewed policies and procedures concerning inventory and selected several judgmental samples of LIRR records to determine whether there was adequate documentation to support purchasing decisions. In addition, we reviewed records related to forecasting inventory needs, interviewed responsible LIRR officials and employees and conducted field visits to observe inventory operations.

We conducted our audit in accordance with generally accepted government auditing standards. Such standards require that we plan and perform our audit to adequately assess those operations of the LIRR which are included in our audit scope. Further, these standards require that we understand the LIRR's internal control structure and its compliance with applicable laws, rules and regulations that are relevant to agency operations included in our scope. An audit includes examining, on a test basis, evidence supporting transactions recorded in the accounting and operating records and applying such other audit procedures as we consider necessary in the circumstances. An audit also includes assessing the estimates, judgments and decisions made by management. We believe that our audit provides a reasonable basis for our findings, conclusions and recommendations.

We used a risk-based approach when selecting activities to be audited. This approach focuses our audit efforts on those operations that have been identified through a preliminary survey as having the greatest probability for needing improvement. Consequently, by design, finite audit resources are used to identify where and how improvements can be made. Thus, little audit effort is devoted to reviewing operations which may be relatively efficient or effective. As a result, our audit reports are prepared on an "exception basis". This report, therefore, highlights those areas that need improvement and does not address activities that may be functioning properly.

Comments of LIRR Officials

A draft copy of this report was provided to MTA-Long Island Rail Road officials for their review and comment. Their comments have been considered in preparing this report and are included as Appendix B.

Within 90 days after final release of this report, as required by Section 170 of the Executive Law, the President of the Long Island Rail Road shall report to the Governor, the State Comptroller, and 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.

Inventory Operations

The LIRR stocks too many inventory items it does not need and too few of other items it does need. To improve inventory management, the LIRR should establish comprehensive guidelines to help Materials Management staff determine appropriate order quantities, require documentation of the review of purchase decisions, refine its forecasting methods to better anticipate future needs, reduce inactive inventory and improve accountability for rebuilt parts. Also, to ensure the availability of critically needed items, the LIRR should expand its Qualified Products List.

Requisition Process

Effective inventory management systems ensure that supplies of goods are adequate to meet the demands of operation. The unavailability of supplies (stock-out) results in delays and inefficiencies, and an oversupply represents unnecessary expenditures and potential losses from obsolescence. The LIRR's goal is to reduce inventories to appropriate levels.

The LIRR has three categories of inventory items. Our analysis determined that, as of April 1994, the total value of regularly used (Category 1) and occasionally used (Category 2) items was $19.6 million, or 53.1 percent of the total inventory value of $36.9 million (exclusive of rebuilt inventory). Manual (Category 3) items in stock represented 46.9 percent ($17.3 million) of total inventory value.

Materials Management staff purchase Category 1 and 2 items when quantities on hand fall to a prescribed minimum reorder point (MRP). For Category 1 items, the MMS automatically generates a requisition when stock reaches this point. In deciding whether to approve requisitions for Category 1 items, Materials Management staff are supposed to review prior usage and lead times (time from order to delivery from supplier) to determine the reasonableness of the order. For Category 2 items, staff should follow the same procedure, but also include a consultation with department staff in arriving at a decision. The LIRR does not have comprehensive guidelines that instruct Materials Management staff in making these decisions or require staff to document how decisions are made.

To increase the economy and efficiency of inventory operations, management stated that inventories of Category 1 and 2 items should be reduced from a one-year supply to a three to six-month supply. To achieve this goal, Materials Management officials stated they now

purchase only a three to six-month supply of goods on multi-year release contracts, and schedule multiple deliveries of smaller quantities of other types of goods. However, we found that the LIRR had not achieved its stated goals for about 20 percent of the Category 1 items and about 80 percent of the Category 2 items we examined. As a result, the LIRR had too many of some supplies on hand and too few of others.

For example, we judgmentally sampled 25 Category 1 items and found that requisitions had been approved for quantities that were either too large or too small to realize a 3 to 6-month supply, as illustrated below:

Item	(A) Prior Year	Lead Time	(C) Amount on Hand	(B) Amount Ordered	(B/A+C) Supply Available
Switch	28	113	15	30	45 (1.6 years)
Splice Kit	10	71	5	30	35 (3.5 years)
Relay	124	69	0	6	6 (18 days)
Coupler	0	130	5	14	*

* None of this inventory was used in the prior year.

We also judgmentally sampled 20 Category 2 items and found that Materials Management had approved requisitions for at least a year's supply of 16 (80 percent) of the sampled items. In one example, the LIRR purchased eight relays (50-day lead time) despite the fact that no relays had been used in the prior year.

Further, although Materials Management uses MRPs to ensure the timely purchase of adequate amounts of stock, we found that MRPs for 21 of the 45 items we sampled were not appropriate, illustrated below:

Item	(A) Prior Year	Lead Time	(B) MRP	(B/A) Supply on Hand (MRP/Prior Year)
Vest	50	14	50	1 year
Handle	10	68	15	1.5 years
Race	203	183	30	54 days
Relay	124	69	9	3 days

Based on consumption and lead time, the MRP for the first two items would result in an oversupply, and the levels for the last two items could result in stock-outs.

Manual items, the third category of inventory, make up almost half the total value of the LIRR's inventory. Operating departments make independent determinations of need for Category 3 items and submit requisitions for them. There are no MRPs for these items. Although Materials Management staff must approve Category 3 item requisitions, they may not always have criteria, other than the operating departments' stated need, on which to base the approval of the purchase. However, in view of the LIRR's efficiency and economy goals for inventory operations, departments should request and receive approval for the purchase of only those items required to fill a foreseeable need.

We tested a judgmental sample of 25 Category 3 items to determine the reasonableness of the purchases. We found that, for 3 of the 25 items tested, departments had not used the stock they had requested in the 5 months or more since the items had been received. We also examined three different LIRR reports concerning slow moving and inactive inventory items and found that almost 60 percent of this inventory consisted of Category 3 items.

To ensure that Materials Management staff approve only appropriate inventory purchases, the LIRR must establish better controls over decision-making processes. The LIRR should develop comprehensive guidelines to help Materials Management staff make decisions about the timing and quantities of inventory purchases. Also included in such guidelines should be a requirement to document the reason the requisition is approved or not approved. Such documentation would provide for management review to ensure that decisions were reasonable and purchases were appropriate. Such review is especially important for purchases of Category 3 items.

Management can also improve the efficiency of inventory operations by incorporating forecasting techniques in inventory purchase decisions. The introduction of systematic forecasting could help identify the operating departments' future needs more readily, cut down on unneeded purchasing and help control inventory balances more effectively. LIRR officials stated that they are in the process of implementing a program of scheduled maintenance of train car components and new procurement systems, such as the Procurement Logistics Systems, to help anticipate future inventory needs.

Recommendations

1. Establish comprehensive guidelines that instruct staff in determining the quantities of Category 1 items to purchase, and that require the documentation of requisition approval for Category 2 and 3 items.

2. Direct operating departments to request only those Category 3 items necessary to satisfy their near-term needs.

3. Establish a process of regular management review of purchasing decisions.

4. Use forecasted needs to determine inventory requirements.

Slow-Moving and Potentially Obsolete Inventory

In a July 1992 memo to the LIRR's executive management, the LIRR President stated that a primary goal was the disposal of slow-moving and potentially obsolete inventory material, which represented 20 percent of the total inventory. LIRR internal reports indicate that, between 1992 and 1994, the value of slow-moving inventory decreased by $11 million; during the same period, the value of potentially obsolete inventory decreased by $5 million. We commend these efforts, and believe that the LIRR needs to continue reductions to improve operating economy.

For example, our review of the April 1994 Slow-Moving Report revealed that the LIRR had more than a year's supply of 734 new items with a total value of $18.7 million. The LIRR had not used 333 of these items, worth $6.4 million, within the previous year; the inventory contained, on average, nearly a four-year supply of the remaining 401 items, worth $12.3 million. We also examined a judgmental sample of 25 high dollar-value items listed on this report. We found that the average quantity on hand, based on average usage, was a three-year supply. Materials Management officials have not developed written procedures establishing the criteria for reducing excess quantities of slow-moving materials.

The December 1993 High Value Potential Obsolete Report listed 24 new items valued at $2 million. Operating department officials indicated that many of these potentially obsolete items could be discarded. However, the LIRR has not established written criteria for deciding which items are unnecessary for operations. Such guidelines are needed to efficiently identify items that should be targeted for sale or disposal.

Recommendation

5. Establish specific criteria that the operating departments can use in reducing surplus and potentially obsolete inventory.

Pool Inventory of Rebuilt Parts

As of April 1994, the LIRR reported that the value of its pool inventory items, or rebuilt parts, was $7.8 million, or about 17 percent of the total inventory value. However, we found that the LIRR is not adequately accounting for a portion of these items, including stores of work-in-process (WIP) inventory for which there is no recordkeeping at all. Therefore, there is increased risk that such assets will be subject to loss, waste or misuse.

The LIRR's pool items are rebuilt in ten component shops at the Holban/Hillside repair facility. As of April 1994, the LIRR's MMS accounted for 742 individual pool items. Part of this inventory is controlled by Stores and the remainder is controlled by user departments. However, the LIRR does not know how much of this inventory is actually under user department control.

Stores maintains adequate control over its pool inventory by using a perpetual inventory system; as receipts and issuances to user departments occur, the balance is changed on the MMS to reflect these transactions. The LIRR's Internal Audit Department regularly verifies and makes necessary adjustments to the balances on hand.

The remainder of the pool inventory is controlled by the user departments where staff count the items on a quarterly basis. Internal Audit staff test-check the counts and make adjustments to the inventory balances to reflect count totals. However, since user departments do not record receipts and issuances of inventory items on the MMS, the periodic counts and adjustments provide only minimal control over these assets.

Furthermore, the quarterly inventory counts performed by the user departments count only those items that are fully rebuilt, not WIP items. Thus, because WIP items are not accounted for at all, the LIRR has no control over this inventory. In addition, if WIP is properly included in pool inventory counts, total quantities of inventory on hand could be significantly larger than indicated in the MMS. When we compared the balances on the system as of April 1994 with our own physical count of a judgmental sample of 10 items, our count total showed 393 more units than were listed on the MMS.

In their response to preliminary findings, the LIRR stated that over the past three years, it has started controlling the pool inventory. LIRR officials also stated their intention to use perpetual inventory controls over all pool material in the near future.

Recommendation

6. Place all pool inventory items, including work-in-process, under the control of the Stores Department and include these items on the perpetual inventory system within MMS.

Qualified Products List

Article V of the MTA's All-Agency Guidelines authorizes the LIRR to establish a Qualified Products List (QPL). The QPL identifies certain supplies, materials and equipment purchased by the LIRR that, for reasons of efficiency, economy, compatibility or maintenance reliability, should be standardized. Use of the QPL enables the LIRR to pre-qualify vendors of suitable items, thus reducing purchasing time and enabling the LIRR to purchase critical items more expeditiously. However, we found that the LIRR makes very limited use of QPL items, which has contributed to occurrences of shortages, stock-outs, and costly emergency orders of certain items. In addition, the LIRR is not ordering items on the QPLs maintained by other MTA-affiliated agencies.

According to LIRR procedures, the operating departments provide written justification to Procurement for placing an item on the QPL. Departments must also submit a detailed specification or drawing that clearly demonstrates all the requirements the prospective vendors must satisfy to qualify. Procurement then publishes the item specifications and vendors submit samples which the LIRR tests for overall adequacy. The vendors of the samples that meet specifications are placed on the QPL for that item. The invitation to bid for the item is submitted only to vendors listed as approved sources.

Operating department officials stated that if the QPL were utilized for all items normally requiring samples, the required time-consuming tests would no longer have to take place at the time the items are needed. Instead, testing could be performed on an ongoing basis, eliminating costly delays. To determine the typical length of testing time, we sampled 50 items for which the LIRR required test samples in 1993. We found that the testing periods ranged from a few days to 330 days. We analyzed 13 items for which the testing period was lengthy (more than 2 weeks), and found that in 4 cases, stock-outs had occurred because the items were tested at the time they were needed. We believe that more extensive use of the QPL can help prevent stock-outs because QPL items are already approved.

Operating department officials told us that approximately 500 to 1,000 items in the LIRR inventory could be added to the QPL, resulting in a more efficient purchasing process. However, our audit found that, as of February 1994, only 45 items were on the LIRR's QPL. Procurement officials explained that the LIRR's QPL was limited for the following reasons: the process involved in placing items on the QPL is costly and time-consuming; operating departments might put commonplace items on the list; and, most items are already on order with the original manufacturer.

We met with officials from the MTA-New York City Transit Authority (NYCTA), which uses an extensive QPL in its operations, to determine what methods they use to contain costs of listing items on the QPL. According to these officials, NYCTA procedures direct vendors to have their products tested, at the vendors' expense, at qualified laboratories that have the specifications for products needed by NYCTA. NYCTA claims that vendors are willing to absorb testing expense because, if their product is proven acceptable, they will be placed on a limited list of qualified vendors for the item. The LIRR may be able to pursue a similar means of funding tests to list items on its QPL.

We believe that the LIRR can further ensure the availability of critical inventory by establishing joint QPLs with MTA subsidiaries or affiliated agencies that comply with relevant purchasing guidelines. According to LIRR officials, the LIRR does not routinely review the QPLs compiled by other MTA agencies because the LIRR does not use many of the same items. However, when we reviewed New York City Transit Authority's QPL, we identified 20 items on this list that are bought and used regularly by the LIRR. LIRR officials stated that they would review the QPLs of other MTA agencies in the future.

Recommendations

7. Identify items that operating departments consider appropriate for the QPL and take steps to list these items.

8. Review the QPLs maintained by other MTA agencies. Where appropriate, purchase items on the lists from these agencies.

9. Consult with Transit Authority officials regarding more economical and effective use of the Qualified Products List.

Vendor Performance

The LIRR must ensure that vendors comply with the terms of purchase orders, such as item quantities and delivery dates, so that inventory items are available when they are needed. However, our review of over 10,000 deliveries revealed that more than half of the items were delivered late. Because of late deliveries, the LIRR has experienced stock-outs of essential items that resulted in operating inefficiencies. While LIRR officials acknowledge that they have not effectively monitored vendor performance, they state that the new Procurement Logistics System should provide the means to ensure vendors' compliance with purchase order terms. We also encourage the LIRR to seek to recover damages, when appropriate, from vendors that default on delivery contracts.

Monitoring Vendor Performance

Our audit found that the LIRR's MMS contains information that could be useful in identifying vendors that do no comply with the terms of purchase orders, but that the MMS is not programmed to generate such information in a report that could be used for monitoring purposes. Therefore, the LIRR did not detect and act to correct unacceptable vendor performance, including deliveries that were late and contained improper item quantities.

For example, we analyzed the records for all 1993 purchase orders that required single deliveries. We found that, of 10,345 deliveries, 5,560 (53.7 percent) had been delivered late, as follows:

- 1,295 were fewer than 7 days late
- 2,756 were 7-30 days late
- 1,509 were 1-4 months or more late

We also examined the records related to deliveries of 50 judgmentally selected items deemed critical by the LIRR's two main operating departments. Our analysis determined that, for 164 deliveries, only 57 (35 percent) were on time. We found that, in six of these instances, nondeliveries resulted in stock-outs of critical items.

We also selected a sample of 25 items from the May 3, 1993, stock-out report of open purchase orders. Our analysis revealed that supplies of 14 of the 25 items (56 percent) had been depleted because of late vendor delivery.

LIRR operating department officials stated that poor vendor performance is resulting in stock-outs and other inefficiencies. For example, to keep some trains in passenger service, employees must repair them with parts removed from trains waiting for routine maintenance, a practice known as "cannibalization."

LIRR officials should ensure that the new Procurement Logistics System provides them with adequate information to monitor both the timeliness of deliveries and the quantity of the products received. With this information, the LIRR can identify and use reliable vendors, thereby ensuring that inventories are available for operating needs.

Damage and Default Clause

The LIRR's standard purchase order provides recourse when a vendor does not fulfill its requirements. The LIRR can declare a late-delivering vendor in default. This condition gives the LIRR the right to terminate the purchase order (in writing), to purchase the materials from another vendor, and to deduct any additional costs from payments to the original vendor. The termination clause of the purchase order also gives the LIRR the right to damages arising out of such a default. However, our audit found that, despite poor vendor performance, the LIRR was not invoking such damages.

For example, we tested to determine whether the LIRR had assessed damages against vendors of any of the 50 critical items noted earlier. We found that the LIRR had never assessed damages for late deliveries, even for those instances in which deliveries were two to six months late or had caused stock-outs.

Despite the pervasive pattern of late deliveries by LIRR vendors, we noted that the LIRR assessed monetary damages against a vendor for that reason just once in 1993, and terminated vendor contracts for late delivery or default for just 62 purchase orders.

Recommendations

10. Establish an adequate system for monitoring vendor performance.

11. Pursue damage claims against vendors who have defaulted on purchase orders.

Major Contributors to This Report

Robert Blot
David R. Hancox
Henry Kagan
Dominick Vanacore
Abe Markowitz
Santo Rendon
Mitch Schmeltzer
Sal D'Amato
Leota Bernard
David Maslansky
Marticia Madory
Nancy Varley

347 Madison Avenue
New York, NY 10017-3739
212 878-7000

Metropolitan Transportation Authority

May 23 1995

Mr. Henry Kagan
Audit Program Director
Office of the State Comptroller
270 Broadway - 19th Floor
New York, NY 10007

Re: LIRR - Selected Inventory Practices
Report No. 94-S-73

Dear Mr. Kagan:

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. Thomas F. Prendergast - LIRR, which address your report in detail.

The extension of time granted to respond was appreciated.

Sincerely,

E. Virgil Conway
Chairman

attachments

0006.doc

Appendix B

Jamaica Station
Jamaica, NY 11435-4380
718 990-7400

MTA Long Island Rail Road

May 15, 1995

Honorable E. Virgil Conway
Chairman - Designee
Metropolitan Transportation Authority
347 Madison Avenue
New York, New York 10017

Subject: **New York State Comptroller Draft Audit Report 94-S-72 Selected Inventory Practices**

Dear Virgil:

As requested by Mr. Robert Blot, Audit Director - Office of the State Comptroller, attached is our response to various aspects of the subject report, including the recommendations.

Also appended is the Long Island Rail Road Company's representation letter, as required.

Should you have any questions relative to our response, please contact me.

Sincerely,

Thomas F. Prendergast
President

Attachment

cc: N. DiMola - MTA
G. D. Sullivan
P. Swani
T. Waring

Office of the State Comptroller
Audit of Selected Inventory Practices
Report No. 94-S-73

LIRR has completed its review of the subject draft audit report, and offers the comments which follow:

By way of introduction, it should be noted that at the opening conference for this audit, held on January 6, 1994, LIRR staff made a presentation to the New York State Audit Team. That presentation pointed out a number of issues that we believed the audit would surface. In summary, the Railroad noted:

- Historical practice had not focused on reducing inventory, but on assuring sufficient stock for any need. As a consequence, the material management systems that were installed at various times, whether manual or automated, did not focus on minimizing inventory.

- With the changing economic climate of recent years, the Railroad recognized that historical practice had to change and it had begun to revise its practices and acquire new systems that would allow better planning and control of inventory, in addition to producing other savings.

- An audit begun at this time (i.e., early 1994) should confirm the weaknesses noted by the LIRR, find that the Railroad had initiated steps to correct those weaknesses, but also conclude that the process was not finished.

The LIRR acknowledges that the audit substantially confirms the points made by the Railroad at the opening conference. The draft report acts as a support mechanism in that it has confirmed problem areas previously identified and considered by the Railroad, and its recommendations essentially echo the various steps that the Railroad has undertaken to improve its material management processes. The draft report therefore confirms the essential soundness of the LIRR's analyses and resultant programs initiated to improve its inventory practices.

The management of material in an operation as complex as the LIRR is also a complex problem. In this regard, attachment A summarizes the major steps that LIRR has undertaken to address the need to improve control of material. Numerous other smaller efforts, such as improved reports on material status and regular interdepartmental meetings at various levels within the company, have also been undertaken in order to improve coordination and planning with respect to material.

The Railroad supports the recommendations contained in the draft report. However, we do have some concerns as to the wording and presentation of selected recommendations, rather than with the underlying intent of the recommendation itself. Accordingly, our responses to the recommendations follow.

Recommendation 1 **Establish comprehensive guidelines that instruct staff in determining the quantities of Category 1 items to purchase, and that require the documentation of requisition approval for Category 2 and 3 items.**

Base guidelines for use by Material Management Staff were issued in 1991. These were supplemented in January, 1995 to provide additional guidance, with the focus on increasing the frequency of delivery, with smaller quantities per delivery. In addition, LIRR Corporate Procedure, "E-10 - Procurement Planning," discusses some of the issues a requestor should consider when planning a project or before drafting a requisition. This was first issued in 1991, but was extensively revised in December 1994. The new Procurement/Logistics System will significantly improve the quality of the material forecasting and planning tools available to Material Management Staff. Finally, the linkage of Macola, Tenera and PLS (collectively, the New Systems) will aid the communication of material data between the users and procurement staff. The status of these projects is summarized in attachment A.

Recommendation 2 **Direct operating departments to request only those Category 3 items necessary to satisfy their near-term needs.**

Taken literally, this recommendation would increase the number of procurement transactions which would increase procurement costs and run counter to the need to reduce staff. The Railroad is working in the direction of improving long range material planning so that long-term needs can be reflected in long-term contracts with appropriate delivery schedules or release provisions. This approach reduces the number of procurement transactions, but provides for the frequent delivery function that we think the audit report is recommending.

Recommendation 3 **Establish a process of regular management review of purchasing decisions.**

LIRR believes that it is proceeding in the right direction with the New Systems which, collectively, improve the tools available to all staff who have a role to play in determining the quantity and schedule requirements for material. These Systems, the status of which is summarized in attachment A, greatly improve the Railroad's ability to plan, schedule and monitor usage. They also improve the quality of management reports compared to the existing process, thereby allowing for improved management review without adding staff or processing time.

Recommendation 4 **Use forecasted needs to determine inventory requirements.**

LIRR agrees with the need to improve material planning and forecasting methods. The tools to do this are being provided in the New Systems. While the LIRR is in substantial agreement with the intent of Recommendations 1 through 4, we feel that the draft audit report does not adequately address a key aspect of material management, material usage schedules, which are part of the Railroad's work Plan to improve control over material. As part of its review of inventory requirements, the LIRR plans for appropriate levels of inventory, utilizing material usage schedules (a time varying demand for an item based on planned programs). Material receipts are scheduled to meet the usage schedule, with some cushion, including inventory, built into the plan to allow for minor variations in implementation schedules, variations in vendor delivery dates, etc.

The difference between the planned usage and receipt schedules results in inventory if receipts occur prior to actual usage, or a stockout if the receipt occurs subsequent to the date the material is actually needed. The draft audit report should reflect this concept as does the LIRR's work effort.

The process re-engineering study of the procurement system is designed to look at the complete material cycle. It will encompass the material planning process employed by the major using departments, the procurement process (this Phase I part of the study is well advanced) and the material usage function, which measures actual material usage over time. The output of this latter process is then compared to the plan to generate a revised forecast to drive the next round of procurements.

The New Systems have the capability to manage the several phases of the material cycle. When fully implemented, these systems will provide, for the first time in the LIRR's history, the kinds of tools necessary to properly plan for material needs.

Recommendation 5 **Establish specific criteria that the operating departments can use in reducing surplus and potentially obsolete inventory.**

The accumulation of such material reflects past problems either in planning for the future material needed or in the way the project for which the need was identified actually evolved, (i.e., underusage of material). The New Systems provide the tools to improve this process so that once they are implemented, the accumulation of such material going forward will be reduced.

Obsolete material is material for which there will be no future use, i.e., the system for which the material is intended has been retired, or the item in question has been superseded. No criteria is required for such material. It should be disposed of.

All other material has a potential future use. The question to be answered is whether the quantity on hand is excessive for any reasonably foreseeable requirement. Among factors that are considered by the operating departments in answering this question are:

- Expected future use projections.
- Difficulty of replacing the item in the future (vendor availability, price, lead time).
- Criticality of the item to operations if a shortage were to develop.

We agree that disposition of surplus or obsolete material is a necessary and good business practice. However, in terms of improving the economic efficiency of the LIRR, the focus must be on strengthening the material planning process, as previously discussed.

Recommendation 6 **Place all pool inventory items, including work-in-progress, under the control of the Stores Department and include these items on the perpetual inventory system with MMS.**

At present, no system of record keeping exists by which a perpetual inventory of Work in Process (WIP) can be kept in the component shops. The Railroad agrees that a process for controlling WIP is necessary and has established a working committee, which includes members from Maintenance of Equipment, Internal Audit, Process Reengineering, Accounting and Procurement, to develop an acceptable system of control for WIP. The Railroad does not agree that WIP should be under the control of the Stores Department. Given the varying state of repair of certain components, WIP should remain under the control of the Maintenance of Equipment Department.

Recommendations 7, 8, 9

Identify items that operating departments consider appropriate for the QPL and take steps to list these items.

Review the QPLs maintained by other MTA agencies. Where appropriate, purchase items on the lists from these agencies.

Consult with Transit Authority officials regarding more economical and effective use of the Qualified Products List.

A key factor in making a determination to place an item on the QPL is the need for standardization. The fact that a sample of a product, or that incoming inspection of an item is required or that testing an item takes a long time, is not, in and of itself, sufficient basis to place an item on the QPL. The discussion of this subject in the draft audit report raises a number of legitimate issues, but for the most part skirts the need for standardization as a controlling criterion for putting an item on the QPL.

The draft report states that the process for putting an item on the QPL is costly and time-consuming. The Railroad's experience with the items on the list (now up to 93) is that the process is fairly straightforward. The report suggests to us that there may be uncertainty within the various departments as to what the process is. Therefore, we have scheduled meetings between the various using groups and the Procurement Department to review the concerns noted in the draft report and to identify additional candidates for inclusion on the QPL.

It must be noted that many items that could be considered candidates for inclusion in a QPL are spare parts. Such parts must be standardized so that the component into which they are incorporated functions properly. In the railroad industry, many such parts are only available from the original equipment manufacturers (OEM) of the component. LIRR has addressed the issue of how to obtain such parts by negotiating spare parts agreements with the major OEMs. Our longer-term objective is to have the supply of virtually all such parts covered under multi-year supply contracts with the respective OEMs.

Such arrangements obviate the need to put individual items on the QPL, assist our objective of consolidating contractual relationships with vendors and support a framework for negotiating favorable supply contracts with our vendors.

We agree that the balance of items for which there is a documented need for standardization should be on the QPL. The process has been ongoing. As noted, meetings will be held to clarify the process so that it functions smoothly.

LIRR will also review the QPLs of other agencies and will meet with the Transit Authority to review its QPL procedure. The Audit Report should note that there is a well-established effort in place to foster interagency cooperation in procurement matters. The procurement directors of the agencies meet regularly for this purpose and have established working committees to develop consolidated contracts for various supplies. MTA headquarters publishes a directory of agency contracts to facilitate this process.

Recommendation 10 **Establish an adequate system for monitoring vendor performance.**

The Railroad is in total agreement with the need to monitor vendor performance. As was explained to the audit team, this was one of the key concerns in specifying the new Procurement/Logistics System. Older systems currently in use either did not record the data to permit vendor evaluation or recorded it in such a way as to make it difficult to use.

Actions already undertaken by the Railroad in this area include:

- Greater use of the MTA All-Agency COPES system
- Expanding the role of the Quality Assurance Department with respect to making pre-award reviews of vendor and post-award reviews of production processes.
- Expansion of the non-conforming material procedure to a company wide procedure.
- Interim modification of the Material Management System (which will be replaced by PLS) to store multiple scheduled delivery dates.
- More aggressive use of Termination for Default provisions of its contracts.
- Membership in the New York Railcar Consortium.

Recommendation 11 **Pursue damage claims against vendors who have defaulted on purchase orders.**

We agree conceptually with this recommendation. However, since this generally results in legal proceedings against the vendor, the cost of the proceeding must be weighed on a case-by-case basis against the amount of damage sustained by the Railroad.

Attachment A
Major Projects to Improve Material Control

Task	**Status**	**Estimated or Actual Completion Date**	**Affected Audit Report Recommendations**
Installation of Macola system in M of E support shops. This system provides bills of material for components for maintenance and better forecasting and scheduling of material needs in relation to planned work	Installed in four out of six support shops. The four shops are approximately 95% complete. Installation in the remaining two shops is approximately 70% complete.	Expected completion date is January, 1996.	1, 3, 4, 5
Use of Tenera system in M of E Department. Tenera provides a tool to plan, schedule and monitor work done to maintain a system, in this case rolling stock. Linkage of the Tenera Work Order system to Macola and the new Procurement/Logistics System will significantly improve the LIRR's ability to control material. Tenera is being implemented jointly with NYCTA's Car Equipment Division.	Contract awarded in November, 1994. Service date System specifications for customization requirements being completed.	Expected in service date for the first support shop is November, 1995. Subsequent support shops will come on-line at 90 day intervals until all support shops are on line by the first quarter of 1997.	1, 3, 4, 5

Task	**Status**	**Estimated or Actual Completion Date**	**Affected Audit Report Recommendations**
The existing Material Management System, non-stock tracker, and Cullinet based contract management system, all of which are incompatible with one another, are being replaced with a new integrated Procurement/Logistics System for the Procurement & Materials Management Department. This will include improved material planning and forecasting capabilities.	Contract awarded in August, 1994 . Uncustomized system installed and accepted in March, 1995. Specifications for customization requirements being completed.	Completed system to be on line and in service in P&MM by December 31, 1995. Implementation in using departments to be placed in service in 1996.	1, 2, 3, 4, 5, 10
The procedure for identifying non-conforming material and services was completely revised, expanded and converted from an MofE Department procedure to a company wide procedure.	Completed	New procedure issued in January, 1995.	10,11
New corporate procedure for material management guidelines is being developed. This will clarify the inter-departmental relationships involved in establishing material schedules.	In drafting stage.	Year end 1995	4, 5

Task	Status	Estimated or Actual Completion Date	Affected Audit Report Recommendations
A process re-engineering project has been established for the material cycle. It is divided into two phases. Phase I is looking at the portion of the process starting with requisition generation through material delivery and invoice processing. Phase II will look at the material/planning scheduling process and material usage process.	Phase I "is" conditions mapped. Disconnects identified; recommendations for "should be" being developed. Phase II will follow immediately after completion of Phase I.	Expected completion by third quarter, 1995	10
Application of Tenera to the Engineering Dept.	Funding for 1995 implementation is not available. On hold pending resolution of budget issues.	Not available. To be resubmitted for funding as part of 1996 budget process	1, 3, 4, 5

Task	Status	Estimated or Actual Completion Date	Affected Audit Report Recommendations
Expand use of blanket orders for regularly used materials and services. The objective is to separate the procurement functions of vendor selection, pricing and establishment of contract terms from the "ordering" function so that when a specific need is established, a release against the preestablished blanket can be made quickly.	Ongoing. From the establishment of the program in 1990, the program has grown to 525 such orders in place at the end of 1994.	Ongoing	2, 7
Control Work in Process (WIP)	Working committee established to develop acceptable control procedures	Year end 1995	6