

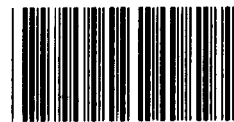
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REPORT BY THE U.S.

General Accounting Office

Control Improvements Needed In Accounting For Treasury Securities At The Federal Reserve Bank Of New York

The Federal Reserve Bank of New York acts as the Treasury Department's fiscal agent in selling and redeeming Treasury securities. This report discusses the need to improve various internal controls in the systems used by the bank to account for the securities transactions. In response to GAO's recommendations and other initiatives, the bank has made or plans to make various control improvements. To ensure that the necessary actions are taken, the report contains recommendations to the Chairman of the Federal Reserve Board and the Secretary of the Treasury.



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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

ACCOUNTING AND FINANCIAL
MANAGEMENT DIVISION

B-211646

The Honorable Donald T. Regan
Secretary of the Treasury

The Honorable Paul A. Volcker
Chairman, Board of Governors
Federal Reserve System

This report summarizes the results of our internal control review of the Federal Reserve Bank of New York's (FRBNY) accounting systems for Treasury securities. We found weaknesses in both automated and manual controls that make the systems vulnerable to errors and abuse. Some of these weaknesses can lead either to overpayments or underpayments when securities mature. These incorrect payments occur when a security is redeemed for more or less than the amount actually due the recipient. The 15 incorrect payments totaling \$2.7 million that were identified are not material compared with the overall transaction volume. Inadequate records prevented us from verifying that only these incorrect payments occurred. Further, FRBNY had not isolated the cause of these incorrect payments so it could take appropriate corrective action.

FRBNY has extensive controls in place to identify errors and abuse. Although we found no evidence of abuse, we believe additional emphasis should be placed on preventive controls. Our review disclosed that:

- FRBNY did not require individual operator passwords to access one automated system, and the passwords required for access through other types of terminals were not adequately safeguarded. In addition to the possibility of unauthorized access, it was difficult to determine who processed a given transaction.
- Procedures for verifying data input accuracy were not always followed and need improvement. Some employees verified their own input because of inadequate separation of duties. As a result, no assurance existed that verification took place and all transactions were properly processed.

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- Errors detected during the data input phase were not always adequately controlled to ensure they were corrected and re-entered promptly.
- No documentation was available for the automated system which contains the master file of securities account balances. Poor documentation can result in system problems going undetected.
- When securities account balances were reconciled to prove their accuracy, FRBNY did not always properly document either how any differences were resolved or that any related adjustments to the account balances were accurate.
- FRBNY did not always detect inaccurate information generated by an automated system and, as a result, erroneous payments occurred when the securities were redeemed.

Our findings are given in detail in appendix I.

Our review's objective was to evaluate internal controls over FRBNY's manual and automated systems that handle most Treasury securities, called book-entry securities because a purchaser receives a receipt rather than an engraved certificate. Ownership is recorded in accounts established at the Treasury or at the Federal Reserve banks.

We did not review the controls over transactions involving foreign institutions and the Federal Reserve open-market account, which represented about 34 percent of the Treasury securities issued by FRBNY during the first quarter of calendar year 1983. Additional time has been required to arrange the necessary access to those transactions, where added precautions are taken to avoid improper disclosure of the foreign parties involved and the nature of the open-market activities. Processing procedures for foreign transactions, which we are now reviewing, will be covered in a separate report.

After our review, we met with FRBNY officials and discussed our audit findings and recommendations. FRBNY officials said that while some controls were not as strong as they could be, overall controls were adequate. Nonetheless, they generally agreed with our findings and subsequently advised us of the following actions:

1. Beginning in the first quarter of 1984, individual operator passwords are to be used at FRBNY to gain access to the securities systems through FRBNY's Direct Access Remote Terminals (DARTs).
2. The securities master file system for which there was no documentation will be replaced beginning in mid-1984, and complete documentation will be developed for the new system.

3. The system found to have generated inaccurate information has been replaced.

We did not verify these changes because they were made or were to be made after our review was completed.

RECOMMENDATIONS TO THE CHAIRMAN, FEDERAL RESERVE BOARD

To ensure that the necessary control improvements are made, we recommend that the Chairman of the Federal Reserve Board require FRBNY to:

- Restrict access to the automated systems through terminals with properly safeguarded passwords.
- Strengthen other controls over data input by ensuring key verification of input, separation of keying and verifying duties among employees, and monitoring of error correction activities.
- Develop documentation for the automated system which contains the master file of securities account balances. The extent of documentation needed will be minimal if the planned replacement system is implemented as scheduled.
- Fully document all changes to the manual reconciliation of account balances to ensure that all transactions are properly executed and resulting account adjustments are appropriate.
- Determine the causes of inaccurate information and related incorrect payments to prevent their recurrence.

RECOMMENDATION TO THE SECRETARY, DEPARTMENT OF THE TREASURY

Because FRBNY acts as Treasury's fiscal agent in selling securities and controlling subsequent transactions, we recommend that the Secretary of the Treasury verify that these corrective actions are fully implemented.

AGENCY COMMENTS

In commenting on this report, the Federal Reserve Board (app. IV) stated that the majority of our review was conducted during a transitional period in which FRBNY was upgrading its data processing capabilities, and that the automated systems now or will include many of the controls suggested in the review. The Board also generally concurred with our recommendations and believed that planned and completed actions will further strengthen FRBNY's internal controls. Specifically, in response to our recommendations, the Board stated:

- FRBNY intends to implement, in 1984, individual operator passwords for the direct access system within the bank.

--Currently, all input transactions into the Securities Trading System require key verification, and procedures have been reinforced to ensure separate keying and verifying.

--FRBNY recognized the desirability of complete documentation and will devote resources to see that the replacement system, which is scheduled for 1984, is properly documented.

--The Securities Clearance Division has begun to reinforce its procedures for documenting all account adjustments.

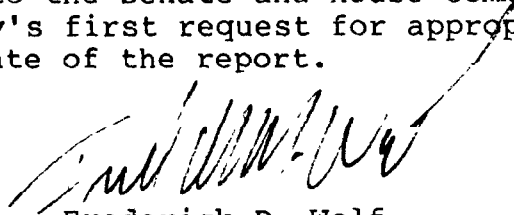
--The low incidence of undetected errors indicated that the Bank's controls generally have been effective, but a new replacement system checks every unique message identifier to determine if there is a duplicate transaction.

We believe the actions taken and planned will strengthen FRBNY's controls applicable to accounting for Treasury securities.

The Treasury Department stated (app. V) that it appeared FRBNY had placed a reasonably high priority on providing sufficient internal controls over Treasury securities systems but that Treasury would work with FRBNY to verify appropriate corrective actions are taken in response to our recommendations.

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As you know, 31 U.S.C. 720 requires the head of a federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days of the date of this letter. The Secretary of the Treasury is also required to send the statement to the Senate and House Committees on Appropriations with the agency's first request for appropriations made over 60 days after the date of the report.



Frederick D. Wolf
Director

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INTERNAL CONTROLS OVER FRBNY'S SYSTEMS USED
FOR TREASURY SECURITIES NEED TO BE IMPROVED

BACKGROUND

The Treasury Department sells securities--bonds, notes, and bills--to finance the public debt. Treasury notes and bonds mature in more than 1 year. They can be issued either as a document, such as an engraved certificate, or in book-entry form where purchasers receive an account statement rather than a certificate. Treasury bills mature in a year or less and are sold for a minimum of \$10,000 only in book-entry form.

The Federal Reserve banks, the Treasury's fiscal agents, provide services to Treasury including selling the securities, remitting the payments to Treasury, maintaining accounts for banks, processing telegraphic transfers of securities, and redeeming matured securities.

Commercial banks and securities dealers also sell the securities, and use the Federal Reserve banks as intermediaries to trade securities in the secondary market. Accounts for individuals who purchase book-entry securities are kept in commercial banks or the Treasury Department's Bureau of the Public Debt in Washington, D.C. The Federal Reserve banks maintain in summary form the accounts for bank purchases of Treasury securities, including securities dealers' accounts. This report focuses on the accounts held by FRBNY.

Federal Reserve banks give daily reports to Treasury on the value of transactions affecting each Treasury issue they hold. Treasury must ensure that the total value of each issue in these reports does not exceed what was originally issued or ultimately redeemed. When Treasury finds differences with the Federal Reserve banks, Treasury requests that the bank research the difference and make any necessary adjustments.

FRBNY has, by far, the largest Treasury security activity of any Federal Reserve bank--about 80 percent of all Treasury securities issued during the first quarter of calendar year 1983. Appendix III shows the distribution of the dollar value of Treasury securities among the Federal Reserve banks and Treasury for that period.

Description of automated systems at FRBNY

Four automated systems process Treasury securities transactions at FRBNY. We were told that the Safekeeping System, which was established in the late 1960's, maintains a daily inventory of all securities by account and issue and receives daily updates from three other systems that process transactions--Sigma, IV Phase, and the Securities Trading System. The average daily balance in the Safekeeping System exceeds \$574 billion, with daily transactions affecting these accounts averaging over \$17 billion.

Sigma, an automated system, provided 44 financial institutions in the FRBNY district with direct, or on-line, access to their book-entry account balances and allowed them to transfer securities. The link to Sigma was through the bank's computer system or specially designed terminals. Account balances were updated as transactions took place and daily account balances were kept for these on-line banks. Sigma processed an average of over 19,000 transactions a day.

At the time of our review, FRBNY planned to replace Sigma with a new system because the projected volume of transactions would have allowed Sigma to provide only marginal service in 1983. According to draft documents, the new system is primarily intended to allow greater volume and speed of processing book-entry transactions. In discussing our draft report, FRBNY officials said that the system has been fully implemented.

FRBNY uses the Securities Trading System and the IV Phase System to input for processing transactions primarily for accounts not directly linked to Sigma, known as off-line accounts. FRBNY inputs the transactions for these accounts, processing daily more than 550 transactions on the Securities Trading System and less than 100 transactions on the IV Phase System.

FRBNY SHOULD IMPROVE DATA INPUT CONTROLS

Because of weaknesses in controlling data input, we believe FRBNY could not always ensure the accuracy of transactions or account balances. Incorrect account balances can result either in overpayments or underpayments to banks when securities mature.

FRBNY needs to control data input to ensure the accuracy, completeness, and timeliness of data during conversion into machine-readable form and entry into the system. The primary means of control include passwords to restrict access to the system, verification of data input accuracy, separation of key duties among individuals who control data input, and documentation of input errors and corrections. We found weaknesses in each of the following areas during our review:

- Individual operator passwords on one type of terminal were not being used to access one system even though this capability was available, and passwords were not adequately safeguarded where they were required.
- Procedures to verify input did not ensure proper processing of transactions.
- Some employees verified their own input because of inadequate separation of duties.
- Controls for monitoring all error corrections were inadequate.

FRBNY has extensive controls in place to help identify errors and abuse including reports to banks on their account activity and reconciliations to verify overall account balances. These controls, however, are primarily designed to detect errors after they occur rather than prevent them. Although FRBNY has some preventive controls, we believe additional controls should be instituted to prevent erroneous data from entering the systems.

FRBNY officials acknowledged the need for improvement of some controls over data input, but felt that, overall, controls were adequate to prevent errors and abuse. Nonetheless, FRBNY officials said they generally agreed with our audit findings and would take corrective action where necessary.

Password controls were weak

In general, passwords are unique codes the machine can read. They are assigned to authorized individuals and must be used to activate terminals and gain access to computer systems. To properly control access to a system, passwords should be confidential and changed periodically. Passwords not only restrict access to system terminals, but also create audit trails so it is possible to determine such information as who initiated a transaction and the terminal that was used.

At FRBNY, individual operator passwords were not required on the DARTs used by FRBNY and some on-line banks to input transactions. Further, passwords used on other terminals were not properly safeguarded, and FRBNY did not adequately document the procedures for changing and safeguarding those passwords. Without adequate password controls, unauthorized persons can gain access to accounts, with little chance of detecting who is responsible.

Individual operator passwords are not required for transactions processed on DARTs

FRBNY, as well as 33 on-line banks, use DARTs to process transactions involving Treasury securities. FRBNY has generally restricted its use of the DARTs to inputting transaction correction data.

Bank officials said that their data processing system uses a security package which they believe provides adequate protection against unauthorized use. The system does not, however, automatically record which employee entered the transaction or how long an employee worked on a DART. FRBNY officials said that the security package is capable of designating and controlling access to the system by assigning individual operator passwords, but this feature was not used for DARTs. We asked FRBNY to comment on our draft report that recommended the use of individual passwords. Then we met with bank officials who agreed to study our recommendation. Shortly thereafter, they provided us with documents stating that individual operator passwords would be implemented on DARTs at FRBNY beginning in the first quarter of 1984.

DARTs at FRBNY are in a secure area protected by magnetic card access, and only designated personnel are permitted to use DARTs. However, most employees in the area know how to operate the DARTs which are kept on throughout the day. Since no individual operator passwords are required, the likelihood increases that someone can process an unauthorized transaction. In fact, a FRBNY internal audit report, dated October 25, 1982, noted that the lack of individually assigned passwords for DART operators caused control difficulties.

FRBNY officials stated that DARTs will be replaced in 1985 or 1986, and that in the interim, FRBNY is attempting to process fewer transactions on the DARTs. However, FRBNY still must process corrections and late transactions on DARTs, and FRBNY requires on-line banks to use DARTs.

Passwords were not properly protected

FRBNY also uses IV Phase and Securities Trading System terminals to process foreign bank and off-line bank transactions. To gain access to a system through a IV Phase Terminal, the operator types in a code that is the operator's three initials. Therefore, the codes are easily identified and can be misused by other operators.

To use Securities Trading System terminals, operators insert individual passwords to process transactions. In one operating area, a supervisor said that clerks had access to all passwords. Without password confidentiality, FRBNY could not readily identify with certainty who processed a transaction. This increased the opportunity for someone to process invalid or improper transactions. After our review, FRBNY officials advised us that each operator now has confidential passwords to process transactions through the Securities Trading System terminals.

Verification procedures do not ensure proper transaction processing

To ensure correct data processing, certain validation and editing techniques, such as key verification, are necessary. Key verification requires someone other than the person who originally keyed in the transaction to read the same source document and to key the data into another terminal. The automated system compares the original data input with the second keying, and notes any differences. Using this procedure, a transaction generally cannot be processed until proper verification is completed.

FRBNY uses sight rather than key verification to process transactions on DARTs and IV Phase and Securities Trading Systems terminals. With sight verification, a second person visually checks on a display screen the data the first operator originally keyed in. However, sight verification does not ensure that a transaction is verified because the verifier can process the transaction without visual review of the data merely by pressing a

keyboard key. On the other hand, key verification minimizes errors by ensuring that the operators keyed in identical data.

Because DARTs do not use key verification, FRBNY required the individuals who keyed, verified, and checked a transaction to initial the source document. However, we found this procedure was not followed. Of the 156 transactions processed on DARTs during October 1982 which should have adhered to the manual procedure, only 7 transactions indicated who keyed, verified, and checked them.

This means FRBNY cannot determine who keyed or verified a transaction, whether the same individual keyed and verified the same transaction, or if the transaction was ever verified. FRBNY internal auditors had also reported that the procedures allowed the same operator to prepare, verify, and transmit a security transfer on DARTs. In commenting on our draft report, the Board acknowledged that FRBNY had been previously advised of the verification problems and that the failure of operating personnel to initial source documents represented a lapse in established procedures rather than a lack of stated controls.

Although both Securities Trading System and IV Phase terminals permit key verification, FRBNY sight verified securities transactions processed on these terminals. A Securities Trading System document stated that sight verification should only be used when severe backlogs develop. However, a supervisor said that even when no backlogs existed, operators used sight verification because it was faster. This meant FRBNY had not followed its own recommended procedures for the Securities Trading System.

We believe key verification could prevent some errors that FRBNY would not always discover without notification from the bank involved. For example, a FRBNY official said that if FRBNY originally keyed in the incorrect account number or amount, FRBNY would not necessarily detect the error providing a sufficient amount of securities was in the account to cover the transaction. It would be up to the bank involved in an error to notify FRBNY, but sometimes banks did not tell FRBNY about overpayments or underpayments. (See p. 9.)

Separation of duties not ensured

To minimize errors and prevent abuse, FRBNY should separate duties so that one employee's work acts as a check on work of another employee and no employee can control the handling and recording of a transaction from beginning to end. However, this procedure was not always followed. In one section, clerks both keyed and verified transactions, although the supervisor said that a clerk is not allowed to do those two functions on the same transaction. As noted previously, FRBNY could not always be sure that different clerks keyed and verified the same transaction because of inadequate password and verification procedures.

Another section also did not adequately separate duties. In processing payments to off-line banks (those not having direct

links to FRBNY's systems) for matured securities, one clerk enters the payments, verifies the data, and reconciles the final output listing to source documents. This increases the opportunity for someone to enter erroneous data which may lead to incorrect payments to banks. FRBNY officials agreed that different personnel should key, verify, and check the amounts paid to off-line banks to avoid improper payments. In addition, the Board's written comments on our draft report state that FRBNY has reinforced its procedures for ensuring separate keying and verifying.

Error correction procedures need improvement

If erroneous transactions are detected when the data is entered, they should be handled in a way to ensure that corrections will be made and the transactions reentered quickly. The system should automatically enter rejected transactions into a suspense file and annotate the transactions with the error time and date and the identity of the individual who entered the transaction. Suspense files assist in monitoring the status of rejected data and allow periodic analysis of error causes and disposition. Supervisors should review and approve corrected transactions before they are reentered. For errors involving interdistrict transactions, the FRBNY did not always follow these procedures. As a result, we could not assure ourselves that all rejected transactions were properly corrected and reentered.

At times, FRBNY receives and corrects transactions with errors from banks outside the New York district. Such transactions, which appear on a terminal in FRBNY's clearing section, are examined by a clerk who determines the nature of the error. The corrected transaction then is reentered on a DART and sent to the receiving party. The DART provides a printout of the corrected transaction. The clerk attaches the original transaction to the corrected transaction and files them in an envelope. However, these procedures do not ensure the proper correction of errors. For example, FRBNY received a transaction with an error on October 1, 1982. FRBNY corrected the error but input the corrected transaction twice. FRBNY did not remove the duplicate transaction until December 27, 1982, only 3 days prior to the Treasury bill's maturity.

We also found no evidence that a supervisor reviewed or approved all corrections. For October 1982 and January and February 1983 corrections, only 11 out of 301 transactions were marked to indicate supervisory review or approval. The need for corrections included problems with account numbers, names, or amounts, as well as simple spacing or punctuation errors in the input message.

Weaknesses in error control and correction increase the risk of erroneous data updating the account balances and causing inaccurate reports and payments. FRBNY should develop stronger controls over processing errors, including documenting supervisory review, to ensure that all errors are quickly corrected. According to the Board's comments on our draft report, FRBNY was previously aware of deviations from the established error-detection procedures and has since implemented improved error-correction practices.

SYSTEM DOCUMENTATION SHOULD BE IMPROVED

An automated system's documentation describes its operations and is essential to proper system use. It should explain how complex sequences of automated tasks are executed, and provide insight into the correct interpretation of system reports. Good documentation increases the ease and accuracy of system maintenance and provides the basis for evaluating the system's internal controls.

FRBNY officials told us that the Safekeeping System, which provides FRBNY's master account file, did not have the following documentation:

- functional requirements specifying user needs and objectives which provide the basis of mutual understanding between users and designers of the system,
- data requirements which provide a data description and technical information about data collection requirements for processing in the system, and
- detailed specifications for all programs in the system.

The only documentation we could obtain was a general system description. In an October 17, 1980, audit report, FRBNY internal auditors recommended that full system documentation be developed, but no action was taken. A FRBNY official said the reason for the poor documentation is that the Safekeeping System was developed in the late 1960's, prior to implementation of FRBNY's system development life cycle approach, which specifies the documents required during a system's development.

Without adequate documentation, system revisions are made more difficult and increase the risk of data processing problems. Errors in the Safekeeping System could lead to improper payments. Appropriate documentation can help to overcome these deficiencies. Subsequent to our review, FRBNY provided information indicating that the Safekeeping System will be replaced starting in mid-1984 and that documentation will be developed for the new system.

RECONCILIATION OF ACCOUNT
BALANCES NEEDS STRENGTHENING

One of FRBNY's more important controls for detecting errors in processing securities transactions is a daily reconciliation that is performed to verify the accuracy of the Safekeeping System's overall balance. However, the reconciliations were not always fully documented as required by FRBNY operating procedures and, as a result, there was a lack of an audit trail explaining how differences were resolved. An audit trail enables the path of a transaction to be traced to ensure proper processing.

Reconciliation is a good control mechanism because it shows differences which may indicate that Safekeeping account balances

are incorrect. When differences exist, FRBNY should adjust the appropriate accounts to reflect the correct balances. The importance of making accurate and well-documented adjustments is critical because FRBNY pays banks based on the system's balances.

Just as important is an audit trail to show how the reconciliation is executed. Audit trails not only help auditors, but also provide managers with a useful control to ensure proper processing procedures are followed. The audit trail for differences between the reconciliation and the Safekeeping System should relate directly to authorized adjustments to account balances.

We reviewed reconciliations for the Safekeeping System for selected days in May and October 1982 and February 1983. Differences existed for 21 out of the 27 days we reviewed. These differences amounted to almost \$6.9 billion, ranging from \$20,000 to \$2.5 billion.

Our examination showed that audit trails for these differences were inadequately documented and difficult to follow. Even FRBNY personnel had difficulty explaining differences. The following examples illustrate these weaknesses.

--On May 26, 1982, the reconciliation showed a \$370,000 difference with Safekeeping. However, the adjustments corresponding to that date totaled \$3.4 million. Similarly, on May 14, 1982, the difference was over \$1.8 million while the net adjustments for the day totaled only \$500,000. A FRBNY official said that this happens because some adjustments are made for purposes not related to the reconciliation process. FRBNY took more than 4 months to adequately explain these two differences.

--On October 8, 1982, the Safekeeping balance exceeded the reconciliation balance by about \$5 million. We received various explanations regarding how this was resolved. About 2 months later, a supervisor provided us with documents explaining what happened.

Given the weaknesses in the automated environment, the reconciliation is an extremely important control feature. However, the lack of audit trails made it difficult to determine whether the reconciliations and related adjustments were properly executed.

In its written comments, the Board stated that FRBNY has already begun reinforcing procedures for documenting account adjustments by requiring more detailed explanations of adjustments to the Safekeeping records' daily proof.

FRBNY DID NOT ALWAYS DETECT ERRONEOUS PAYMENTS TO BANKS

In some instances, FRBNY made incorrect payments to banks at maturity. FRBNY generally did not know of the errors until it was notified by Treasury. To identify transactions which can result

in incorrect payments, FRBNY relies on certain detective controls. For example, FRBNY reconciles daily with other Federal Reserve banks' transactions sent to FRBNY. Also, FRBNY sends daily detailed transaction statements to its on-line banks which should notify FRBNY of any erroneous transactions. Finally, FRBNY relies on Treasury to notify it if the FRBNY account is not in balance. Our review disclosed that these controls were not always effective because FRBNY's reconciliation with other Federal Reserve banks did not detect all improper transactions, banks sometimes failed to notify FRBNY of erroneous payments, and Treasury did not quickly report out-of-balance conditions.

FRBNY records for January 1981 through March 1983 disclosed 15 erroneous maturity payments totaling \$2.7 million. FRBNY overpaid banks about \$2 million in 10 instances, and underpaid banks \$675,000 in 5 instances. FRBNY was unaware of 12 of the 15 incorrect payments until it received Treasury notification of an out-of-balance condition. In some instances, Treasury did not notify FRBNY until nearly 3 months after the transaction date. Also, in 13 of the 15 cases, the banks which received incorrect payments did not notify FRBNY. We could not determine why the banks failed to notify FRBNY of the errors. Although the number of identified errors was not material in relation to FRBNY's transaction volume, FRBNY's inadequate recordkeeping for erroneous transactions prevented us from verifying that these were the only errors that occurred.

The incorrect payments resulted from automated system or manual problems. In the case of automated system problems, Sigma sometimes duplicated or lost transactions. Duplicate transactions occur when FRBNY receives a transaction twice from another Federal Reserve bank. Lost transactions occur when FRBNY does not receive a transaction from another Federal Reserve bank. Duplicate and lost transactions can cause incorrect payments if they are not discovered prior to maturity.

FRBNY has a procedure in place to intercept duplicate or lost transactions. This procedure involves the end-of-day confirmation of all transactions sent between the Federal Reserve banks. This is to ensure that transactions are correctly received and discrepancies are quickly detected. Information was not available for us to review the procedure for 12 of the cases. However, in the three cases for which information was available, we could not find the transactions which caused incorrect payments. A FRBNY official could not adequately explain why the confirmation procedure did not work.

FRBNY officials also could not explain why the Sigma communication function duplicated or lost the specific transactions. A data processing official said users should notify his department when transactions are duplicated or lost, but they failed to do that in these cases. Although duplicate and lost transactions apparently occurred infrequently with Sigma, FRBNY should still determine why it happened at all because it is important that the problem does not continue with the Sigma replacement system.

FRBNY officials, subsequent to our audit, provided documentation indicating that the Sigma system had been replaced by the Customer Account Facility system. This system is designed to assign unique identifiers to each transaction and automatically check all previous transactions for duplicates. Although this should detect duplicate transactions, we did not evaluate the new system.

CONCLUSIONS

FRBNY needs to improve its internal controls over Treasury securities transactions. FRBNY has various controls in place, but such preventive controls as password protection, key verification, and separation of duties either were weak or did not exist. Preventive controls are important to ensure that transactions are accurately processed, reports are reliable, and account balances are properly maintained. Furthermore, the incorrect payments indicate that the existing controls may not operate consistently.

FRBNY should develop stronger controls over access to the systems. If properly implemented, FRBNY's planned use of individual operator passwords for DARTs will reduce the likelihood of unauthorized individuals gaining access.

FRBNY also needs to better document its reconciliation of system balances by developing a clearer and more accessible audit trail. Without such a trail, FRBNY cannot easily ensure that corrections are made and accounts properly updated. Before reprocessing, supervisory personnel should review error corrections. This review would decrease the opportunity for transaction errors. Although we identified relatively few incorrect payments, FRBNY needs to better document these cases and determine the exact causes.

The documentation of FRBNY's automated system, which controls Treasury securities account balances, needs improvement. If the replacement system is implemented as planned, the need for documentation of the existing system will be minimal. However, if the replacement system is delayed, the basic functions of the existing system must be documented to ensure proper operation. It is also particularly important that FRBNY identify those system deficiencies or other problems that have permitted duplicate or lost transactions to occur. Although these transactions apparently occurred rarely and were eventually discovered and corrected, they caused incorrect payments to banks and could occur again if the problems are not isolated and corrected.

The Treasury Department and Federal Reserve Board comments on our draft report were very constructive. The corrective actions outlined by the Board, if properly implemented, should address many of our concerns.

RECOMMENDATIONS

To ensure that the necessary control improvements are made, we recommend that the Chairman of the Federal Reserve Board require FRBNY to:

- Restrict access to the automated systems through terminals with properly safeguarded passwords.
- Strengthen other controls over data input by ensuring key verification of input, separation of keying and verifying duties among employees, and monitoring of error correction activities.
- Develop documentation for the automated system which contains the master file of securities account balances. The extent of documentation needed will be minimal if the planned replacement system is implemented as scheduled.
- Fully document all changes to the manual reconciliation of account balances to ensure that all transactions are properly executed and resulting account adjustments are appropriate.
- Determine the causes of inaccurate information and related incorrect payments to prevent their recurrence.

Because FRBNY acts as Treasury's fiscal agent in selling securities and conducting subsequent transactions, we also are recommending the Secretary of the Treasury verify that these corrective actions are fully implemented.

OBJECTIVES, SCOPE, AND METHODOLOGY

Overall, we wanted to find out if there were adequate internal controls over Treasury securities accounts at FRBNY. We worked primarily at FRBNY, with limited work at the Treasury's Bureau of the Public Debt, where we learned how Treasury reconciles data received from the Federal Reserve banks and verified that Treasury had received required reports from FRBNY. The review was performed in accordance with generally accepted government audit standards.

We based the internal control evaluation on our guidelines which are designed to identify control deficiencies. We examined FRBNY's procedures governing automated system design, development, and modification, and data origination, input, and output. We also conducted extensive interviews with FRBNY officials concerning the procedures and potential weaknesses.

We also reviewed and analyzed FRBNY internal audit reports, procedure manuals, user manuals, computer printouts, and other documents pertaining to the automated systems. We supplemented this document review by observing FRBNY processing of a matured Treasury bill, transactions between selected investors, payments to off-line banks at maturity, and the preparation of reconciliations of system balances.

REVIEW OF MANUAL RECONCILIATIONS

We reviewed all May 1982 manual reconciliations of the Safekeeping System. We selected the month because it was the most recent month available when our review began. We compared collateral proof sheet balances to the Safekeeping System's balances. When the two balances did not agree, we reviewed corrections to accounts made on that day and on the following day as well as other supporting documents. If we could not resolve a difference, we asked supervisory personnel to explain and provide us the appropriate documentation. We later updated our information by judgmentally selecting various days in October 1982 and February 1983 for review to verify that the problems still existed.

REVIEW OF ERROR CORRECTIONS

We reviewed transactions with errors received from other Federal Reserve banks for October 1982 and January and February 1983. Those months were selected judgmentally and corresponded to the time we began this work segment and neared completion of our overall review. We wanted to determine what types of errors were made and how FRBNY corrected them. We asked the responsible FRBNY supervisor to explain the rationale for any changes made on corrected transactions, and reviewed the documentation provided in support of those explanations.

REVIEW OF MANUAL REPORTS TO TREASURY

We reviewed all manual report files at FRBNY for the period January 1981 through March 1983 to determine if FRBNY incorrectly

paid any banks. We selected this period to provide a sufficiently long period for examining FRBNY's experience with incorrect payments and also to coincide with our review's final stages. We reviewed reports at Treasury to determine whether Treasury received the reports from FRBNY. For identified incorrect payments, we also checked records at Treasury to ensure that Treasury had received the appropriate adjustments.

PERCENT OF TREASURY SECURITIES ISSUED BY LOCATIONFOR THE FIRST QUARTER OF CALENDAR YEAR 1983

<u>Location</u>	<u>Percent</u>
Boston	.70
New York	80.19
Philadelphia	.42
Cleveland	1.05
Richmond	.78
Atlanta	.79
Chicago	4.81
St. Louis	.83
Minneapolis	.34
Kansas City	.79
Dallas	.34
San Francisco	5.67
U.S. Treasury	<u>3.29</u>
	<u><u>100.00</u></u>

BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM

WASHINGTON, D. C. 20551

ADDRESS OFFICIAL CORRESPONDENCE
TO THE BOARD



February 13, 1984

Mr. William J. Anderson
Director
United States General
Accounting Office
General Government Division
Washington, D. C. 20548

Dear Mr. Anderson:

The Board of Governors and the Federal Reserve Bank of New York appreciate the opportunity to comment on the draft General Accounting Office ("GAO") report, "Control Improvements Needed in Accounting for Treasury Securities at the Federal Reserve Bank of New York." We are pleased that the GAO found no evidence of abuse in the application of procedures for accounting for Treasury securities and that, as a general matter, internal controls appear to be effective although some opportunity for strengthening certain controls exists. The Federal Reserve System places a high priority on internal controls and continues to examine control systems to assure operational effectiveness.

In responding to the report, we have taken into account the overall control environment of these operations, the timing of the GAO review relative to operational changes that were in progress, the materiality of the financial exceptions identified, and previous internal audit findings and Bank management's response to these findings. We have also considered the potential risk of loss in the context of existing systems of internal control and any potential liability in cases of negligence and misuse of automated systems by users external to the Bank. In our judgment, these are relevant considerations, and all observations and recommendations of the GAO have been carefully evaluated, as is reflected later in this response.

It is our opinion that an effective set of internal controls already exists and that both preventive and detective controls are in place. The majority of the GAO review was conducted during a transitional period in which the Reserve Bank was upgrading its data processing capabilities; these automated systems now include or will include many of the controls suggested in the review. The GAO noted in its report that 15 erroneous payments totaling \$2.7 million were made on maturing securities. It should be noted that, prior to the GAO review, reconciliation procedures already in place enabled the Reserve Bank to correct 14 of these payments. The last payment was corrected subsequently. The total loss over the 26-month period audited was only \$200. Although the GAO staff noted with qualification that the number and dollar amount of these mispayments are

immaterial when compared to the overall transaction volume totaling trillions of dollars, we recognize that any mispayments should be avoided, to the extent possible, through effective controls. In addition, we were pleased to note that the review was consistent with the findings previously identified by the Bank's auditors and did not reveal any significant new findings. Management had already begun to act on many of these findings at the time of the review. Finally, in assessing risk of loss, it is appropriate to recognize that standing agreements with external users provide indemnities that greatly reduce the potential for loss by the Treasury.

The following presents our comments on the five recommendations in the report concerning: (1) passwords, (2) verification of accuracy of data input and error detection, (3) system documentation, (4) reconciliation of account balances, and (5) detection of erroneous payments.

Passwords (pages 4-7 of the report)

Observation: FRBNY did not require individual operator passwords to access the automated systems, and the passwords needed for other types of terminals were not adequately safeguarded. In addition to the possibility of unauthorized access, this made it difficult to determine who processed a given transaction.

Recommendation: Continue your plans to improve control over terminal access, thereby reducing the potential for abuse, by modifying the existing security system to recognize individual operator passwords.

Comment:

We agree with the GAO's conclusion that more comprehensive password controls are desirable. It should be emphasized, however, that other controls were in place that help to prevent unauthorized access to the automated systems. These measures, in part, are preventive and include secure access to the securities transfer system by depository institutions through use of dedicated lines, computer protocols, terminal log-on password verification and station identification, and on-line verification of account holdings before and after securities transfers are effected. Computers and terminals at the premises of users can be activated only by the Bank's control center.

With respect to the Bank's internal Securities Trading system, during 1983 the Bank assigned new passwords on an individual basis and implemented procedures to assure confidentiality of the passwords that restrict access. In addition, in 1984, the Bank intends to implement individual operator passwords for the direct access system within the Bank and, as noted in the report, the Bank has stated its intent to replace direct access terminals by 1986.

Verification of accuracy of data input and error detection (pages 4 and 7-11 of the report)

Observation: Procedures for verifying the accuracy of data input were not always followed and need improvement. Some employees verified their own input because of inadequate separation of duties. As a result, there was no assurance that verification took place and that all transactions were properly processed.

Errors detected during the data input phase were not always adequately controlled to ensure [that] they were corrected and reentered in a timely manner.

Recommendation: Strengthen other data input controls by requiring key verification of input, separation of keying and verifying duties among employees, and monitoring of error correction activities.

Comment:

New York Reserve Bank management had been previously advised through internal audits that these verification problems existed, and also had acknowledged certain limitations of the direct access terminals and had already planned to replace them. The failure of operating personnel to initial source documents cited on page 8 of the GAO's report represented a lapse in established accountability procedures and not the lack of appropriate verification controls. The Bank's Communications Control Standards already required the use of the controls described in the GAO's report.

Bank management was also previously aware of the deviation from established procedures for error detection. Better error correction practices have been implemented.

Currently, all transactions entered into the Securities Trading system require separate key verification of input, and the IV-Phase system provides for sight verification of all data, and key verification for certain data. Management in the Government Bond and Safekeeping Function (Fiscal Services Function) has reinforced its procedures for assuring separate keying and verifying.

System documentation (pages 11-12 of the report)

Observation: There was no documentation for the automated system which contains the master file of securities account balances. Poor documentation can result in system problems going undetected.

Recommendation: Develop documentation for the automated system which contains the master file of securities account balances. The extent of documentation would depend on the time frame of the new system's implementation.

Comment:

The Bank recognizes the desirability of having complete documentation. Developing the documentation at this time for the Safekeeping system would not, in the Bank's view, be worthwhile. Rather, the Bank believes that it is more appropriate to devote resources to a properly documented replacement for this system since the processing of book-entry Treasury securities will be removed from the Safekeeping system during 1984. Also, the Bank intends to develop plans during 1984 for a new system to replace the processing of definitive securities that will remain on the Safekeeping system.

The existing documentation for the Safekeeping system does contain detailed operating and recovery procedures and user guides that are necessary for the daily execution and on-going support of the system. Programmers have been able to diagnose and correct system problems using the available documentation. The absent documents cited in the report are used primarily during the development cycle of a system, to insure that the delivered system meets the user's requirements. The Safekeeping system evolved over a period of years, beginning in the 1960s, when the Bank's present documentation standards were not in effect.

Reconciliation of account balances (pages 13-14 of the report)

Observation: Reconciliation to prove the accuracy of securities account balances were not properly documented to show how differences were resolved and that any related adjustments to the account balances were accurate.

Recommendation: Fully document all changes to the manual reconciliation to assure that all transactions are properly executed and resulting account adjustments are appropriate.

Comment:

As a result of the recommendations of an internal audit that preceded the GAO audit, management of the Securities Clearance Division has already begun to reinforce its procedures for documenting all account adjustments by requiring a more detailed explanation of adjustments to the daily proof of the Safekeeping records. Moreover, the need for further action to strengthen procedures for reconciliation of account balances will be obviated when the Bank transfers all book-entry securities holdings to the new Securities Transfer system, which is expected later this year.

Detection of erroneous payments (pages 14-16 of the report)

Observation: Inaccurate information generated by an automated system was not always detected and erroneous payments occurred when the securities were redeemed.

Recommendation: Determine the causes of inaccurate information and related mispayments to prevent their recurrence.

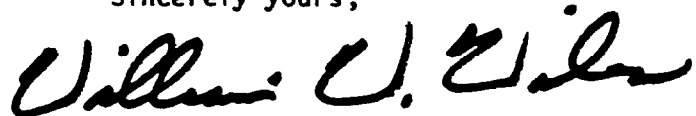
Comment:

The Bank agrees that controls should be in place to detect errors promptly and effectively. According to the Bank's records, the only actual loss that resulted from mispayments during the January 1981-March 1983 audit period amounted to \$200 for one transaction. It should also be noted that 14 of the 15 mispayments identified by the GAO had previously been detected by either the Bank or the Treasury Department. These mispayments, as we stated earlier, occurred over a 26-month period during which 7 million transactions were performed totaling trillions of dollars.

The low incidence of undetected errors indicates that the Bank's controls generally have been effective. Mispayments arising from problems with the Sigma system no longer are an issue because the Sigma system was replaced in 1983. As part of the replacement, the District's new communications switch checks every unique message identifier to determine if there is a duplicate transaction, regardless of whether or not the transaction is marked as a possible duplicate message. If a duplicate is encountered, it is intercepted and routed for visual inspection and disposition.

The Board of Governors and the Federal Reserve Bank of New York generally concur with the recommendations contained in the report and are of the opinion that planned and completed actions will further strengthen internal controls in these operations. We appreciate the opportunity to comment on this draft report and will make the staff available to discuss the Federal Reserve's comments if your staff determines that it would be beneficial. Also, we would like to express our appreciation to the GAO staff for meeting with us on December 12, 1983, to discuss the draft report. The meeting was very productive and resulted in several clarifications regarding operational procedures and controls, that are reflected in the revised draft report.

Sincerely yours,



William W. Wiles
Secretary to the Board



DEPARTMENT OF THE TREASURY
WASHINGTON, D. C. 20220

FISCAL ASSISTANT SECRETARY

JAN 9 1984

Dear Mr. Anderson:

I am pleased to respond to your letter sent to Secretary Regan on November 23, 1983, enclosing the GAO draft report, "Control Improvements Needed in Accounting for Treasury Securities at the Federal Reserve Bank of New York."

Your draft report described several areas where systems security and documentation, data input and the reconciliation process could be improved. The Department of the Treasury supports the emphasis given to having effective controls in these areas because of the importance of the Treasury securities market and the huge dollar amounts involved. On the basis of your draft report it appears that while some internal controls could be enhanced, overall the Federal Reserve Bank has placed a reasonably high priority on providing sufficient internal controls over Treasury securities systems.

Your recommendations are being carefully evaluated by the Federal Reserve System and appropriate action will be taken to improve internal controls. The Department will work with the Federal Reserve Bank to verify that such actions are taken.

Sincerely,

Gerald Murphy
Acting Fiscal
Assistant Secretary

Mr. William J. Anderson
Director
General Government Division
United States General Accounting Office
Washington, D.C. 20548

(905069)



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