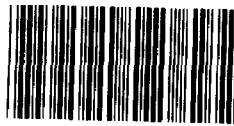




UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

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INFORMATION MANAGEMENT
& TECHNOLOGY DIVISION



126430

B-217586

MARCH 14, 1985

The Honorable William E. Dannemeyer
House of Representatives

Dear Mr. Dannemeyer:

Subject: SSA's Acceptance Testing of a Mass Storage
System for Computerized Data Was Adequate
(GAO/IMTEC-85-5)

In response to your July 27, 1984, request (see encl. IV), we are providing you information on a contract (No. 600-84-0046) the Social Security Administration (SSA) awarded to the Masstor Systems Corporation for a mass storage system for computerized data. You expressed concern that SSA's acceptance testing of the Masstor system had been repeatedly postponed and that SSA may have overlooked significant mandatory contract requirements. Specifically, you asked us to observe the acceptance test to make sure mandatory requirements were not waived.

SSA received two responses--one from the Braegen Corporation, the other from Masstor--to its July 1983 request for a mass storage system. On January 25, 1984, a \$1.02 million contract was awarded to Masstor, the lowest bidder. We found that during the procurement process, SSA waived a channel cable length specification that it no longer needed. In waiving this requirement, SSA was within the boundaries of federal procurement regulations. Also, shortly after the contract was signed, Masstor and SSA disagreed over the interpretation of a clause in the contract which, according to SSA, specified that Masstor must provide dual-channel access to four of SSA's computers. Acceptance testing of the Masstor equipment, which was supposed to begin in April 1984, was delayed for 4 months while both parties worked to resolve this issue. Masstor eventually agreed to install additional equipment, and acceptance testing began. We believe this testing--which lasted from August 6 to October 8, 1984--provided reasonable assurance that the Masstor system met SSA's needs as expressed in the contract.

Currently, Masstor has a \$428,707 claim against SSA for compensation for extra equipment provided to resolve the above issue. Also, SSA has assessed Masstor with \$99,665.28 in liquidated damages for a 121-day installation delay.

Details of our review follow.

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OBJECTIVE, SCOPE, AND METHODOLOGY

Our objective was to respond to concerns raised in your July 27, 1984, letter. We performed our review from August to December 1984 in accordance with generally accepted government auditing standards.

As part of our review to assess whether SSA waived contract requirements, we

- reviewed the internal and external SSA correspondence applicable to Masstor's mass storage system;
- spoke with SSA's mass storage project officer, contracting officer, training coordinator, and senior equipment evaluator to solicit their views on contract specifications;
- spoke with individuals outside SSA (other government agencies and private industry) to confirm SSA opinions regarding equipment capabilities; and
- physically inspected all equipment delivered and checked it against the contract's equipment delivery requirements.

As part of our review of the Masstor acceptance testing, we

- reviewed SSA's test plans and confirmed that all the contract's mandatory requirements were being tested or validated;
- attended acceptance testing on 4 days and compared SSA's reported results with those observed;
- verified that the reported test results accurately summarized the computer printouts resulting from SSA's tests (although we did not validate the computer programs from which the tests were run); and
- met with representatives of each SSA group involved with acceptance testing.

EVENTS LEADING TO ACCEPTANCE TESTING

As part of its System Modernization Plan, on July 18, 1983, SSA requested proposals for a computerized mass storage system. The objective of a mass storage system is to provide users with immediate access to large amounts of computerized data at an economical cost. SSA plans to use the mass storage system at its primary software development unit--the Test and Time Sharing Facility--in Baltimore, Maryland. This system is expected to decrease the amount of time associated with storing, retrieving, and managing programmer test data. SSA estimated that a mass storage system would reduce the completion time of 113 tape-oriented tests from 38 hours to a few minutes.

SSA anticipated that its computerized mass storage needs would be met when it awarded the \$1.02 million mass storage contract to Masstor. A disagreement over the interpretation of a contract clause (the requirement for dual-channel access to four computers), however, led to an almost 4-month delay in the start of acceptance testing. (See encl. I for a chronology of events.)

Disputed clause delayed beginning of acceptance testing

Within 2 months of awarding the mass storage contract, SSA discovered that the Masstor system did not comply with section F.4.7¹ of the contract which, according to SSA, stipulated that the proposed system be able to provide dual-channel access to four computers. On March 26, 1984, SSA notified Masstor that within 10 days it had to explain how it planned to meet this requirement. Masstor disagreed with SSA's interpretation that it was required to provide this feature. Subsequent written negotiations centered on whether the contract required Masstor to meet the dual-channel access requirement and, if so, what type of equipment Masstor would provide.

Masstor acknowledged that its equipment could not provide dual-channel access to four computers, but it stated that the contract did not specifically require it to meet this provision. SSA responded that the requirement was sufficiently clear and pointed out that, in its proposal, Masstor had explicitly stated, "Data will be concurrently accessible via two channel access to each of the four IBM/PCM processors via dynamic channel switching under program control."

Ultimately, Masstor proposed to install direct-access storage disks, which would enable its equipment to meet the dual-channel access requirement. Throughout the negotiations, Masstor stated that it reserved the right to bill SSA for the additional equipment. SSA accepted Masstor's proposal on June 13, 1984,² subject to the condition that the additional equipment (1) passed acceptance testing and (2) was provided at no additional cost to the government. Masstor delivered the equipment but did not respond in writing to SSA's qualified acceptance.

¹Section F.4.7 states, "The data, once staged, must be concurrently accessible via two channel access in accordance with F.4.1 via dynamic channel switching under program control."

²Between the end of negotiations and August 6, 1984, when the acceptance testing began, SSA had its test facilities prepared for installation and conducted some preliminary testing. During this time, Masstor completed delivery of all equipment required by the contract, including data storage cartridges.

Before accepting Masstor's proposal subject to the two conditions, SSA recomputed Masstor's price proposal to make sure Masstor remained the low offerer even after SSA included its overhead cost for the new equipment. An SSA official told us that since Masstor remained the lowest bidder, SSA did not compromise the integrity of the procurement process by allowing Masstor to install the additional equipment.

SSA waived a mandatory requirement

Upon receiving SSA's notice regarding the dual-channel access problem, Masstor proposed 3350-type disks (originally marketed by IBM in 1975) as a solution. SSA rejected this solution when it discovered that the disks did not meet another contract provision, which specified that all equipment must support 280 feet of cable attached to a "block multiplexer" communication channel. Masstor next proposed 1980-vintage 3380-type disks, which met the cable length requirement. The 3380-type disks can hold almost four times the amount of data as the 3350-type disks and are over twice as fast. While evaluating this proposal, SSA was changing its computer configuration, which ultimately made the cabling requirement for a block multiplexer channel inapplicable. When Masstor learned of this change, it withdrew its 3380 proposal and resubmitted the 3350 proposal, declaring it "technically responsive." SSA agreed with Masstor, accepted the 3350-type disks, and waived the block multiplexer channel cable length requirement.

An SSA official told us that, even if SSA had waived the channel cable length requirement before the contract was awarded, the waiver should not have changed either Masstor's or Braegan's bid, since neither vendor initially included disks as part of its proposal. Also, federal procurement regulations allow agencies discretion in determining whether to waive contractual requirements. Although SSA received equipment that would respond to its current needs, had it not waived the cable length requirement, it might have obtained the more sophisticated 3380-type disks.

MASSTOR TEST RESULTS WERE ADEQUATE

To pass acceptance testing, Masstor's equipment had to maintain an effectiveness rate³ of at least 95 percent for 30 consecutive days within a 90-day period. Between September 9 and October 8, 1984, Masstor met this requirement by achieving a 98.55-percent effectiveness rate. Although the test period started

³The contract defines effectiveness rate as operational use time divided by the sum of operational use time plus system failure downtime.

on August 6, 1984, initial problems caused equipment downtime⁴ and prevented Masstor from beginning to meet the 30-consecutive-day requirement until September 9, 1984. SSA's testing of the Masstor equipment was adequate, though not without problems. SSA resolved these problems and conducted the test in such a manner as to provide reasonable assurance that the equipment performed according to contract specifications.

SSA testing of the Masstor equipment was reasonable

SSA developed a reasonable test plan for the Masstor equipment. We analyzed this plan and found that it addressed all the contract's mandatory requirements which could be tested at SSA facilities. SSA followed this test plan during its acceptance testing.

Throughout the testing period, the Masstor equipment was closely monitored and downtime was documented. SSA divided the acceptance testing into three parts: (1) performance testing, where the mandatory requirements stipulated in the contract were tested and verified; (2) application testing, where the Masstor equipment was tested under normal working conditions, using programs which simulated actual workloads; and (3) testing of the 3350-type disks to make sure that they performed as Masstor stated they would.

In a few instances, SSA could not test for certain contract requirements because it did not have the necessary equipment. So instead, SSA validated these requirements through a technical review process. For example, SSA was unable to test the dual-channel access requirement because it did not have four computers in its testing facility. Rather than actually testing the feature, a technical evaluation team analyzed Masstor's configuration chart and declared that the feature was acceptable, thus validating that the requirement was met. We also analyzed the configuration and concluded that it demonstrated that the equipment could meet this requirement.

SSA records provide reasonable assurance that test results were accurate

An examination of SSA records, along with our own observations of acceptance testing, also indicated that testing was reasonable and fair. Many problems were encountered at the beginning of the

⁴The contract specifications define downtime as that period in which the scheduled program(s) cannot be run due to system failure.

testing period as Masstor tailored its system to meet all of the contract requirements. Problems encountered during testing, however, were caused by both Masstor and SSA. Masstor was not charged downtime for problems caused by SSA. An example of a Masstor problem was a defective circuit board which, along with a software problem, caused over 15 hours of downtime. A major problem created by SSA was the manner in which it had cabled two computers to the mass storage device. The computers had to be recabled during acceptance testing to increase the system's efficiency and to protect the testing facility should one of the computers fail.

We analyzed SSA records and ascertained that SSA accurately allocated downtime to Masstor. SSA designed its acceptance testing so that most problems would be encountered and corrected at the beginning of the test period. During the performance phase of testing, Masstor achieved only a 51.175-percent effectiveness rate since it was charged with a great deal of downtime while meeting all the mandatory requirements. After Masstor met all of the mandatory requirements and began the application phase of the testing, however, downtime associated with the Masstor equipment dropped dramatically. Because of this drop, the Masstor equipment's effectiveness rate increased until it surpassed the 30-consecutive-day, 95-percent effectiveness rate requirement on September 9, 1984. We validated Masstor's test results against the supporting evidence and found them to be accurate.

CLAIMS BY BOTH MASSTOR
AND SSA ARE PENDING

On October 29, 1984, Masstor notified SSA that it was requesting an equitable adjustment to the contract for \$428,707. This claim was based on Masstor's providing SSA with 3350-type disks so that the Masstor system could provide dual-channel access to four computers. Masstor contended that, by requiring this provision be met, SSA changed the contract. Thus, Masstor believed it was entitled to an adjustment as provided for in the contract. SSA denied that the contract had changed and stated that when Masstor allowed acceptance testing to begin, it gave tacit approval to SSA's terms that the equipment be provided free of cost to the government.

On November 20, 1984, SSA notified Masstor that it was withholding \$99,665.28 from the total contract amount. According to SSA, this amount constituted SSA's assessment of liquidated damages for the installation delay caused by Masstor's inability to provide dual-channel access to four computers. SSA said the delay had spanned 121 days (from April 9, 1984, when, according to contract specifications, the system was to be installed and ready for testing to August 8, 1984, when the complete system was ready for testing).

Neither Masstor nor SSA has responded to each other's claims. As a matter of general policy, GAO does not comment on the merit of matters in dispute under a contract.

CONCLUSIONS

SSA's acceptance testing was reasonable and provided adequate assurance that the Masstor system met SSA's needs as expressed in the contract. Although SSA waived one requirement during the procurement process, it had the discretion to do so under federal procurement regulations.

Masstor submitted the lowest proposal, and its equipment met SSA-mandated specifications. We found no evidence that SSA's procurement actions provided Masstor with an unfair advantage over the other competitor.

AGENCY AND VENDOR COMMENTS AND OUR EVALUATION

Although the Department of Health and Human Services (HHS) generally agreed with the facts in our report, it disagreed with our statement regarding the SSA-waived requirement. According to HHS, the 280-foot-cable requirement was "non-operational" because SSA no longer had block multiplexer channels.

When SSA accepted Masstor's proposal in June 1984, however, SSA was still using block multiplexer channels. Since SSA accepted equipment that did not meet a contract requirement, we consider this issue a waived mandatory requirement.

Masstor commented that, contrary to our report, it delivered all contractually required equipment in March 1984. It also stated that it did not respond in writing to SSA's June 13, 1984, letter because "no response was necessary." Masstor said it never gave tacit approval to SSA's terms that the 3350-type disk equipment be provided free of cost to the government.

SSA received only 400 of some 1,900 data storage cartridges on April 2, 1984--part of the contractually required equipment. The rest of the cartridges were not delivered until late July 1984. Regarding the June 13, 1984 letter, our report stated only applicable facts. Instead of making observations on this issue, we stated that GAO does not comment on matters involving a contract dispute.

Specific agency and Masstor comments are addressed individually in enclosures II and III, respectively.

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As arranged with your office, we are sending copies of this report to the Secretary, Health and Human Services; Director, Office of Management and Budget; Director of Federal Sales, Masstor

Corporation; President, Braegen Corporation; and appropriate congressional committees. Copies will be made available to others upon request.

Sincerely yours,

Warren G. Reed
Warren G. Reed
Director

Enclosures - 4

CHRONOLOGY OF MAJOR EVENTS REGARDING
SSA's MASSTOR CONTRACT #600-84-0046

<u>Date</u>	<u>Major Events</u>
1/25/84	- Contract #600-84-0046 awarded to Masstor Systems Corporation for the purchase of a mass storage system.
3/20/84	- SSA received Masstor mass storage equipment.
3/21/84	- SSA discovered that the Masstor system could not provide dual-channel access to four computers.
3/26/84	- SSA notified Masstor that it had to submit a viable proposal within 10 days demonstrating how it would provide SSA with dual-channel access to four computers.
4/6/84	- Masstor assured SSA that it would provide disk devices to satisfy the dual-channel access requirement; however, Masstor reserved the right to file a claim for this feature.
4/9/84	- Contractually the last date allowed for installation of Masstor's complete mass storage system (negotiations continued regarding the dual-channel access problem).
4/10/84	- Masstor proposed 3350-type disk equipment to resolve the problem. It continued to reserve the right to file a claim for this feature as a change to the contract.
4/11/84	- SSA accepted the 3350 proposal, "pending successful completion of the acceptance test," and with the explicit understanding that the acceptance was not a change to the contract.
4/25/84	- SSA informed Masstor that the 3350 proposal was not acceptable because the equipment did not conform to a cable length requirement in the contract.
5/1/84	- Masstor proposed 3380-type disk equipment to resolve the problem.
5/1/84	- Masstor proposed another kind of 3350-type disk equipment to resolve problem.
5/11/84	- Masstor withdrew its 5/1/84 proposals after SSA changed its computer configuration and resubmitted its

4/10/84 proposal, declaring it "technically responsive."

- 6/13/84 - SSA accepted Masstor's 3350 proposal of 4/10/84 subject to the following two conditions:
- (1) Masstor's proposal would be provided at no extra cost to the government.
 - (2) Masstor would successfully complete the acceptance test as specified in the contract.

This accepted proposal did not conform to the channel cable length specification in the contract.

- 6/30/84 - SSA completed upgrading the communications channels which supported its Test and Time Sharing Facility.
- 7/17/84 - SSA received 3350-type disks from Masstor.
- 7/30/84 - SSA received the final shipment of data storage cartridges from Masstor. (SSA received the first shipment of cartridges in March 1984.)
- 8/6/84 - SSA began acceptance testing.
- 10/8/84 - Masstor successfully completed the acceptance testing.
- 10/29/84 - Masstor filed a \$428,707 claim with SSA requesting equitable adjustment of the contract for providing the 3350-type disk equipment.
- 11/20/84 - SSA informed Masstor that it was being assessed \$99,665.28 in liquidated damages for a 121-day delay in the installation of the complete mass storage system. (The period covered Apr. 9, 1984, when, according to a contract requirement, the system was to be installed and ready for testing to Aug. 6, 1984, when the complete system was actually ready for testing.)



DEPARTMENT OF HEALTH & HUMAN SERVICES

Office of Inspector General

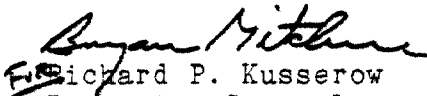
Mr. Warren G. Reed
Director, Information Management
and Technology Division
United States General
Accounting Office
Washington, D.C. 20548

Dear Mr. Reed:

The Secretary asked that I respond to your request for the Department's comments on your draft report "SSA's Acceptance Testing Of A Mass Storage System For Computerized Data Was Adequate." The enclosed comments represent the tentative position of the Department and are subject to reevaluation when the final version of this report is received.

We appreciate the opportunity to comment on this draft report before its publication.

Sincerely yours,


Richard P. Kusserow
Inspector General

Enclosure

COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES ON THE
GENERAL ACCOUNTING OFFICE'S DRAFT REPORT, "SSA'S ACCEPTANCE
TESTING OF A MASS STORAGE SYSTEM FOR COMPUTERIZED DATA WAS
ADEQUATE" (IMTEC-85-5, DATED JANUARY 22, 1985)

The draft report is generally correct. However, we are concerned about two findings which are not completely accurate. The finding (on page 4) that the Social Security Administration (SSA) waived a mandatory requirement is not stated correctly. The report cites a contract requirement to support a 280 foot interface to a block multiplexer communications channel. The block multiplexer channel is 1968 technology. SSA replaced the last of its block multiplexers in early 1984. The requirement became nonoperational because SSA no longer had block multiplexers.

GAO response

The block multiplexer communication channels were not replaced until late June 1984, after SSA had agreed to the Masstor 3350 disk solution. Earlier, SSA had rejected the same Masstor disk equipment because the equipment did not meet the block multiplexer requirement. We concluded that SSA effectively waived the mandatory requirement when it accepted the disk equipment with full knowledge that the equipment did not meet the channel requirement.

The second area of concern deals with the Masstor claim. It is incorrect to say SSA has denied or will deny the claim. The claim is currently being evaluated, and a final decision has not been issued. The report's speculation as to SSA's position on the claim is improper. We strongly recommend that references to the SSA "position" be deleted.

GAO response

We deleted the sentence stating the contract officer's view of this issue.

Additionally, we suggest that the first sentence of the first full paragraph on page four be rewritten as follows: "Before accepting Masstor's proposal subject to the two conditions, SSA recomputed Masstor's price proposal to make sure they remained the low offeror, by adding to their price SSA's increased facilities costs, as contemplated by the request for proposals."

GAO response

We partially changed this sentence.

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January 30, 1985

Mr. Warren G. Reed
 Director
 Information Management and
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 U.S. General Accounting Office
 441 G Street, N.W.
 Washington, D. C. 20548

Re: B-217586: SSA's Acceptance Testing of A
 Mass Storage System For Computertized
 Data Was Adequate (GAO/IMTEC-85-5)

Dear Mr. Reed:

In response to your January 22, 1985 letter, Masstor Systems Corporation ("Masstor") herewith provides the following comments on subject draft report.

1. Masstor would like the report to specifically reference the fact that GAO did not speak with representatives of Masstor as part of its review of SSA's enforcement of the contract requirements or its review of the acceptance testing.

2. The chronology of events relative to the dispute between Masstor and SSA concerning section F.4.7 of the contract is incomplete. By letter dated April 11, 1984, SSA unconditionally accepted Masstor's 3350 proposal submitted in response to the March 26, 1984 cure notice (copy enclosed). This event is not, but should be, included in the chronology which is part of the draft report.

¹ The April 11, 1984, letter is not included in this report.

GAO response

The chronology is not meant to be inclusive of every event. Nevertheless, we have added to the chronology the event addressed in the April 11 letter because Masstor believed it was important, stating that the letter constituted an unconditional acceptance of Masstor's proposal. In the April 11, 1984, letter, SSA accepted Masstor's disk proposal, "pending successful completion of the acceptance test." It also stated that SSA's acceptance of this proposal was not to be considered a change within the general scope of the contract. On April 25, 1984, SSA informed Masstor that the equipment did not meet all the mandatory requirements stipulated in the contract.

3. Footnote 2 of the draft report is inaccurate. Masstor did not use the time between the end of negotiations and August 6, 1984 to complete delivery of equipment required by the contract. To the contrary, all of the equipment required by the contract had been delivered by Masstor in March 1984. Moreover, this equipment, and the 3350 disk equipment proposed in response to the cure notice, was ready for installation prior to April 9, 1984. Masstor, however, did not install any of the equipment at that time per the direction of SSA.

GAO response

The footnote is provided to explain the activity that occurred during this period. Delivery receipts document that, as of April 2, 1984, Masstor had delivered only 400 of some 1,900 required cartridges. Also, officials from SSA and a private support contractor told us that the rest of the cartridges were not delivered until late July 1984. We changed the footnote slightly to ensure that only facts, and not opinions, were conveyed.

4. Masstor did not respond in writing to SSA's June 13, 1984 letter because no response was necessary. In this regard, Masstor never withdrew its reservation to make a claim relative to the 3350 proposal, and the lack of a written response to SSA's letter would not constitute a waiver of Masstor's rights in that respect. Contrary to SSA's apparent belief, Masstor never gave tacit approval to SSA's terms that the disk equipment be provided free of cost to the Government.

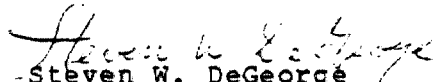
GAO response

Our report only stated the facts regarding SSA's June 13, 1984, letter accepting the Masstor 3350 proposal. Instead of making any observations on this issue, we stated that GAO does not comment on matters involving contract disputes.

Masstor appreciates the opportunity to provide the foregoing comments and requests that it be furnished copies of any other written comments received by GAO in this matter.

Thank you for your consideration.

Sincerely,


-Steven W. DeGeorge
Attorney for Masstor Systems
Corporation

Enclosure

cc: Clem Bosch, Esquire, Masstor Systems Corp.
Mr. Kenneth E. Wylie, Masstor Systems Corp.

WILLIAM E. DANNEMEYER
50TH DISTRICT, CALIFORNIA

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Congress of the United States
House of Representatives
Washington, D.C. 20515

July 27, 1984

Honorable Charles Bowsher
Comptroller General of the U.S.
General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

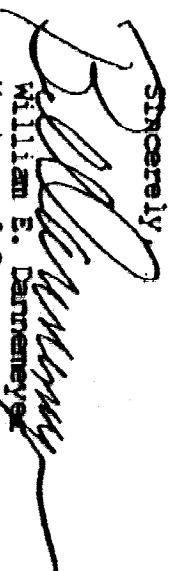
Dear Mr. Bowsher:

I am writing to you on behalf of the Braegen Corporation of Anaheim, California and their concern regarding Social Security Administration (SSA) contract #600-84-0046. It is my understanding that the contract requires delivery of a computer mass storage system. It was awarded to Masstor Corporation on January 26, 1984.

Under clause E.6.1.2, the equipment is required to complete a 30 day acceptance test to prove that it can meet SSA's specifications. I am told that the Masstor equipment has not yet passed acceptance because the testing has been repeatedly postponed. It is my understanding that the terms of the contract requires completion of installation no later than 75 days after receiving the award (which would have been sometime in April).

Braegen Corporation is concerned that the SSA may overlook significant, mandatory contract requirements in its desire to complete acceptance of the Masstor equipment. In this light, I would like to request that you designate a team of auditors to participate in the SSA acceptance testing and insure that waivers of mandatory requirements do not occur. I understand that the review is due to begin on or about July 30.

As always, I appreciate your assistance and look forward to your prompt reply.

Sincerely

William E. Dannemeyer
Member of Congress

WED/sc

cc: Paul L. Klein
David S. Cohen