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Briefing Report to Congressional Committees

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POSTAL SERVICE

Automation Is Taking Longer and Producing Less Than Expected

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The Honorable Ted Stevens
Chairman
The Honorable David Pryor
Ranking Minority Member
Subcommittee on Post Office and Civil Service
Committee on Governmental Affairs
United States Senate

The Honorable John M. McHugh
Chairman
The Honorable Barbara Rose-Collins
Ranking Minority Member
Subcommittee on the Postal Service
Committee on Government Reform and Oversight
House of Representatives

This briefing report provides information on the U.S. Postal Service's progress in using optical scanning technology to achieve its goals of (1) barcoding virtually all letter mail, (2) automatically sorting mail to individual home and business addresses, and (3) adjusting work methods and employment to achieve workforce reductions.

On February 8 and 9, 1995, we briefed your Subcommittee on setbacks in the Service's automation program and obstacles it must overcome to achieve current automation goals. This briefing report summarizes the information presented in that briefing.

Background

The Postal Service began automating letter mail processing in 1982, acquiring optical character readers, which could read ZIP Codes and spray barcodes on letters, and barcode sorters for detailed sorting. In 1988, the Service began offering lower postage rates to larger mailers who did their own barcoding. By 1997, the Service plans to deploy up to about 14,000 pieces of automation equipment costing about $5 billion. Historically, the Service has viewed automation as a principal means of controlling labor costs, which for 1994 amounted to about $39.6 billion or 81.7 percent of annual operating expenses.

In 1992, we pointed out that automation, while producing some savings, was unlikely to be a panacea that will reverse the tendency for postal costs

to outpace inflation. Through January 1995, we had issued eight products on Postal's automation program. A listing appears at the end of this report.

Following a major reorganization in 1992, the Service discontinued much of automation's central management oversight and decentralized decision-making to the field. Because field managers complained about the lack of central direction and emphasis in 1993, the Service reestablished a central office to oversee automation and prepare a new Corporate Automation Plan, which is expected to be completed by March 1995.

Results

The Postal Service must overcome difficult, if not insurmountable, obstacles to successfully complete the program by their projected date of 1998. Barcoding of letter mail and automatic sorting of letters to homes and businesses, referred to as "delivery point sequencing," has proven more difficult than the Service expected and is behind schedule. The savings from automation continue to be small compared to overall labor costs and more difficult to achieve than the Service anticipated.

Barcoding Problems Numerous and Varied

In 1988, the Service set a goal for mailers and the Service to jointly barcode virtually all letter mail by 1995—or about 90 percent of the more than 115 billion letters processed annually. To meet that schedule, about 80 billion letters were to have been barcoded in 1993 by mailers and the Postal Service. Mailers barcoded 30 billion letters that year, exceeding the 29-billion benchmark set by the Service. However, the Service fell short of its 51-billion benchmark, barcoding 30 billion letters. Optical character readers cannot read about half of the letters they process because of the wide variation in the physical characteristics of envelopes and addresses. While the Service encourages standardization, only mailers who receive volume discounts for barcoding their mail are required to comply with the Service's automation standards.

Another factor contributing to the barcoding shortfall was delayed deployment of "remote barcoding," whereby clerks key in addresses that cannot be read by the equipment. The delay occurred when plans to use contract employees for remote barcoding were thwarted by a union-management contract dispute. In 1993, remote barcoding was expected to generate about 13 billion barcoded letters from an 83-site system, but the actual number was 25 sites and 3 billion barcoded letters.

Postage rates are out of sync with the Service's automation plans because incentives offered to mailers give preference to presorting over barcoding. Before delivery point sequencing, it made sense for the Service to give a discount to mailers who put their mail in delivery sequence because it saved time for the carrier. However, now that the Service must sequence the mail, there is less value in having individual mailers do it. The Service is also limited in its ability to verify that letters barcoded by mailers, and receiving discounted postage rates, have the right barcode and can be sorted on Service equipment.

In recognition of the barcoding difficulties, the Postmaster General announced in April 1994 that the barcoding goal had slipped from 1995 to the end of 1997.

Not Enough Mail Is Sorted in Delivery Sequence Automatically

Barcoding allows letters to be sorted in delivery sequence, which should significantly reduce the time that carriers spend manually sorting letter mail. For many routes, there has not been enough delivery-sequenced letters given to the carriers. Consequently, they often continued to manually sort mail already sorted by automation. The Service has not reduced carrier in-office workhours or adjusted routes as intended, and no longer assumes carriers will be able to reduce by 2 hours a day the time they spend preparing mail for delivery.

About 19 percent of deliveries are to multiple-occupant buildings where the Service has not yet implemented delivery point sequencing. Until the Service extends delivery sequencing to the addresses within these buildings, which has been deferred indefinitely, carriers will need to continue to manually sort this mail.

Automation Not Reducing Workforce

Expecting automation to reduce the postal workforce, the Service in 1992 reaffirmed a 1989 goal of an outright reduction of over 40,000 workyears from the program. This has not happened because of barcoding and sorting problems highlighted above and the Service's inability to change work methods and reduce employee workhours after equipment was deployed. Moreover, a steady drop in career employment, which began in 1989, was disrupted by a downsizing in 1992 unrelated to automation. The downsizing proved temporary inasmuch as in 1994 career employment surpassed its pre-downsizing level and is still increasing, offsetting much of the earlier reduction. Postal officials said that employment reductions did not occur because the Service's workload increased. However, we

noted no major difference between actual workload growth and the growth projected in the Service's automation plans.

The Service also has departed from its automation strategy of replacing career employees with less costly, short-term transitional employees who were to fill in until automation reduced employment. Since the downsizing, the transitional workforce has decreased while career employment has increased.

Business-related mail that best lends itself to automated processing is also the most vulnerable to being diverted to electronic communication, such as e-mail and electronic data interchange. As this diversion occurs, the benefits of automation are likely to diminish.

Objectives, Scope, and Methodology

Our objective was to determine the status of the Postal Service's letter mail automation efforts, including its progress in achieving the goals of (1) barcoding virtually all letter mail, (2) automatically sorting mail to individual addresses, and (3) adjusting work methods to reduce the postal workforce.

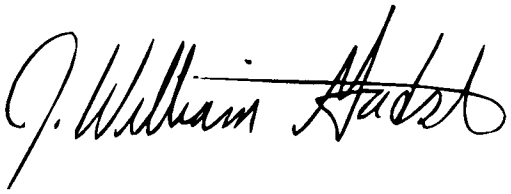
To determine the automation program's status, we analyzed prior studies, reviewed the Service's written corporate automation plans and decision analysis reports supporting the acquisition of automation equipment. We also reviewed related Postal Inspection Service audit reports, results of postal employee opinion surveys, and briefings provided by Service officials to the Board of Governors. In addition, we interviewed Postal Service headquarters officials responsible for overall automation planning and management and conducted on-site work at several facilities in the Service's Western Area. We did not determine the extent to which automation has improved postal productivity because Postal Service data did not permit us to isolate the effects of automation versus other factors. Our review followed generally accepted government auditing standards and was done from October 1993 through September 1994.

A draft of this report was provided to senior Postal Service officials in December 1994 and we incorporated their comments and clarifications where appropriate.

We are sending copies of this report to the Postmaster General and to Members of Congress and congressional committees that have

responsibilities for Postal Service issues. Copies will also be made available to others upon request.

The major contributors to this briefing report are listed in appendix II. If you have any questions about this report, please call me on (202) 512-8387.



J. William Gadsby
Director, Government Business
Operations Issues

Contents

Briefing Section IV Automation Not Producing Anticipated Reductions

Appendixes

Abbreviations

AFCS	Advanced facer canceler system
CAP	Corporate Automation Plan
CSBCS	Carrier sequence barcode sorter
DBCS	Delivery barcode sorter
ID	Identification
IPSS	Image processing subsystem
ISS	Input subsystem
MLOCR	Multiline optical character reader
MPBCS	Mail processing barcode sorter
OCR	Optical character reader
OSS	Output subsystem
RBCS	Remote barcoding system
RCR	Remote computer reader
SLOCR	Single line optical character reader
WABCR	Wide area bar code reader
ZIP	Zoning Improvement Plan

Background

GAO Automation Overview

- Printed and electronic addresses converted to barcodes
- High-speed sorting of barcoded mail

Barcoding by
- Postal Service
- Mailers, for a discount

- Goal—ability to barcode virtually all letters by end of 1997

Automated mail processing involves converting printed and electronic addresses to barcodes and sorting letters according to the barcode using high-speed equipment. Barcodes can be applied by the Postal Service, either by automated mail processing equipment or keyers reading addresses that the equipment cannot decipher (called remote barcoding), and by mailers who may receive a discount for doing so.

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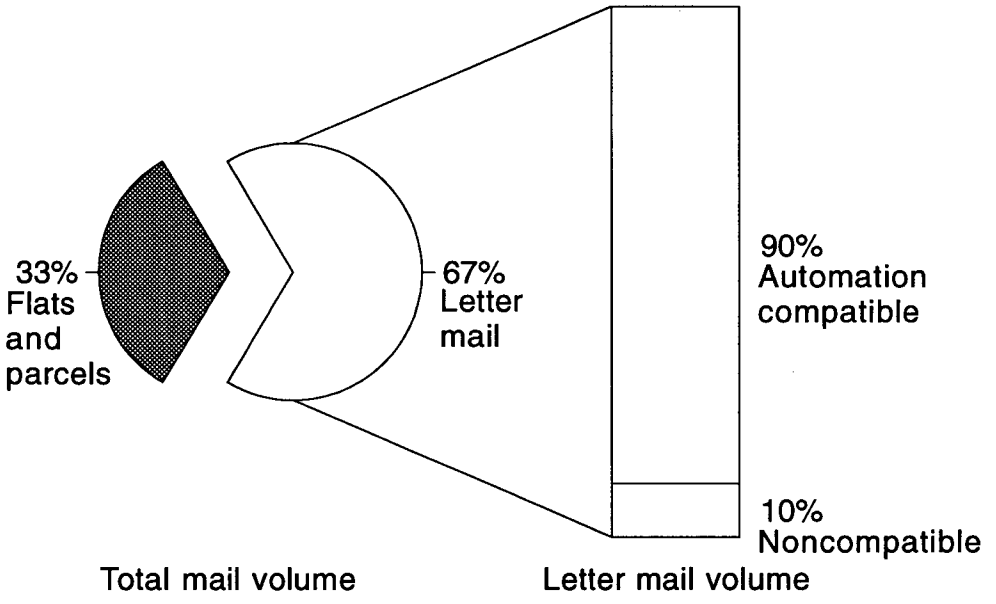
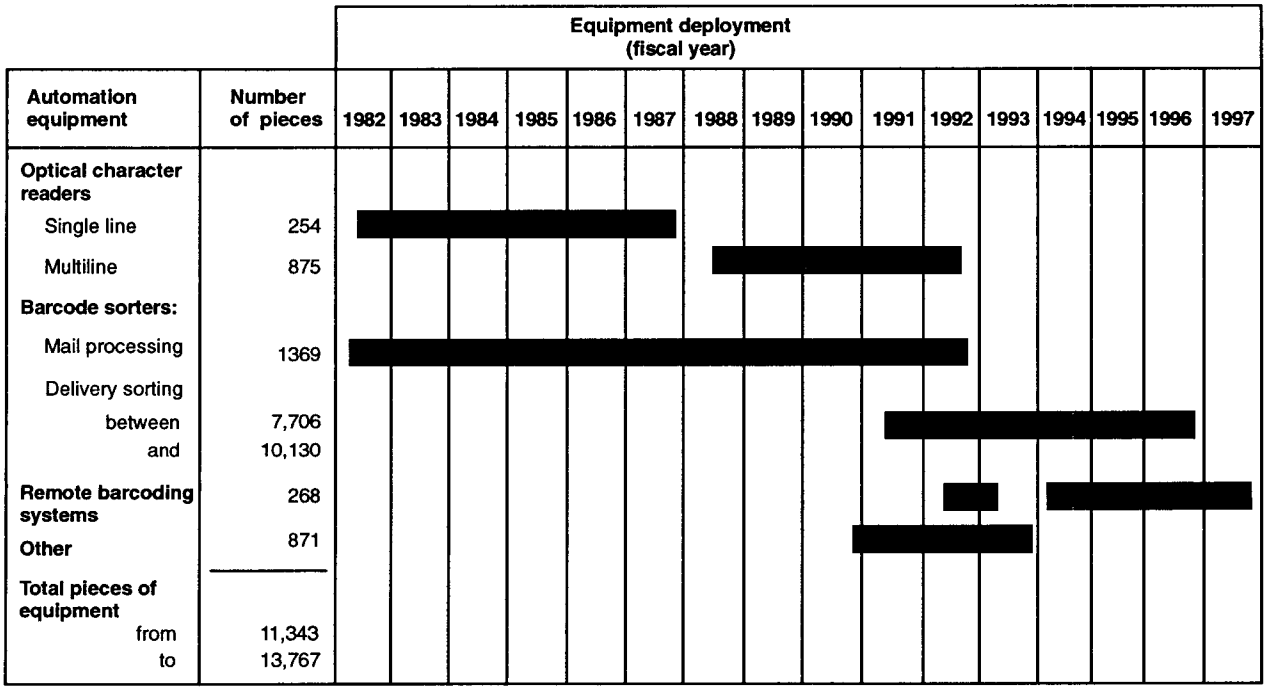
Not All Letter Mail Is Automation Compatible



Source: Postal Service data.

Letters make up about two thirds of all mail, and about 90 percent of the letters are of acceptable size and shape to be processed on automated equipment. The Service's goal is to be able to barcode these letters by the end of 1997. The total mail volume in 1994 was 177 billion pieces.

GAO Automation Equipment Deployment Schedule Spans 16 Years



Note: Postal estimates the total cost of the automation program will be $5 billion.

Source: Postal Service data.

Equipment and Cost

The automation program requires basically two types of equipment: (1) optical character readers that read addresses, translate them into barcodes, spray the barcodes on envelopes, and do some initial sorting; and (2) barcode sorters that read the barcodes and do the detailed sorting. As the program has evolved, various modifications and other equipment have been developed and added, including a remote barcoding capability where workers read addresses that the optical character readers cannot. Over a 16-year period ending in 1997, up to about 14,000 pieces of letter automation equipment, costing $5 billion, are planned to be deployed.

GAO Evolution of ZIP Codes and Barcodes

- 5 digit ZIP Code created in 1963
  - identified post office
- 4 digits added to ZIP Code in 1983
  - identified segment of carrier route
  - included barcode
- 2 digits added to barcode in 1993
  - identified address
  - allowed for delivery point sequencing

Current Coding Evolved From 1963 ZIP Code

In 1963, the five-digit Zoning Improvement Plan (ZIP) Code was devised to provide a numbering system that could guide mail to any U.S. post office. By 1978, the code was used on approximately 97 percent of all domestic mail. Most letter mail was sorted on large letter sorting machines that relied on operators to manually key in the ZIP Code before the mail piece could be sorted. When mail arrived at the post office specified by the 5-digit code, a machine operator who had memorized street names and numbers for each carrier's route sorted the letters to carriers. The Service also offered business mailers lower postage rates for presorting their mail, allowing it to by-pass certain steps in the Postal Service.

In 1983, the Service added four digits to the ZIP Code, (ZIP+4), enabling mail to be sorted to a segment of a carrier route without any special knowledge, or, if warranted, to certain finer designations, such as one side of the street in a block, a business, building, or post office box section.

Barcoding was introduced with the 9-digit ZIP Code, thus permitting letters to be sorted automatically. In 1993, the Service instituted the 11-digit barcode by adding the last two numbers of the street address to the 9-digit ZIP Code; it enables sorting to specific street numbers.

GAO Congressional/GAO Interest

- 9 digit ZIP Code not well received
  - Inconvenient
  - Not heavily used
  - GAO reviewed potential 9-digit use
- Conversion to multiline OCRs
  - GAO reviewed Service's conversion option plans
  - ZIP Code helpful but not needed
- Automation not a panacea for Service's costs to outpace inflation

Congressional and GAO Interest in Postal Automation

Conversion to the 9-digit ZIP Code was controversial. Business mailers believed that adding 4 digits to the 5-digit ZIP Code was an imposition whose costs and inconvenience would exceed any savings. Congress postponed the 9-digit code until October 1983 while we reviewed the code's planned implementation and the Service re-examined its internal options for the expanded ZIP Code. In 1983, we reported that the 9-digit ZIP Code could be cost-effective if the Service (1) demonstrated successful performance of the equipment and (2) established rate incentives for volume mailers that reasonably assured sufficient use of the 9-digit code.

The Service initially acquired single-line optical character readers (OCR) that only read the 9-digit ZIP Code line of the address. We reported that their success thus depended upon mailers applying these codes in large numbers. But this did not occur. As the Service considered converting to multiline readers, we reported on the pros and cons of single versus multiline optical character readers. The Service decided in 1985 to replace the single-line readers with multiline readers which could read up to five lines of a printed address. At that point, the optical character readers no longer needed ZIP Codes to apply barcodes; however, they work more efficiently if a correct ZIP Code is present. We subsequently reviewed the Service's conversion to multiline readers.

In 1992, we pointed out that automation was producing some savings but was unlikely to be a panacea that would reverse the tendency for postal costs to outpace inflation.

GAO Inconsistent Management Attention

- Portions of automation program abolished in 1992
  - Headquarters oversight office
  - Field support
  - Performance tracking
- Low employee opinion of program implementation

Inconsistent Management Attention to the Automation Program

The Postal Service began major deployments of automated equipment in 1982, and in 1987 it began formulating a formal program with an oversight office, a written plan, results tracking, timetables, and goals. However, much of the central management oversight was discontinued in 1992 after a major reorganization under Postmaster General Runyon, and more decision-making was delegated to the field. The number of staff responsible for planning and implementation of automation was reduced.

Although the Service is restoring features of the earlier automation program, momentum has been lost. Parts of the automation program abolished due to the change in policy included

- Automation Implementation Management Department at Postal Headquarters,
- management support structure in the field, and
- tracking system that measured automation equipment use and performance.

In 1993, field managers commented that the automation program appeared to be on hold or in hibernation. More than a third of employees responding to an opinion survey in 1993 did not believe that the Service was doing a good job of implementing automation. The percentage of executives who believed that the Service was doing a good job of implementing the program decreased from 53 percent in 1992 to 39 percent in 1993. A central automation office was reinstated in October 1993 to update the Corporate Automation Plan and, in coordination with operating functions, develop and implement a process to manage automation. The new office expects to complete a new Corporate Automation Plan by March 1995.

Barcoding Problems Numerous and Varied

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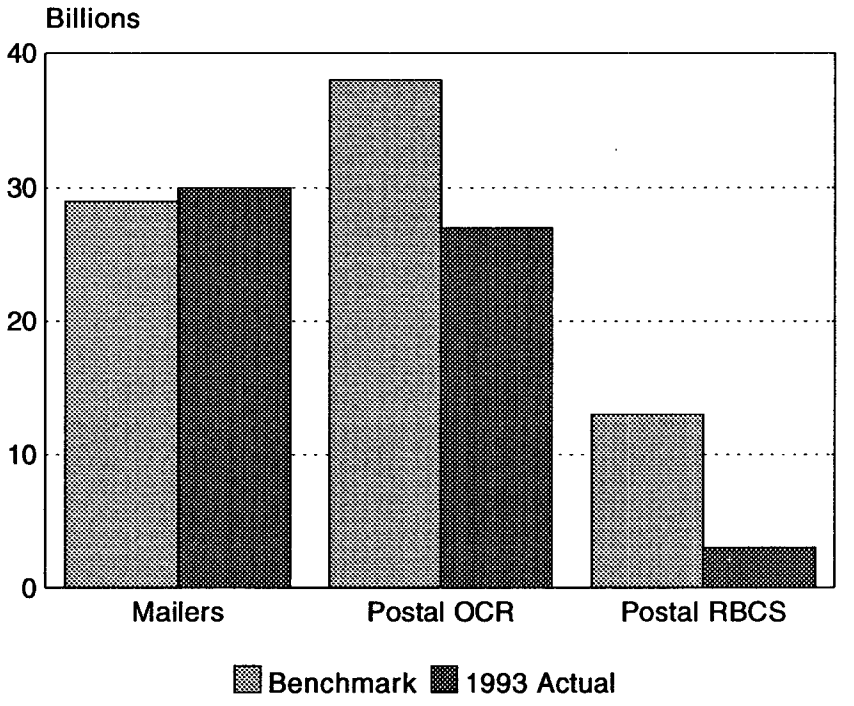
Letters Barcoded in 1993 Fell Short of Benchmark



Source: Postal Service data.

Barcoding Is Behind Schedule and Hampered by Problems

In 1988, the Postal Service set a goal and began developing a detailed Corporate Automation Plan (CAP) to barcode virtually all letter mail by the end of fiscal year 1995. The 1992 revised plan included benchmarks indicating the volume of mail to be barcoded each year by the Service and by mailers to achieve the 1995 goal. The benchmark for 1993 was a total of 80 billion letters. The Service and mailers together barcoded 60 billion letters in 1993. Mailers barcoded more letters than expected. Most of the 20 billion shortfall was due to the Service not barcoding its share of letters. The remote barcoding system (RBCS) was expected to generate about 13 billion barcoded letters from an 83-site system, but the actual number was 25 sites and 3 billion barcoded letters. Actions the Service is taking to increase barcoding are discussed in subsequent sections of this briefing.

GAO Postal Service Barcoding Problems

- Barcoding hampered by inadequate address information and mailpiece quality
  - Not all addresses are OCR readable and verifiable against the Service's official address directory
  - Such characteristics as envelope design, color, or paper composition may preclude barcoding

Postal Service Barcoding Is Hampered by Inadequate Address Information

OCRs are expected to derive barcodes from addresses that must be (1) machine readable and (2) verifiable against the Postal Service's official address directory. Overall, the Service's readers reject about half the letters they receive for barcoding. Because the readers reject letters with incorrect or unrecognized addresses, such letters must either be barcoded by slower and more costly methods or processed without a barcode, which is the most expensive sorting method.

Because barcoding discounts are not available to most mailers (e.g., a minimum of 500 First Class letters per mailing to qualify), they do not have to conform their address databases with the official directory. As a result, many letters have addresses that cannot be barcoded by the Service's optical character readers. Many others cannot be read due to the color or composition of the paper, or other design characteristics. Moreover, handwritten addresses cannot be read by optical character readers and will be barcoded by remote barcoding.

The Service is adding computer and camera enhancements to OCRs that it believes will improve its ability to read and bar code letter mail.

GAO Postal Service Barcoding Problems (Cont.)

- Largest discount now for mailer presorting, not prebarcoding
- Postal plans to file for a general reform of the mail classification structure—will favor prebarcoded mail over presorted mail

Incentives Give Preference to Presorting Over Barcoding

Postage rates are not entirely compatible with the current Postal Service automation plans. The Postal Service offers a discount for barcoding mail. But it offers an even larger discount if mailers presort their mail to the carrier route or in delivery sequence. Before the implementation of delivery point sequencing in March 1993, it made sense to offer the largest discount for mail presorted to carrier routes. However, with delivery point sequencing, this is not the case. Maximum workhour savings accrue when a carrier receives a single batch of letters already sorted in delivery point sequence, which can only be done after the Postal Service receives and makes final sorts of mail from mailers. The benefits of delivery point sequencing can be reduced or lost when carriers receive multiple trays of presorted mail from different mailers. Such mail must be merged either by automation using the Service's sorting equipment or manually by the carrier. If neither is done, the carrier must go on the street with multiple groups of letters, which can increase delivery time and defeat the purpose of automated sorting. Yet presorted mail currently receives the largest discount from the Postal Service.

The Postal Service wants to reclassify the postage rates so they more closely reflect the level of service given, the use of automation technology, and the point at which mail enters the system. The Service expects to propose mail classification revisions to the Postal Rate Commission in 1995, with rates that, among other things, will favor barcoded mail over presorted mail. However, presort discounts are well established. Because mailers and presort firms have committed their time and money to the existing rate structure, it will take time to change the basic discount strategy.

GAO Postal Service Barcoding Problems (Cont.)

- Smaller mailers not directly eligible for barcode discount
  - Minimum quantities required to qualify for barcoding discount effectively eliminate medium and small mailers
  - Advances in technology have given small mailers capability to barcode letters

Most Mailers Not Eligible for Barcode Discount

The Postal Service offers no financial incentive but only encouragement for most mailers to prepare mail that can be sorted on the Service's equipment. The minimum quantity of letters to qualify for a barcode discount is a single mailing of 500 pieces for First Class and 200 for third class. In 1991, the Postal Rate Commission proposed a public automation rate discount of 2 cents for anyone using barcoded reply envelopes often provided by business mailers for bill remittances. But the Postal Service opposed this proposal because of the difficulties it anticipated it would face in educating the public about a new rate and ensuring that correct postage was used. The Service's current plans for reclassifying the rate structure do not extend prebarcode discounts to smaller volume mailers.

The minimum quantities to qualify for discounts were first established in the 1960s and, according to postal officials, have no current analytical basis. In the meantime, recent advances in desktop computing have made it relatively inexpensive and easy for smaller volume mailers to address letters that meet Postal Service standards for barcoded mail.

GAO Mail Preparation Requirements Discourage Barcoding

- Complicated mail preparation regulations
- Thousands of employees required to monitor compliance
- Effectiveness of monitoring unknown

Mail Preparation Requirements May Discourage Mailer Participation

The Service's requirements for mailers to qualify for automation discounts do not encourage barcoding or necessarily ensure savings. The requirements are lengthy, complex, and hard to understand. When mailers submit mail for a discounted rate, it is not easy for the Service to ensure that the mail meets its specifications and can be processed on automation. In 1994, the Service had about 3,000 employees whose job, among other duties, was to determine that large mailings actually qualify for prebarcoded and/or presorted mail discounts. In many cases, special equipment is required (but not always available) because flaws cannot be detected visually. Because of the sheer volume of this mail, the Service's effectiveness in screening it for correct postage is unknown. We are looking at this area in a separate review.

The Service offers assistance to mailers on how to prepare their mailings properly. It also has an effort under way to improve these field operations by streamlining mailing requirements functions, simplifying regulations, and increasing training for customers and employees. One goal is to reduce the administrative workload of mail requirements personnel so that more time can be spent on such activities as customer training and support.

GAO Remote Barcoding More Expensive Than Planned

- Initially planned that remote barcode keying would be contracted out
- Now using Postal employees

Remote Barcoding Method More Expensive Than Planned

One automation problem involves how to put barcodes on letters that have not been barcoded by mailers and have handwritten or poorly printed addresses that cannot be read by the Service's OCRs. The Service's solution is a function called remote barcoding; it entails making an electronic image of letters that optical character readers cannot read. The images are electronically transmitted to data entry clerks who enter enough address information to provide the appropriate delivery point code. This information is transmitted back to the processing facility and a modified bar code sorter then matches the new information to the letter and applies a barcode.

The Service initially planned that remote barcode keying would be contracted out because (1) these workers would not touch the mail, (2) the work would be part-time employment, and (3) technological advances in optical character recognition would enable equipment to read this mail and eventually phase out the remote barcoding. Twenty-five remote barcoding sites opened initially in 1992 and 1993, with plans to ultimately have 268 sites. In 1990, The American Postal Workers Union and the National Association of Letter Carriers challenged the Service's remote barcoding plans. In May 1993, an arbitrator decided that the Service's contract with the Union required the Service to first offer the keying work to postal employees before contracting it out. In November 1993, the Service and the Union agreed that the work would be done by postal employees, 30-percent career employee workhours and 70-percent transitional employee workhours. Because postal employees are paid significantly more than contract workers, the agreement will reduce the savings anticipated from remote barcoding. Early in 1994, the Service reactivated deployment of remote barcoding systems (RBCS).

GAO Remote Barcoding More Extensive Than Planned

- Remote barcoding intended as interim barcoding method until advances in technology eventually phase it out
  - Now seen as long-term part of automation

Remote Barcoding Method More Extensive Than Planned

The Service now believes that no major breakthrough in character recognition is imminent. In 1992, it revised its approach to research in this area and focused more on products that could be added to the Service's existing equipment rather than creating whole new machines, and on products that would not otherwise be funded by industry. Because OCRs are not barcoding as many letters as expected, and because no breakthroughs are expected in this technology, the Service will be relying on the more expensive remote barcoding function more than planned and for much longer than planned.

The Service is adding a new piece of equipment, the remote computer reader (RCR), to remote barcoding systems that is expected to increase automatic bar code production and reduce encoding costs. RCR uses the same technology as the OCR but has more time to decipher an address image than the OCR does. If successful, it will reduce the number of images that need to be transmitted to remote keyers.

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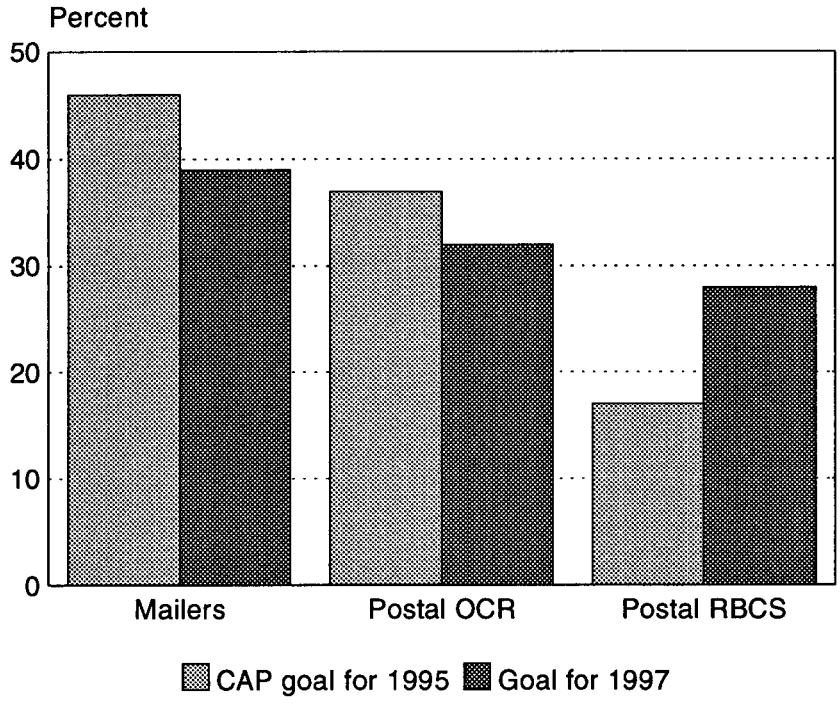
Increased Use of Remote Barcoding and Reduced Dependence on Mailers



Source: Postal Service data.

Increase in RBCS Use and Reduced Role for Mailers and OCR

In March 1994, the Postal Service changed its barcoding projections to increase the use of remote barcoding and reduce dependence on mailers and the Service's OCRs for barcoding. The Service originally planned that RBCS would barcode 17 percent of the letter mail. However, the Service now expects this method to barcode 28 percent. According to Postal Service officials, the increased reliance on RBCS is due in part to two factors: (1) lower than expected OCR barcoding performance due to a degradation of the mailbase and (2) technology enhancements in remote barcoding. The degradation of the mailbase occurred as more of the easier to barcode mail became customer prebarcoded. The remaining mail is more difficult for the Service's OCRs to barcode. According to Service officials, a team has been formed to address the problem by persuading mailers to improve address accuracy and readability.

Obstacles to Achieving Delivery Point Sequencing

GAO Obstacles to Achieving Delivery Point Sequencing

- Delivery point sequencing not yet implemented for high-rise business or residential buildings
  - Includes 23.1 million addresses—19 percent of total deliveries
- Time frame for implementing delivery point sequencing for high-rise structures is indefinite

Delivery Point Sorting Is Not Available for Multiple Occupant Buildings

The 11-digit barcode identifies the street number of the address so that letters can be sequenced according to the carrier's route. However, many carrier routes have large numbers of apartments and suites, and most mail for these units cannot now be sorted in delivery sequence. In implementing delivery point sequencing, the Service gave priority to residential addresses, and apartments and other units in multiple-occupant buildings were deferred. This was because of the additional complexity involved in interpreting the address information and because the Service believed that greater savings could be achieved by concentrating on residential deliveries.

About 23 million delivery points are affected, about 19 percent of total deliveries. The Service expects to eventually include these addresses in delivery sequencing, but does not know when.

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Obstacles to Achieving Delivery Point Sequencing

Capturing carrier savings behind schedule

- No joint agreement to expedite route realignments

Capturing Carrier Savings Behind Schedule

When carriers receive their letters in delivery point sequence, the time they spend preparing mail for delivery should be reduced. This would allow the carriers to cover larger routes, resulting in a savings in workhours. The Service originally expected that 2 hours of mail preparation time could be saved per carrier.

Achieving the carrier savings expected, however, will require the cooperation of the carriers and the unions representing them. In September 1992, the Postal Service and the National Association of Letter Carriers issued joint agreements that resolved past disputes on the subject and provided a plan for setting delivery point sequencing volume targets and rules for realigning carrier routes to capture savings. As the Service gained experience with implementation, it became clear that original target volumes to trigger major realigning of routes were too high. In January 1994, negotiations on updating the joint agreements broke down, leaving delivery units in various stages of their plans. As a result, the Postal Service, using the existing agreements, issued detailed delivery point sequencing management strategies to the field, including changes to target percentages for interim route adjustments and new directions on when carriers should cease casing automation sequenced mail and carry it directly to the street. The Service also amended the handbooks to provide for route inspection procedures to include automation sequenced mail.

The Service no longer anticipates that carriers will save 2 hours a day preparing mail for delivery, and now uses a savings estimate of 80 minutes per day based on standard sorting rates and volumes.

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Obstacles to Achieving Delivery Point Sequencing

Capturing carrier savings behind schedule

- Sequenced mail volume behind schedule
- Carrier in-office time increasing
- Inspection Service finds little savings and service delays

Obstacles to Capturing Carrier Savings

At the end of fiscal year 1994, after a year and a half of implementation, 50,112 routes, about 30 percent of all city routes, were receiving letter mail sequenced on automation, and carriers for about 33 percent of the routes continued to manually sort letters already sequenced by automation. However, daily consistent volumes were insufficient to carry out major route realignments. Frequently, target offices received less than 40 percent of the letter mail in delivery point sequence order. And, overall, time spent in the office by carriers in 1994 was up 6.2 percent over 1993, while volume was up 3.4 percent.

The Postal Inspection Service studied delivery point sequencing at several of the first delivery units to implement the new method, and thus should have been the furthest along in its use. The Inspection Service concluded that not only was there no significant savings in carrier in-office workhours, but also that the amount of delayed mail also increased. The chief reasons for the lack of savings were reported to be the low volume of delivery point mail and the carriers' distrust of automation's accuracy, which caused them to continue to sort the mail manually. (A 1993 Postal Service employee opinion survey indicated that fewer than one fifth of the city carriers who responded believed the Service was doing a good job implementing automation.)

GAO Space Needed for Sorters

- Large sorters required more space than was available
- Change to more, smaller sorters
- Space problem remains

Lack of Space for Sorters

A long-standing problem that has required the Service to revise its plans and that can reduce expected cost savings is the lack of space at mail processing plants or delivery stations for all the barcode sorters needed. Most of the delivery point sorting was to be done by a piece of machinery called the delivery bar code sorter. The Service estimated that it needed about 5,600 of these. However, after committing to about 2,400 delivery bar code sorters (DBCS), the Postal Service realized that it did not have room for all of the remainder. The Service then developed plans for a smaller barcode sorter. However, it must buy more of these than the original pieces of equipment because they have less capacity. This still has not solved the space problem entirely. The Service currently estimates that it lacks space for about 20 percent of the needed delivery sequence sorting capacity.

Automation Not Producing Anticipated Reductions

GAO Postal Service's Expected Savings

Automation expected to save

- 84,000 work-years
- actual reduction of 40,000 work-years in functions directly related to automation

Savings Have Not Met Expectations

The Service developed a detailed Corporate Automation Plan in 1989, which it last updated in 1992. In so doing, the Service predicted savings of from 84,000 to 100,000 work-years by 1995, including an outright reduction of over 40,000 work-years. Instead, work-years have increased, both overall and for work such as letter sorting that is most directly affected by automation. Work-years in manual letter sorting, which should decline as the Service turns to automation, actually increased 5.3 percent in 1993 and 2.9 percent in 1994.

Postal officials said that increased mail volume and deliveries account for the growth in work-years. However, workload growth is normal in the Postal Service, varying according to rate increases and the general health of the economy. The Corporate Automation Plans took workload increases into account. For example, the 1990 plan estimated that volume growth would average 1.7 percent a year from 1990 to 1995; through 1994, it has grown 1.9 percent annually.

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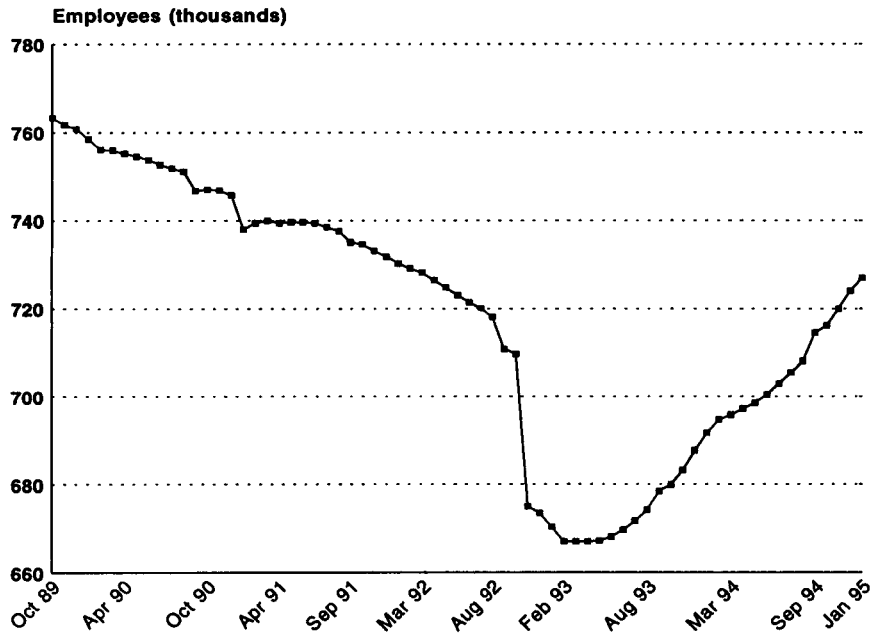
Career Employment Dropped but Has Returned to Pre-reorganization Level



Career Employment Fluctuations

By far the largest group contributing to total work hours are career employees. Career employment steadily declined from a high in May 1989 until a major reorganization and downsizing occurred in 1992, which was unrelated to the automation program. As a result of the downsizing, career employment dropped suddenly and quickly in 1992 and early 1993. However, career employment now exceeds the level achieved before the downsizing and is increasing rapidly, apparently in an effort to remedy some widely publicized service problems that the Postal Service encountered after the downsizing.

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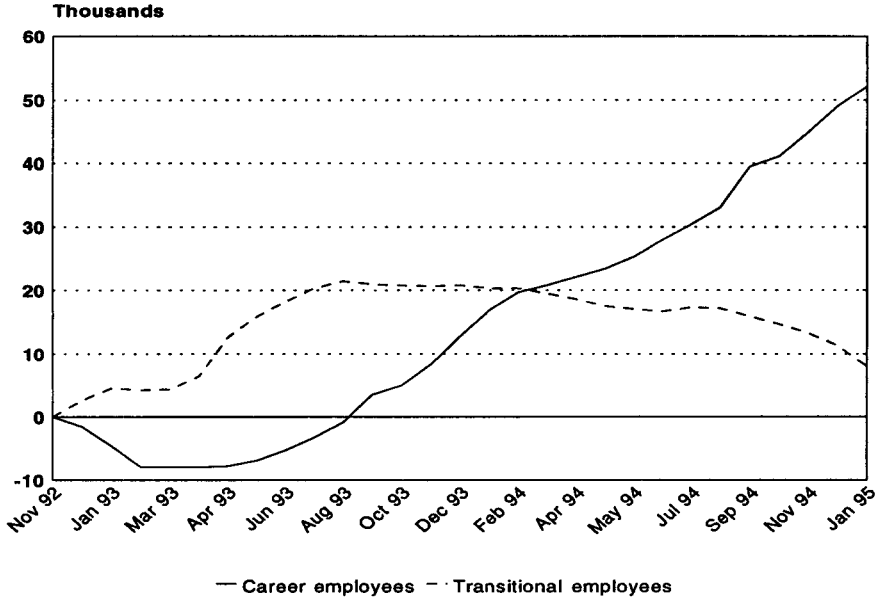
Change in Career and Transitional Employment

Cumulative changes since 1992 downsizing



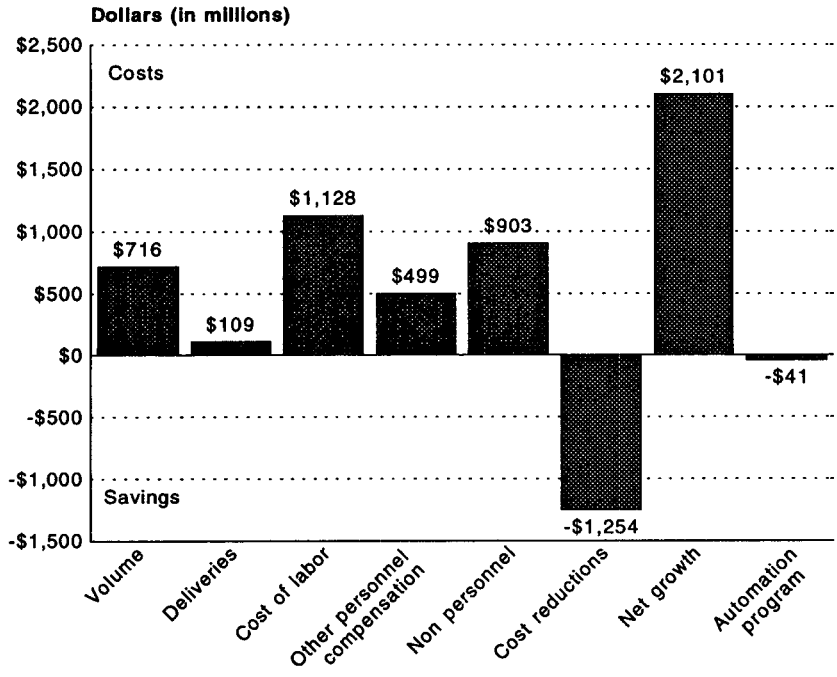
Note: In November 1992, career employment equaled 674,983 and transitional employment equaled 20,218.

Source: Postal Service data.

Career Versus Transitional Employees

The Service also is no longer following an explicit cost-savings strategy whereby career employees were to be replaced by less costly transitional (temporary) employees during the period that automation was being phased in. The theory was that once automation began displacing employees, the transitional workforce could be more easily reduced than career employees, who have significant job protection. Accordingly, from May 1992 until August 1993, the transitional workforce grew to over 41,000 employees. However, in a 1993 agreement with the American Postal Workers Union, the Service agreed to curtail the number of transitional employees. Thereafter, transitional employment leveled off and began dropping while career employment increased sharply.

GAO Budgets Project Some Automation Savings in 1994



Source: Postal Service data.

Cost-Saving Impact of Automation Has Been Relatively Insignificant

From inception of the automation program in 1982, the Service justified automation on the basis of its potential for reducing costs. If automation were performing entirely as planned and producing all the savings that were cited to justify the equipment initially, the savings would still be a small percentage of total operating expenses. For example, in 1994, the Service estimated the budget impact from automation to be a savings of $41 million, or less than one tenth of a percent—a relatively insignificant

amount compared with cost increases due to higher mail volume ($716 million) and the higher cost of labor ($1.1 billion) in 1994.

The Service estimated that the total amount of budget savings and cost avoidance from automation, beginning in 1987 when the Service began investing in advanced OCRs, through 2005, would be $14.4 billion. This is about 1.3 percent of estimated total operating expenses for the same period—about $1.1 trillion.[1] (In a recent request to the Postal Service Board of Governors for approval of RBCSs, the Service also included in its justification delivery data showing that barcoded mail was delivered more quickly than other mail.)

[1]Assuming operating expenses continue to grow by 6.1 percent annually, the actual rate of growth from 1987 through 1993.

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Electronic Diversion Could Adversely Impact Automation Benefits

- Business correspondence and transaction mail most vulnerable
- About 45 percent of total mail volume is vulnerable
- Business-to-business correspondence and transaction mail down 30 percent since 1988

The Impact of Electronic Communication on Letter Mail

A factor largely outside the Postal Service's control—the electronic diversion of letter mail—could adversely affect future benefits from automation. Mail that best lends itself to automated processing is business-related correspondence and financial transactions. This is the mail that is also the most susceptible to being diverted by mailers to electronic communication such as fax, e-mail, and electronic data interchange between businesses. Such mail accounted for about 44 percent of the Service's total volume in 1993. The Service estimated that business-to-business correspondence and transaction mail would drop from 30.4 billion pieces in 1988 to 20.5 billion in 1994. While the projected decline was offset by increases in advertising mail and mail between businesses and households, many postal experts believe that in coming years a major portion of the mail clearly will be at risk.

Letter Mail Automation

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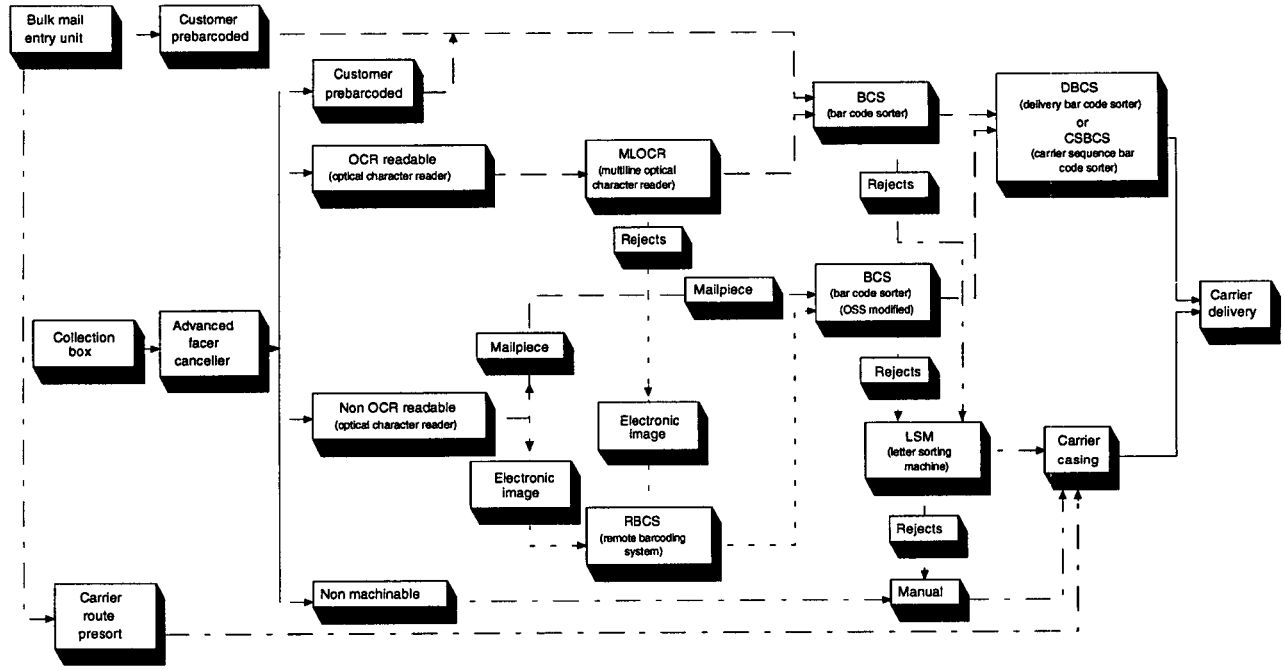
U.S. Postal Service Letter Mail Automation



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Glossary of Letter Mail Automation Equipment

Advanced Facer Canceler System (AFCS)	Faces (arranges mail so all addresses and stamps are facing the same way), cancels, and sorts letter mail into three mail streams: pre-barcoded letters, OCR readable (typed/machine imprinted) letters, and hand-written or script letters.
Carrier Sequence Bar Code Sorter (CSBCS)	Sorts barcoded letters into the carrier's walk sequence, i.e., the order in which letter carriers deliver their routes. Using a three-pass operation, it sorts one route at a time.
Delivery Bar Code Sorter (DBCS)	Primarily used to sort barcoded letter mail to the order in which letter carriers deliver their routes. Using a two-pass operation, it sorts many routes at a time.
Mail Processing Bar Code Sorter (MPBCS)	Primarily used to process/sort barcoded letters to the destination post office or 5-digit ZIP Code level only. Can also sort barcoded letters to the carrier route for larger delivery offices.
Multiline Optical Character Reader (MLOCR)	Reads the entire address block of a letter, consults the address directory, determines the proper ZIP Code for that address, sprays a barcode on the letter, and sorts the letter to one of a number of stackers.
Remote Barcoding System (RBCS)	Provides barcoding for mail that cannot be read by OCR. It processes images of letters lifted by AFCS and MLOCR and determines the correct barcode, which allows the letter to be barcoded by a barcode sorter modified with an OSS.
Major Components of RBCS	Image Processing Subsystem (IPSS): Receives images of letters not read by RCR and transmits the images to the remote encoding sites, displays video images on video terminals, determines ZIP Codes from operator-keyed extraction codes, and transmits ZIP Code and ID back to the decision storage unit. Input Subsystem (ISS): A modification to AFCS and MLOCR that allows AFCS and MLOCR to spray an ID tag on the back of each OCR unreadable mailpiece and then provide a video image to the RBCS for further processing.

	Output Subsystem (OSS): A modification to a barcode sorter that enables it to interface with RBCS and print a barcode on the letter, as well as sort the letter based on the barcode. Remote Computer Reader (RCR): Uses address recognition techniques similar to the MLOCR but has more time to determine the ZIP Code information.
Single Line Optical Character Reader (SLOCR)	Reads the city/state/ZIP line of the address block, consults the address directory, and determines the proper ZIP+4 barcode for that address; prints the barcode on the letter; and sorts the letter to one of a number of stackers.
Wide Area Bar Code Reader (WABCR)	A modification to MPBCS that permits the sorter to "read" a barcode virtually anywhere on the letter.

List of Related GAO Reports

Conversion to Automated Mail Processing Should Continue; Nine-Digit ZIP Code Should Be Adopted If Conditions Are Met (GAO/GGD-83-24, Jan. 6, 1983).

Conversion to Automated Mail Processing and Nine-Digit ZIP Code—A Status Report (GAO/GGD-83-84, Sept. 28,1983).

Comparative Review of Single-Line and Multiline Optical Character Readers Used in Mail Processing (GAO/GGD-84-78, Aug. 7, 1984).

Postal Service: Information on the Change to Multiline Readers for the ZIP + 4 Program (GAO/GGD-86-62BR, Mar. 28, 1986).

Postal Service: Automation Is Restraining But Not Reducing Costs (GAO/GGD-92-58, May 12, 1992).

Postal Automation and Pricing in the 1990s (GAO/T-GGD-92-39, May 12, 1992).

Postal Service: Restructuring, Automation, and Ratemaking (GAO/T-GGD-93-15, Mar. 25, 1993).

Postal Service: Role in a Competitive Communications Environment (GAO/T-GGD-94-162, May 24, 1994).