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STATE COMPTROLLER



STATE OF NEW YORK
OFFICE OF THE STATE COMPTROLLER

A.E. SMITH STATE OFFICE BUILDING
ALBANY, NEW YORK 12236

July 8, 1996

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

Re: Report 96-F-12

Dear Mr. Prendergast:

Pursuant to the State Comptroller's authority as set forth in Article X, Section 5, of the State Constitution, we have reviewed the actions taken by officials of the Long Island Rail Road Company, as of April 30, 1996, to implement the recommendations contained in our prior Audit Report 93-S-94. This report, which was issued on January 5, 1995, examined the Long Island Rail Road Company's Automated Warehouse Systems at the Holban/Hillside Maintenance Complex.

Background

The Long Island Rail Road Company (LIRR) is a wholly-owned subsidiary of the Metropolitan Transportation Authority. The LIRR operates a rail system originating from Penn Station in Manhattan and Flatbush Avenue in Brooklyn and traveling to various points in Queens, Nassau and Suffolk counties. In 1995, the LIRR's 1,100 railroad cars carried approximately 73.6 million passengers; the LIRR employed a staff of about 6,000, had revenues of \$320 million, and incurred expenses of \$676 million. The loss of \$356 million was funded by Federal and State subsidies, Triborough Bridge and Tunnel Authority surpluses, and special taxes authorized by the State Legislature.

The LIRR officially opened the Holban/Hillside Maintenance Complex (Complex) in July 1991. The Complex was built at a cost of \$380 million, more than twice the original estimate, and was completed years after the originally-planned completion date. The Complex was expected to increase worker productivity through better lighting, equipment, technology and storage facilities, as well as the introduction of robotics. The Complex uses its Stores Department to store, issue and deliver parts to maintenance and repair shops. To establish security and accountability over the parts inventory and improve worker productivity, the Stores Department is using two computer systems: a Warehouse Control System and an automated Guided Vehicle Control System. Both systems reside on two interfacing Stratus computers.

Summary Conclusions

During our prior audit, we found that the LIRR had only recently adopted written procedures that detailed the requirements of an ongoing needs analysis and capacity study. Because the procedures were not in place at the time of purchase, the LIRR bought computer systems that are not being fully utilized, do not meet the LIRR's capacity needs, and cannot perform critical internal control functions. We also found the systems did not deliver the quality of service that was expected. For example, the audit trail produced was inadequate; back orders were not processed automatically; and integration of data was not seamless. Stores often did not respond to requests on the same day. The LIRR did not provide adequate security over inventory that is transported by the robots, making materials subject to theft and controls over user access very weak. There was no disaster recovery plan, and transactions were not backed up adequately on a daily basis.

In our follow-up review, we found that the LIRR has addressed many of the recommendations. The LIRR has reduced system maintenance costs significantly, is delivering inventory items to end users on a more timely basis, has found a reliable source of parts for the robots, deletes system access on a timely basis and has instituted tape back-up.

Summary of Status of Prior Audit Recommendations

The LIRR has fully implemented 8, has partially implemented 3 and has not implemented 3 of the 14 recommendations in our prior audit.

Follow-up Observations

Recommendation 1

Perform adequate planning and capacity studies before purchasing computer systems and related software.

Status - Partially Implemented

Agency Action - LIRR officials stated that planning sessions were held with IBM and STRATUS (the two suppliers of computer hardware) before the current hardware was ordered and installed. The Automated Warehouse Control System is currently operating as intended. LIRR officials were able to produce a report of the capacity study, but could not document the meetings that they said were held to develop the study or establish that the items purchased were sufficient to meet its needs.

Recommendation 2

Implement the following functions and enhancements as discussed in this report:

- *develop adequate transaction reports, including a daily transaction register, and reports showing transactions performed and transferred to the MMS;*
- *design an audit trail with sufficient transaction detail to permit the tracing of transactions and reconciliation of discrepancies;*

- *enable shop users to confirm quantities required from stores;*
- *design an on-line history file that covers a meaningful length of time; and*
- *provide for an automatic back-order serving system.*

Status - Partially Implemented

Agency Action - The LIRR has implemented a Materials Management System and a History/Audit Trail Subsystem. These systems respond to most of our recommendations. However, the LIRR has not enabled shop users to confirm the quantities they received from the Stores Department. LIRR officials indicate this is a low priority and is not a cost-effective measure.

Auditors' Comments - In their response to the original audit, LIRR officials stated its automated systems would include an enhancement to allow users to confirm quantities received from Stores. We believe this should still be a priority and should be implemented.

Recommendation 3

Monitor, and to the extent practical, initiate actions to minimize system maintenance costs.

Status - Fully Implemented

Agency Action - The LIRR has implemented a computerized preventive maintenance program for the Warehouse Control System equipment that provides better monitoring capabilities and equipment histories. The program is designed to minimize/prevent major equipment failures that can cause extended downtime. In addition, failures are anticipated through trend analyses of daily error reports provided by the Stores Department. The LIRR also reduced the cost of software maintenance and support by having in-house Information Services staff assume this responsibility. Total expenses for contracted software support for 1994 were \$17,240 as compared to \$140,800 for 1993 and \$257,000 for 1992.

Recommendation 4

Determine why inventory items are often not delivered to end users on a more timely basis, and take appropriate corrective action.

Status - Fully Implemented

Agency Action - After the audit, the Stores Department consolidated daily pick-ups. As a result more items are sent to fewer locations, maximizing the Automatic Guided Vehicle's load count. This allows each shop to order material and receive it on a more timely basis. Shops are also making pick-ups from the Warehouse Control System on a daily basis, resulting in a one-day turnaround delivery. The Stores Department now controls approximately 75 percent of pool inventory stock in a storeroom environment on the shop floor, thus making material available to mechanics and/or users on request.

Recommendation 5

Find reliable sources of repair parts for the robots, and maintain adequate inventory levels of those parts so that the downtime rates for robots can be reduced.

Status - Fully Implemented

Agency Action - Finding reliable sources of repair parts for the Warehouse Control System has been an ongoing activity since the warranty period ended. Effective inventory levels are being established based on actual usage to date and on projected usage of replaceable parts, and parts are being added to inventory based on this experience. When practical, maintenance costs are expected to be reduced through in-house repairs. In addition, officials showed us a copy of an agreement they recently made with a parts supplier.

Recommendation 6

Provide physical security and password protection for both of the microcomputers used to produce user access cards.

Status - Fully Implemented

Agency Action - Physical security and password protection have been provided for the one computer currently used for this application. This was confirmed by physical observation.

Recommendation 7

Assign the application security administrators' duties to an independent security group, and limit security screen access to designated security administrators.

Status - Not Implemented

Agency Action - The LIRR disagrees with this recommendation. Two independent groups are currently involved in the security administration of this application. The LIRR data security group provides log-on and password administration at a systems level, but does not grant a user automatic access to the Warehouse Control System. The Maintenance of Equipment/Stores Security Administrators provide that access, as required. However, actual access cannot be achieved without the coordination between the two groups.

Auditors' Comments - Our concern is that the Maintenance of Equipment/Stores Security

Administrators are also user supervisors. This inadequate separation of duties weakens the internal controls provided by the security administrator of this application.

Recommendation 8

Delete access capabilities on a timely basis, and collect access cards of employees upon transfer or termination. Make periodic comparisons of user names on the security file printout with names on the current staff roster.

Status - Fully Implemented

Agency Action - The Stores Department Security Administrator currently deletes system access for any employee who is transferred or terminated; and forwards all appropriate paperwork to the LIRR Jamaica Administrator, advising him to take the employee's name off the security screen. The Traffic Controller periodically reviews staff rosters to confirm that the update was effected, and the Security Administrator in the Mechanical Department sets up reports on a quarterly basis to purge the system of any invalid users.

Recommendation 9

Grant employees access to only computer functions that are necessary for the performance of their assigned duties.

Status - Not Implemented

Agency Action - The LIRR disagrees with this recommendation. Stores Department employees are performing the same mix of functions they did before the automated Warehouse Control System was implemented. Dividing these functions would reduce current flexibility and productivity.

Auditors' Comments - We believe that the mix of functions performed by Stores Department employees does not provide an adequate separation of duties.

Recommendation 10

Utilize formal written authorizations for user access.

Status - Fully Implemented

Agency Action - All required paperwork is prepared by the Stores Department Security Administrator and forwarded to the main Security Administrator located in Jamaica.

Recommendation 11

Ensure daily tape backup of Warehouse Control System and Material Management System transactions.

Status - Fully Implemented

Agency Action - The LIRR installed a tape back-up system in March 1996.

Recommendation 12

Adopt and periodically test a disaster recovery plan that includes designation of an alternate site for both systems.

Status - Partially Implemented

Agency Action - The procurement process for piggybacking an MTA contract for recovery services with a nationally known company has just been initiated. Thus, it has not been able to periodically test the system. Railroad officials indicated that they plan to test the disaster recovery system during the summer of 1996.

Recommendation 13

Ensure reliability and integrity of Warehouse Control System and Material Management System data by integrating the systems properly to provide real-time data updates.

Status - Not Implemented

Agency Action - The LIRR concurs with this recommendation, and has planned system integration as part of the new Procurement and Logistics System implementation.

Recommendation 14

Ensure that the daily reconciliations between the systems are documented and approved by Stores management.

Status - Fully Implemented

Agency Action - On a daily basis, an exception report is reconciled by a Stores Department management employee and the appropriate backup documentation is maintained.

We would appreciate your response to this report within 30 days, indicating any action planned or taken to address the unresolved matters discussed in this report.

We also thank the management and staff of the LIRR for the courtesies and cooperation extended to our staff during this review.

Very truly yours,

Robert H. Attmore
Deputy Comptroller

cc: Patricia A. Woodworth