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The Honorable Jerome H. Powell
Under Secretary for Finance
Department of the Treasury

The Honorable E. Gerald Corrigan
President, Federal Reserve Bank of
  New York

We have been reviewing the Treasury Automated Auction
System (TAAPS) being developed by the Federal Reserve Bank
of New York, as fiscal agent for the Treasury. This system
is being developed to automate the current manual auction
process for selling Treasury securities and will initially
enable 39 Treasury securities dealers[1] to electronically
transmit their bids via computer-to-computer link, instead
of submitting paper tenders. As you are aware, auction
proceeds go to help fund government shortfalls between
expenditures and receipts. Given the importance of this
system, a key objective of our work was to review the TAAPS
test strategy and plans to ensure that the system would be
adequately tested prior to being implemented. The proposed
system testing is scheduled to be completed in December
1992 before TAAPS is to be made operational in January
1993.

The purpose of this letter is to alert you about our
concerns that the TAAPS testing strategy may be incomplete.
Our review of test plan documentation indicates that (1)
the tests may not include detailed system functions and (2)
the planned stress test will not independently demonstrate
all TAAPS' capabilities under extreme operating conditions.
This increases the risk that system weaknesses will not be
detected and corrected before they could cause data
processing problems in a live operating environment.

First and foremost, although the TAAPS' test strategy is
intended to evaluate the system's functions, we are
concerned about the extent of the proposed testing.
Specifically, we could not determine whether all detailed

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[1] These dealers are commonly referred to as primary dealers.

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functional requirements had been incorporated into the system test plan because the Bank did not document them in adequate detail. These requirements are typically contained in a formal document that specifically describes what the system is supposed to do and how it will be done. The requirements represent the criteria for developing test plans and serve as the checklist for determining whether the proposed tests will cover all system functions. In lieu of detailed requirements, the Federal Reserve Bank of New York developed high-level business requirements that describe system functions in general terms, and the Bank has used these to develop the system tests. For example, one of the high-level requirements is that the system enable dealers to quickly submit tenders with minimum keystrokes. However, there are no detailed requirements specifying how this is to be done, and the test strategy does not describe how this requirement is to be tested.

Federal Reserve Bank officials told us they obtained detailed requirements and incorporated them into the system but did not document them because such an effort is time consuming and from their experience, provides questionable benefits to users. However, without a complete set of detailed written requirements, there is no readily available checklist to evaluate the comprehensiveness of the test strategy.

Second, we are concerned that the stress test planned by the bank is unnecessarily limited. Stress testing assesses how much data a system can process without experiencing any degradation in performance--such as a response time slower than required. It also helps identify and correct system weaknesses before they could cause data processing problems in a live environment.

The Federal Reserve Bank of New York plans to stress test TAAPS by having up to 30 dealers submit tenders during test auctions to determine whether TAAPS can adequately handle the receipt of this volume of bids. Additionally, Bank officials told us they may simulate the transmission of more bids than is typically submitted at auctions in order to determine what effect this will have on TAAPS' capability to receive bids. While these tests should provide the Bank with indications about TAAPS' capability, they will not provide complete information on how much data the system can process adequately. Specifically, the test will not validate (1) the acceptability of system performance (such as response time) when all 39 dealers are using the system simultaneously and (2) the ability of the system to process bid data simultaneously with other

applications expected to coexist on the mainframe computer system where TAAPS will reside.

Federal Reserve Bank of New York officials said they did not construct their stress test to validate these points because (1) they are confident the system has the capability to process auction data in a timely manner after it has been successfully transmitted and (2) it is very expensive to simulate all the other application activities occurring simultaneously on the computer system when TAAPS is operating. Consequently, the Bank would rather focus its scarce resources on other TAAPS' system development efforts. We agree that rigorous stress-testing of automated systems is complicated and not without costs. However, until the Bank conducts a stress test of all system capabilities, it cannot confidently predict TAAPS' capabilities.

The above testing weaknesses are compounded by the fact that critical quality assurance tests (e.g., simulated auctions) are being conducted by the TAAPS system developer. While not a substitute for adequate testing by the system developer, quality assurance testing by a separate, independent group can provide an additional level of assurance that the system will be thoroughly tested. Federal Reserve Bank of New York officials acknowledged that they are not using such a group to perform TAAPS quality assurance testing and have relied on the system development staff to perform quality assurance testing. Consequently, the bank has less assurance that the system will operate as intended.

The surfacing of the above concerns is meant to be constructive so that at completion of system testing, management, users, and the system developer will have assurance that TAAPS will be implemented with minimal risks. We will be contacting your staff in the near future to discuss these weaknesses and your approach for correcting them. Should you have any questions about this letter, please call me or Mary Ellen Chervenic, Assistant Director, at (202) 512-6418.

Howard G. Rhile
Director, General Government
  Information Systems

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