

CHAPTER 7

Post Office

<p>The Postal Mechanisation System at the Air Mail Centre</p>
--

**Audit Commission
Hong Kong
22 March 2005**

This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 44 of the Director of Audit contains 8 Chapters which are available on our website at <http://www.aud.gov.hk/>

Audit Commission
26th floor, Immigration Tower
7 Gloucester Road
Wan Chai
Hong Kong

Tel : (852) 2829 4210
Fax : (852) 2824 2087
E-mail : enquiry@aud.gov.hk

THE POSTAL MECHANISATION SYSTEM AT THE AIR MAIL CENTRE

Contents

	Paragraph
PART 1: INTRODUCTION	1.1
Background	1.2 – 1.3
The planning and commissioning of the Postal Mechanisation System	1.4 – 1.7
Components of the Postal Mechanisation System	1.8 – 1.9
Audit review	1.10 – 1.11
Acknowledgement	1.12
PART 2: ACCEPTANCE TESTS OF THE POSTAL MECHANISATION SYSTEM	2.1
Importance of acceptance tests	2.2
Contract terms for acceptance tests	2.3 – 2.4
<i>Audit observations</i>	2.5 – 2.18
Post Office' s views in 2001	2.19
<i>Audit recommendations</i>	2.20 – 2.21
Response from the Administration	2.22 – 2.23

	Paragraph
PART 3: PERFORMANCE OF THE POSTAL MECHANISATION SYSTEM	3.1
Audit examination of the performance of the Postal Mechanisation System	3.2
Performance of the integrated mail processors	3.3 – 3.4
<i>Audit observations</i>	3.5 – 3.12
Post Office' s views in 2001	3.13
Action taken by the Post Office to improve the performance of the integrated mail processors	3.14
Counterclaim against the Contractor for unsatisfactory read rate of the integrated mail processors	3.15
Performance of the packet sorting systems	3.16 – 3.21
<i>Audit observations</i>	3.22 – 3.30
Post Office' s views in 2001	3.31
Action taken by the Post Office to improve the performance of the packet sorting systems	3.32 – 3.34
Performance of the parcel sorting system	3.35
<i>Audit observations</i>	3.36
Post Office' s views in 2001	3.37
<i>Audit recommendations</i>	3.38 – 3.39
Response from the Administration	3.40 – 3.43

	Paragraph
PART 4: UTILISATION OF THE POSTAL MECHANISATION SYSTEM	4.1
Expected utilisation of the Postal Mechanisation System	4.2 – 4.4
<i>Audit observations</i>	4.5 – 4.18
Post Office' s views in 2001	4.19
Action taken by the Post Office to increase the utilisation of the Postal Mechanisation System	4.20 – 4.21
<i>Audit recommendations</i>	4.22 – 4.23
Response from the Administration	4.24 – 4.25
PART 5: PAYMENTS FOR THE POSTAL MECHANISATION SYSTEM	5.1
Discounts allowed in the Contract	5.2
Payment procedures	5.3 – 5.4
<i>Audit observations</i>	5.5 – 5.8
Administration' s views in 2001	5.9 – 5.11
Recovery of the overpayments from the Contractor	5.12
<i>Audit recommendations</i>	5.13 – 5.14
Response from the Administration	5.15 – 5.16

	Page
Appendices	
A : Capital costs of the components of the Postal Mechanisation System	71
B : Read rate of the integrated mail processors for inward mail (April 1999 to September 2004)	72
C : Read rate of the integrated mail processors for outward mail (April 1999 to September 2004)	73
D : Error rate of the integrated mail processors for inward mail (April 1999 to September 2004)	74
E : Error rate of the integrated mail processors for outward mail (October 2000 to September 2004)	75
F : Overflow rate of the integrated mail processors (April 1999 to September 2004)	76
G : Jam rate of the integrated mail processors (April 1999 to September 2004)	77
H : Throughput of the packet sorting systems (April 1999 to September 2004)	78
I : Jam rate of the packet sorting systems (April 1999 to September 2004)	79
J : Overflow rate of the packet sorting systems (April 1999 to September 2004)	80
K : Throughput of the parcel sorting system (April 1999 to September 2004)	81
L : Projected and actual daily number of mail items sorted by the Postal Mechanisation System (1999-2000 to 2003-04)	82
M: Acronyms and abbreviations	83

PART 1: INTRODUCTION

1.1 This PART describes the background to the audit of the Postal Mechanisation System (POMS) at the Air Mail Centre (AMC).

Background

1.2 In 2000-01, the Audit Commission (Audit) conducted a review of the POMS at the AMC. However, in August 2001, the Department of Justice informed Audit that in June 2001, the Contractor of the POMS had served a notice of arbitration against the Government over the issues of prolongation of contract period, and delays and disruptions to the installation work as a result of the postponement of the opening of the Hong Kong International Airport at Chek Lap Kok (Note 1).

1.3 In May 2004, the Post Office informed Audit that the Contractor's claims had been settled. The Department of Justice had advised that it was inappropriate and undesirable to disclose the terms of the settlement agreement in the audit report. In July 2004, Audit resumed the audit of the POMS. The audit covered the Contract for the supply and installation of the POMS, and the performance and utilisation of the POMS.

The planning and commissioning of the Postal Mechanisation System

1.4 In early 1990s, when planning the construction of the new AMC at the Hong Kong International Airport at Chek Lap Kok to replace the facilities at the Kai Tak Airport, the Post Office considered the AMC project an opportunity to improve both the cost-effectiveness of handling air mail and the service standards of air mail. At that time, air mail was processed at the General Post Office (GPO) in Central and the International Mail Centre (IMC) in Hung Hom. The Post Office decided to develop the AMC into a major operation centre to centralise the operation of handling air mail.

Note 1: *The Department of Justice advised that the publication of an audit report at that stage might be perceived as prejudging the outcome of the arbitration or probable legal proceedings and was unfair to the Contractor and might prejudice the Government's position in those proceedings. Audit should defer the publication of the audit report until after the conclusion of the arbitration or probable legal proceedings. Based on the advice of the Department of Justice, the review was held in abeyance.*

1.5 In July 1993, the Post Office appointed a Consultant, specialised in postal services, at a cost of \$7.1 million (Note 2) to provide assistance in the design, procurement, testing and commissioning of the POMS at the AMC. According to the consultancy agreement, the Consultant was responsible for conducting inspections and testing of the POMS both at the contractor's plant and at the AMC to ensure that the POMS would fully comply with the contractual requirements.

1.6 In early 1994, based on the Post Office's requirements of the POMS, the Consultant submitted its final Study Report on the design to the Post Office. According to the design, the AMC would have sufficient capacity to handle the air mail traffic on peak days up to 2010-11 and human involvement in the operation of the POMS would be reduced to an absolute minimum.

1.7 At its meeting held on 4 February 1994, the Finance Committee approved the funding request of \$278.3 million in money-of-the-day prices (Note 3) for the POMS. In April 1995, the Contract for the supply and installation of the POMS to the AMC was signed between the Government and the Contractor. The POMS commenced operation on 6 July 1998 upon the opening of the new Hong Kong International Airport. The total capital cost of the POMS is \$207.9 million. Details are given in Appendix A.

Components of the Postal Mechanisation System

1.8 The POMS has the following main components:

- (a) *Integrated mail processors.* Two integrated mail processors (IMPs — see Photograph 1) are installed for automating and integrating the various steps in processing letters. The total capital cost of the two IMPs is \$43.9 million. They include:
 - (i) two optical character recognition machines (OCRs — Note 4) which capture the images of addresses written or printed in English and perform character recognition and address interpretation of letters;

Note 2: *The consultancy fee was revised to \$10.1 million due to additional work resulting from the delay in the opening of the AMC from July 1997 to July 1998.*

Note 3: *The money-of-the-day prices are the estimated cost of the POMS after allowing for forecast increases in prices.*

Note 4: *The OCRs cannot recognise addresses written or printed in Chinese characters.*

- (ii) a video coding system (VCS) which sends the address images of those letters that cannot be recognised by the OCRs to the video coding stations. Postal staff manning the video coding stations key in sorting codes of the letters; and
- (iii) two letter sorting machines which sort letters into the respective collection units according to their addresses;

Photograph 1

Integrated mail processor



Source: Photograph taken by Audit staff

- (b) ***Packet sorting systems.*** Two packet sorting systems (Packet SSs — see Photograph 2) are installed at a capital cost of \$24 million. For each Packet SS, there are four coding stations where postal staff key in the sorting codes of the packets. The conveyor belts of the Packet SSs send the packets to the respective collection units according to their addresses; and

Photograph 2

Packet sorting system



Source: Photograph taken by Audit staff

- (c) **Parcel sorting system.** One parcel sorting system (Parcel SS — see Photograph 3) is installed at a capital cost of \$17 million. The Parcel SS has four coding stations where postal staff key in the sorting codes of the parcels. The conveying system of the Parcel SS sends the parcels to the respective collection units according to their addresses.

Photograph 3

Parcel sorting system



Source: Photograph taken by Audit staff

1.9 Apart from the IMPs, the Packet SSs and the Parcel SS, the other supporting systems of the POMS include a conveyor system, a storage and retrieval system, lifting devices, transfer facilities and a mail segregation system. The capital cost of the supporting systems is \$67.8 million.

Audit review

1.10 Audit has conducted a review of the POMS at the AMC. The audit has focused on the following areas:

- (a) acceptance tests of the POMS (PART 2);
- (b) performance of the POMS (PART 3);
- (c) utilisation of the POMS (PART 4); and
- (d) payments for the POMS (PART 5).

1.11 Audit has found that the acceptance tests had not been performed in accordance with the terms of the Contract, and that a significant quantities of letters and packets had been sorted manually. Audit has also found that there are areas where improvement can be made and has made a number of recommendations to address the issues.

Acknowledgement

1.12 Audit would like to acknowledge with gratitude the full cooperation of the staff of the Post Office during the course of the audit review.

PART 2: ACCEPTANCE TESTS OF THE POSTAL MECHANISATION SYSTEM

2.1 This PART examines the acceptance tests of the POMS and suggests measures for improvement.

Importance of acceptance tests

2.2 The Contract provides for the conduct of acceptance tests on the POMS before the acceptance of its component systems. Properly conducted acceptance tests ensure that all equipment installed at the AMC meet the contractual requirements.

Contract terms for acceptance tests

2.3 The Contract stipulates the following three types of acceptance tests at three different stages:

- (a) ***Factory acceptance tests.*** The Contract specifies that:
- (i) all free-standing equipment shall be fully tested at the factory prior to shipment to the AMC;
 - (ii) other equipment to be finally assembled at the AMC shall be assembled at the factory as a test-rig for the tests; and
 - (iii) the Contractor shall build at the factory the following components of the Parcel SS for the factory acceptance tests:
 - an injection lane together with a small section of a tilt tray conveyor and control system;
 - a selection chute; and
 - a reject chute;

- (b) **Site acceptance tests.** During the installation of the POMS at the AMC, the Contractor has to demonstrate on site that the performance of the POMS is satisfactory and that the POMS complies fully with the requirements specified in the Contract. The performance of the IMPs and the Packet SSs has to be tested by using test packs and live mail; and

- (c) **Confidence trial.** After passing the site acceptance tests, the equipment has to undergo a confidence trial. According to the Contract, the confidence trial lasts for 90 days. The purpose is to demonstrate that the POMS operates consistently with live mail up to a level of performance both achieved during the site acceptance tests and according to the design performance parameters, and with minimum failure. Failure is defined in the Contract as a breakdown of any item of the equipment such that the system is not fully available for service or does not operate up to the performance level (for example, on read rate, error rate and jam rate) achieved during the site acceptance tests. The equipment is required to complete successfully the confidence trial for 90 days with live mail without being out of service for an aggregated period of more than 10 hours.

2.4 The Contract specifies that:

- (a) if a component system fails any of the acceptance tests, the Contractor shall remedy the defects and repeat the relevant tests. Any repeat tests shall not relieve the Contractor of its obligations to meet the dates specified in the implementation plan;

- (b) if the system fails the tests again, the Post Office may elect:
 - (i) to fix a new date for carrying out further tests. If the system fails such further tests, the Post Office will be entitled to request the tests to be repeated;
 - (ii) to require the Contractor to provide replacement and/or additional equipment which will enable the system to pass the tests;
 - (iii) to allow the system to proceed to the next stage of implementation, subject to a reasonable abatement of the price; or
 - (iv) to reject the system and terminate the Contract;

- (c) if, after the site acceptance tests and the confidence trial, the equipment is found to have performed satisfactorily and in accordance with the Contract in every respect, it will be accepted and taken over by the Post Office. The Consultant, on behalf of the Post Office, will issue a Final Acceptance Certificate to the Contractor; and

- (d) in the event that the POMS fails to pass the confidence trial by reason of any defect or deficiency and if any such defects or deficiencies are not remedied prior to the issue of the Final Acceptance Certificate, the Contractor shall provide equivalent temporary equipment or services to the satisfaction of the Post Office. The Post Office shall issue the Final Acceptance Certificate with a schedule of works on defects or deficiencies to be promptly remedied by the Contractor. The Post Office shall be entitled to withhold a reasonable sum of money against the remedy of all such defects and deficiencies.

Audit observations

2.5 Audit found that both the factory acceptance tests and the site acceptance tests of the IMPs, the Packet SSs and the Parcel SS, and the confidence trial of the IMPs had not been properly carried out in accordance with the terms of the Contract. Details are given in paragraphs 2.6 to 2.18.

Factory acceptance tests

2.6 The factory acceptance tests were carried out by the Contractor in the presence of the Consultant at the Contractor's factory in 1996 and 1997. The test procedures were prepared by the Contractor and approved by the Consultant. The Post Office could not provide Audit with the results of the factory acceptance tests of the supporting systems. For the IMPs, the Packet SSs and the Parcel SS, Audit found that the factory acceptance tests had not been carried out in accordance with the terms of the Contract. Details are given in paragraphs 2.7 to 2.9.

2.7 ***IMPs.*** Audit noted that:

- (a) performance standards lower than those specified in the Contract had been adopted for the tests of the read rate (Note 5) and the error rate (Note 6). The Consultant and the Contractor agreed that the IMPs would be tested again in the site acceptance tests to ascertain if the contractual requirements could be met; and

Note 5: *The read rate of an IMP is the percentage of letters recognised by the OCR of the machine. The read rates for the acceptance tests specified in the Contract for inward mail and outward mail were 74% and 67% respectively. The corresponding figures adopted for the factory acceptance tests were 60% and 50% respectively.*

Note 6: *The error rate of an IMP is the percentage of letters sorted to the incorrect collection units. The error rates for the acceptance tests specified in the Contract for inward mail and outward mail were 0.6% and 0.3% respectively. The error rates adopted for the factory acceptance tests were both 1.5%.*

- (b) the overflow rate (Note 7) was not tested.

2.8 **Packet SSs.** Audit noted that:

- (a) the Contractor proposed to exclude the throughput test (Note 8) from the factory acceptance tests because of the non-availability of compressed air. However, the Electrical and Mechanical Services Department (Note 9) advised the Post Office that the test was a key performance aspect of the Packet SSs and that it would be undesirable to exclude the test. In the event, the throughput test was not conducted. Instead, the Contractor tested the speed of the conveyor belts of the Packet SSs and then used a formula to compute the throughput; and
- (b) the Packet SSs failed the tests of the overflow rate and the jam rate (Note 10). Nevertheless, the Contractor was not required to remedy the defects.

2.9 **Parcel SS.** Audit noted that:

- (a) the Parcel SS was not ready for testing at that time; and
- (b) the Contractor, as a substitute for the factory acceptance tests, only demonstrated the operation of the parcel flow using a similar Parcel SS at the Contractor's plant with two sections of spiral chute connected by a section of conveyor.

Note 7: *The overflow rate of an IMP or a Packet SS is the percentage of mail items which are not sorted by the system to the destination collection units but are sent to the bins for overflow items. Overflow may occur because of technical problems or because filled collection units are not cleared by postal staff on time.*

Note 8: *The throughput is the number of mail items processed by the system in one hour.*

Note 9: *The role of the Electrical and Mechanical Services Department in the POMS project was to understand the system so as to provide maintenance and technical advice to the Post Office after the commissioning of the system. The responsibility of the factory acceptance tests lay with the Consultant.*

Note 10: *The jam rate of an IMP or a Packet SS is the percentage of mail items jammed in the system.*

2.10 **Issue of Factory Acceptance Certificates.** Despite the deficiencies mentioned in paragraphs 2.7 to 2.9, the Consultant issued to the Contractor the Factory Acceptance Certificates for the Parcel SS in September 1996, and for the IMPs and the Packet SSs in May 1997. The Consultant certified that the systems were accepted by the Post Office and were ready for shipment to the AMC.

Site acceptance tests

2.11 The site acceptance tests were carried out by the Contractor in the presence of the Consultant at the AMC in 1997 and 1998. The test procedures were prepared by the Contractor and approved by the Consultant. The tests were similar to the factory acceptance tests. The Post Office could not provide Audit with evidence to substantiate that the site acceptance tests of the error rate, the overflow rate and the jam rate of the IMPs had been carried out. The Post Office also could not provide Audit with the results of the site acceptance tests of the Parcel SS and the supporting systems. For the other performance aspects of the IMPs and the Packet SSs, Audit found that, similar to the factory acceptance tests, the site acceptance tests had not been properly carried out in accordance with the terms of the Contract. Details are given in paragraphs 2.12 and 2.13.

2.12 **IMPs.** Audit noted that:

- (a) the IMPs failed the read rate test. However, the Contractor was not required to remedy the defects;
- (b) in processing letters which the OCR could not recognise, the performance of the VCS was tested with only 40 letters, instead of 20,000 letters as specified in the Contract; and
- (c) the Post Office had made arrangements to bring live mail to the AMC for testing. However, there was no evidence showing that live mail was actually used in the site acceptance tests as required by the Contract.

2.13 **Packet SSs.** Audit noted that:

- (a) the Packet SSs failed the throughput test. However, the Contractor was not required to remedy the defects; and
- (b) there was no evidence showing that live mail was used in the site acceptance tests as required by the Contract.

2.14 *Issue of Site Acceptance Certificates.* Despite the deficiencies mentioned in paragraphs 2.12 and 2.13, the Consultant issued to the Contractor the Site Acceptance Certificates for the Parcel SS in March 1998, and for the IMPs and the Packet SSs in June 1998. The systems were then allowed to proceed to the confidence trial.

Confidence trial

2.15 The purpose of the confidence trial was to demonstrate that the POMS operated consistently with live mail up to a level of performance both achieved during the site acceptance tests and according to the design performance parameters, and with minimum failure. The confidence trial was scheduled to start, upon the commencement of operation of the AMC, on 6 July 1998 and end on 5 October 1998 (Note 11). However, the actual confidence trial commenced on 3 August 1998 and ended on 5 October 1998 (see para. 2.16(a)).

2.16 Details of the audit observations on the confidence trial of the POMS are as follows:

- (a) *Confidence trial period shortened by about one-third.* Although the Contract specified a confidence trial period of 90 days, the actual confidence trial period of the POMS was shortened, by about one-third, to 64 days. The Contractor, at a meeting held on 10 July 1998, said that the postal staff had incorrectly operated the system and caused unnecessary interruptions to the system affecting its reliability and performance. The Consultant considered that the general lack of training of postal staff in using the equipment hampered the conduct of the confidence trial. The Post Office, the Consultant and the Contractor then agreed that the first four weeks of the confidence trial period would be considered as the “preliminary settling down period” for postal staff to get acquainted with the operation and control of the equipment, prior to the actual system evaluation. The down time of the system during these four weeks was excluded from the total down time of the confidence trial;

Note 11: *The Post Office, the Consultant and the Contractor agreed that the confidence trial period would last for 92 days (i.e. from 6 July 1998 to 5 October 1998) instead of 90 days specified in the Contract.*

(b) ***Maximum down time allowed not reduced to take into account the shortened confidence trial period.*** According to the Contract, the maximum down time allowed for each system was 10 hours for a period of 90 days. Having shortened the confidence trial period from 90 days to 64 days, the maximum down time allowed should have been proportionally reduced to 7.1 hours (10 hours \times 64 days \div 90 days). The Post Office could not provide Audit with data on the actual down time of the Parcel SS during the shortened confidence trial period. Regarding the IMPs and the Packet SSs, the total actual down time were:

- (i) 8.4 hours and 8.6 hours for the two IMPs; and
- (ii) 2.6 hours and 3.1 hours for the two Packet SSs.

If the maximum down time allowed in the Contract had been reduced to 7.1 hours, the IMPs would have failed the confidence trial;

(c) ***Performance of the IMPs not in compliance with the contractual requirements.*** The Post Office could not provide Audit with data on the error rate of the IMPs. The performance of other aspects of the IMPs during the shortened confidence trial period of 64 days is summarised in Table 1.

Table 1

**Unsatisfactory performance of the integrated mail processors
during the shortened confidence trial period**

Performance indicator	Minimum performance requirement according to the Contract	Actual performance
Read rate	76% for inward mail 71% for outward mail	43% (Note 1)
Throughput	28,000 items per hour	26,097 items per hour
Overflow rate	Not exceeding 0.5%	3.2%
Jam rate	Not exceeding 0.01%	0.04%
Error rate	Not exceeding 0.8%	(Note 2)

Source: Post Office records

Note 1: The Post Office did not have separate read rates for inward mail and for outward mail.

Note 2: The Post Office could not provide Audit with data on the error rates of the IMPs.

According to Table 1:

- (i) when processing live mail during the confidence trial, the read rate achieved by the IMPs was only 43% (i.e. below the minimum read rates specified in the Contract). However, the Contractor argued that the performance of the IMPs would be assessed using test packs instead of live mail (see para. 3.6(a)); and
- (ii) the performance of the IMPs during the confidence trial did not meet the contractual requirements in respect of throughput, overflow rate and jam rate; and
- (d) ***Data on performance of other systems not available.*** The Post Office could not provide data on the performance of the Packet SSs (other than the down time of the Packet SSs), the Parcel SS and the supporting systems during the confidence trial. The performance of these systems during the confidence trial could not be assessed.

2.17 The Consultant issued the Final Acceptance Certificate to the Contractor on 6 October 1998 (i.e. one day after the end of the confidence trial). The Consultant issued the End of Confidence Trial Report to the Post Office and the Contractor on 8 October 1998. In the Report, the Consultant stated that the situation had improved considerably in respect of the high jam rate of the IMPs. However, the Consultant did not mention in the Report the other performance problems of the IMPs described in paragraph 2.16(c).

2.18 In November 1998, after seeking the opinion of the Consultant, the Post Office informed the Government Logistics Department (Note 12) that:

- (a) the POMS had been operating satisfactorily; and
- (b) the outstanding issues of the POMS were minor and would not affect its performance.

Note 12: *The Government Land Transport Agency, the Government Supplies Department and the Printing Department merged into the Government Logistics Department on 1 July 2003. The then Government Supplies Department was the Government's agent for the procurement of the POMS.*

Post Office's views in 2001

2.19 In response to audit enquiries, the Post Office, after taking into account the views of the Consultant, informed Audit in August 2001 details of the issues as follows:

The POMS project

- (a) ***Implementation programme.*** The POMS project, along with the building of the new AMC, was the biggest infrastructure project in the history of the Post Office. Its implementation programme was also the tightest one compared to those of the previous projects of setting up the GPO in 1976 and the IMC in 1980. This was because the Post Office had a target completion date that could not be compromised (i.e. the new AMC had to commence operation upon the opening of the new airport). The procurement process and the acceptance tests for the POMS were all geared to the originally planned opening of the new airport on 30 June 1997. Shortly after the signing of the Contract in April 1995, the airport opening date was deferred to 30 September 1997 and an implementation plan was revised to match with this new date. Thereafter, there were still uncertainties with the revised opening date. In January 1998, there was a firm decision to open the airport on 6 July 1998;

Factory acceptance tests

- (b) ***Evidence of the factory acceptance tests of the supporting systems.*** The tests were conducted in 1996 whereas the audit review was carried out in 2000-01. Due to the lapse of time, some of the working papers containing the testing records had already been disposed of. The Post Office had not been informed beforehand by Audit that it would review the POMS project, otherwise the Post Office would have retained all the working papers;
- (c) ***Standards for testing the read rate and the error rate of the IMPs.*** The Consultant accepted a lower standard for testing the read rate and error rate under the time constraint at the time. The Consultant advised that it was common for equipment of that type to require extensive fine-tuning of the OCR software on site with large quantity of mail in order to gradually improve the software performance;
- (d) ***Overflow rate of the IMPs.*** The Consultant tested the overflow function and found it in order. Overflows were caused mainly by late clearance of filled collection units by the postal staff. Such situation would normally not arise at all during the factory acceptance tests due to relatively low volume of test mail involved. The Consultant therefore saw no useful purpose to test the overflow rate of the IMPs during the factory acceptance tests;

- (e) ***Throughput of the Packet SSs.*** The Consultant reported that there were problems with the compressed air supply in the part of the factory where the Packet SSs were constructed. As an alternative, the Consultant conducted tests of individual diverters at a separate test-rig to test the diversion function. The Consultant also conducted conveyor belt speed tests and confirmed that the machine would be able to meet the throughput criteria with an adequate supply of compressed air. As the machines built for the AMC were based on existing and well-proven machines, the Consultant decided, under the prevailing time constraints, to test the throughput by an alternative method, and to allow the shipment of the machines in order to keep the project on schedule;
- (f) ***Overflow rate and jam rate of the Packet SSs.*** The Consultant was satisfied that the compressed air supply problems mentioned in (e) was the reason that the diverters did not operate quickly enough and thus items travelled past the intended selections were easily jammed, resulting in higher overflow rate and jam rate. Furthermore, tests on a separate test-rig confirmed that, individually, the diverters could indeed operate quickly enough, subject to an adequate supply of compressed air;
- (g) ***Tests on the Parcel SS.*** The Parcel SS was based on a well-established machine of proven reliability installed in many mail centres around the world. Since the Parcel SS for the AMC was to be mounted on a custom-built frame some five metres above floor level and joined to 44 large spiral chutes imported from a supplier in another country, it was not practicable to fully assemble the machine in the factory. The Consultant therefore considered the factory acceptance tests should be deemed satisfied by an examination of the manufactured components, modules and assemblies, together with visits to sites with the machine already installed to observe the function under operational conditions. That was a normal practice for the factory acceptance tests of such a system;

Site acceptance tests

- (h) ***Error rate of the IMPs.*** Two kinds of tests were conducted, one using electronic images and one using test packs. One of the main reasons for using electronic images, which should give approximately the same results as those of test packs, was to save wear and tear on test packs. Besides, it could give instant test results. For test packs, they required a long process of manual analysis. The frequent use of the test packs resulted in wear and tear, and caused the performance to deteriorate. On such occasions, the error rate was tested by using electronic images and it passed the test;

- (i) ***Read rate of the IMPs.*** The IMPs could pass the test on read rate when using electronic images;
- (j) ***The overflow rate and jam rate of the IMPs.*** The Consultant tested the overflow function and jam detection function and found them in order. Overflow rate and jam rate were largely dependent on the postal staff and mail characteristics respectively, and not machine design. If the postal staff cleared the filled collection units quickly enough and took away the non-compliant items before feeding the letters into the machine, the rates would become much lower;
- (k) ***Use of 40 letters to test the IMPs.*** The tests referred to were focused on the software function of the VCS. The function was fairly simple and accordingly, the Consultant decided that 40 letters of different images were sufficient enough to test it. Although there were 20,000 test items produced for the tests, it was not necessary to apply all of them to test every individual function. Depending on the requirements and complexities, the Consultant decided on the quantity of test packs required. If the machines under test were the first of their kind from the manufacturer, there would be a need to test them more vigorously. In the case of the IMPs, the machines had already undergone a particularly exhaustive testing programme under the direction of the British Post Office during which many thousands of items had been processed. The British Post Office bought more than one hundred IMPs and the two IMPs for the AMC were in the same batch of supply;
- (l) ***Use of live mail in the site acceptance tests on the IMPs.*** It was specified in the Contract that acceptance tests on the IMPs should be based on the results of their performance on the test packs. At the same time, the Contract also required the performance of the IMPs in processing live mail to be equal to, or better than, the performance in processing test packs. For that reason, the Post Office forwarded live mail to the AMC on a daily basis for testing immediately after the installation of the IMPs. The tests with live mail were mainly for mechanical tests and for capturing address images for optimising the electronic reader. At that time the Post Office could not afford to bring in a large amount of live mail to the AMC, or to leave them there for long period for analysis purpose, lest it would cause delays to delivery of the mail and consequently affect the quality of service. There were no records to show any irregularities with these tests;
- (m) ***Throughput of the Packet SSs.*** The target mechanical throughput was 10,000 items per hour. During the site acceptance tests, one Packet SS passed the test with a throughput of 10,574 items per hour, but another Packet SS only achieved a throughput of 9,546 items per hour. The Consultant marked “passed conditionally” on the relevant test result form for the Contractor to follow up and make improvement. The problem with the mechanical throughput of the Packet SSs was not mentioned again in the End of Confidence Trial Report and this indicated that it had been rectified by the Contractor;

- (n) ***Use of live mail in the site acceptance tests on the Packet SSs.*** Records showed that the Post Office had also used live mail to test the Packet SSs, but no working papers had been retained. Similar to the tests of the IMPs with live mail, the Post Office could not afford to bring in a large amount of live mail to the AMC for testing without risking impairment to quality of service. Likewise, the acceptance of the Packet SSs was based on their performance on test packs;

Confidence trial

- (o) ***Shortened confidence trial period.*** Although there were some deficiencies of the POMS detected during the period, the Consultant did not see any need to make good the confidence trial period to 90 days as originally planned. The deficiencies identified were comparatively minor in nature and did not justify the significant amount of additional payment to the Contractor for an extension. The Post Office estimated that it would cost an extra amount of some \$6 million if the confidence trial period was extended by four weeks. Under such circumstances, an acceptance certificate was issued to the Contractor after the shortened confidence trial period to allow the project to move to the warranty period, with a list of outstanding items for rectification. The Post Office did not have a chance to negotiate with the Contractor for a proportional reduction of the allowable down time during the shortened confidence trial period without incurring additional costs. The Consultant considered that the aggregated down time during the shortened confidence trial period was acceptable;
- (p) ***Performance of the IMPs in the confidence trial.*** The contractual requirements of testing the performance of the IMPs were based on test packs, although the Post Office should expect a similar performance with live mail. The composition and make-up of the test packs were specified in the Contract. Samples of live mail were selected as specified for the production of the test packs. Hence the test packs reflected the characteristics of the mail items at the time when the samples were taken. Mail characteristics could however change over time. It was an ongoing process to fine-tune the OCR function of the IMPs to suit the changes in order to optimise their efficiency. The use of test packs to measure performance might yield better results than live mail because the latter, apart from the changes in characteristics, might consist of a number of non-compliant items in terms of size, thickness, stiffness and enveloping that would cause more jams, overflows and machine-reading problems. For good quality mail, the Post Office had experienced read rates of over 80% for both inward and outward mail. The Post Office had not been satisfied with the performance of the IMPs, in particular the average, sustainable read rates. Although the IMPs passed the site acceptance tests with test packs, they had not been able to perform consistently up to the required standards with live mail after commissioning. The Post Office had drawn the attention of the Contractor to the deficiency at the end of the warranty period;

Acceptance certificates

- (q) **Conditional acceptance.** Acceptance certificates were conditional acceptance, issued subject to the rectification of the outstanding defects by the Contractor. A detailed list of defects was provided after each test. The Consultant considered that the nature and seriousness of the defects or deficiencies did not warrant the withholding of the certificates and the delay to the project schedule; and
- (r) **Payment scheme.** The POMS project adopted a progress payment scheme whereby the Post Office would pay only when the Contractor had fulfilled their contractual obligations and made good the defects and deficiencies to the Post Office's satisfaction.

Audit recommendations

2.20 Acceptance tests ensure that the performance of the POMS fully meets the contractual requirements. However, the acceptance tests had not been conducted properly in accordance with the terms of the Contract. The POMS did not perform consistently up to the required standards with live mail after commissioning (see PART 3). Audit considers that the Postmaster General needs to ensure that, in future, acceptance tests for postal equipment are conducted strictly in accordance with the terms of contract.

2.21 **Audit has recommended that the Postmaster General should:**

- (a) **ensure that in future, records relating to the results of the acceptance tests for all equipment (including postal equipment) are retained;**
- (b) **ensure that in future, acceptance tests for all equipment (including postal equipment) are conducted and acceptance certificates are issued strictly in accordance with the terms of contract; and**
- (c) **in future, seek the advice of the Department of Justice and the Director of Government Logistics in handling cases of deviation from and non-compliance with the conditions of contracts.**

Response from the Administration

2.22 The **Postmaster General** has said that he generally agrees with the audit recommendations. He has also said that:

General response

- (a) the Post Office accepts the audit recommendation that records relating to the results of the acceptance tests for all equipment (including postal equipment) should be retained. Such records will be retained for seven years, in line with the retention period for accounting records;
- (b) the Post Office agrees that the contractor should be required to fulfil all contractual requirements. However, there are circumstances during the various stages of testing under which the Post Office has to accept professional advice of the consultant to advance or defer or modify certain tests in order to ensure the smooth progress of the project. The Post Office will proactively monitor the consultancy. Where a major variation is made, prior approval must be sought from the Post Office. The Post Office will not allow such variations in testing procedures to compromise the performance and continue to ensure that the equipment would perform according to specifications in the contract prior to final acceptance;
- (c) the Post Office agrees that the Department of Justice or the Government Logistics Department should be consulted if a variation requires legal expertise or an interpretation of the government procurement policies. However, for technical or business issues, the Post Office is more appropriately placed to exercise discretion;

Acceptance tests

- (d) the Post Office has no reason to doubt that all tests and inspections had been properly conducted and documented. According to international practice and worldwide experience, when special circumstances arise and contractual procedures cannot be strictly followed, flexibilities in testing are allowed as long as they are supported by valid reasons. Regarding the working papers containing the test records of the supporting systems, they have already been disposed of due to the lapse of time. The Post Office has, however, retained records containing the inspection results of the conveyor equipment which is part of the supporting systems, and the site acceptance report of the Parcel SS. The Post Office has also kept all the acceptance certificates. The issue of these certificates indicated that these systems did not have any significant problem and passed the acceptance tests;

Factory acceptance tests

- (e) the Consultant and the Contractor agreed that the tests of the overflow rate and jam rate of the Packet SSs would be conducted again in the site acceptance tests to ascertain if the contractual requirements could be met;
- (f) the Parcel SS was a standard system in the market in terms of design and functional reliability. The records of the Post Office indicated that factory tests had been performed on the Parcel SS. The exception was the induction section of the test machine which had not yet been integrated with the control panel at that time and hence its operation and performance could not be tested. The engineers of the Electrical and Mechanical Services Department who attended the factory acceptance tests commented that the Contractor's work was progressing well and no apparent problem was observed during the tests. More importantly, the machine in actual operation has met fully the contractual requirements;

Site acceptance tests

- (g) the record containing the results of the tests of error rate of the IMPs using electronic images is still available for inspection. The Consultant advised that tests using electronic images were as valid as tests using physical test packs. With the benefit of hindsight, the Consultant could have done better by conducting tests on error rate using physical test packs as well;
- (h) the IMPs passed the read rate test when using electronic images but failed marginally when using test packs. The Consultant advised that tests using electronic images were as valid as tests using physical test packs. With the benefit of hindsight, the Consultant should be more stringent in enforcing the requirement to pass the tests using physical test packs;
- (i) the Contractor used 40 letters to test the software function of the VCS of the IMPs, mainly on the function codes such as short codes and foreign codes. These function codes have been working well ever since the IMPs have been put into operation. This reflects that the Consultant's approach in using a smaller quantity of letters for the test was not unreasonable. For testing of other functions of the VCS, more than 20,000 test items were used;
- (j) the records of the Post Office show that live mail was brought to the AMC for testing the performance of the IMPs. Due to the lapse of time, the Post Office has not retained the working papers containing the test records;

Confidence trial

- (k) during the shortened confidence trial period, the Consultant had closely and continuously monitored the operation of the IMPs, in particular those with repetitive faults;
- (l) regarding the IMPs' inability to maintain consistently satisfactory performance after commissioning, with the benefit of hindsight, the Consultant should have flagged up the issue for taking up with the Contractor. The Post Office was not satisfied with the average, sustainable read rates of the IMPs and subsequently took up the case with the Contractor and this finally took the form of the Government's counterclaim in the legal proceedings in response to the Contractor's claim against the Government (see para. 3.15); and
- (m) due to the lapse of time, the working papers recording the performance of the Packet SSs, the Parcel SS and the supporting systems have already been disposed of.

2.23 The **Director of Government Logistics** has said that:

- (a) the staff of the Government Logistics Department were not involved in any part of the acceptance tests of the POMS;
- (b) the Post Office had not sought any advice from the Government Logistics Department in respect of the non-compliance identified during the acceptance tests. In fact, the Government Logistics Department was not aware of such non-compliance; and
- (c) as a procurement agent, the Government Logistics Department stands ready to provide assistance and advice to the Post Office if it encounters any difficulties in enforcing or handling cases of non-compliance with the conditions of contract by the contractor. If and when necessary, the Government Logistics Department will also provide assistance and advice to the Post Office in the preparation of the tender document for future procurement of postal equipment at the pre-tender stage, such as the replacement of the letter sorting system at the GPO and the IMC in the pipeline.

PART 3: PERFORMANCE OF THE POSTAL MECHANISATION SYSTEM

3.1 This PART examines the performance of the POMS and suggests measures for improvement.

Audit examination of the performance of the Postal Mechanisation System

3.2 Audit examines the performance of the IMPs, the Packet SSs, the Parcel SS and the supporting systems of the POMS. Audit has found that there are deficiencies in the performance of the IMPs, the Packet SSs and the Parcel SS.

Performance of the integrated mail processors

Contractual requirements

3.3 According to the Contract, the IMPs shall be capable of accepting the full range of mail items (such as cheque books sealed in envelopes, postcards, aerogrammes and computer generated stationery). The physical dimensions and the weights of mail items that can be handled by the IMPs are shown in Table 2. Mail items outside these physical dimensions and weights are automatically rejected by the machine.

Table 2
Physical dimensions and weights of mail items
that can be sorted by the integrated mail processors

	Length (mm)	Height (mm)	Thickness (mm)	Weight (g)
Minimum	135	85	0.15	2
Maximum	260	167	7.00	100

Source: Post Office records

3.4 The contractual requirements in respect of read rate, error rate, overflow rate and jam rate of the IMPs are shown in Table 3.

Table 3

**Contractual requirements in respect of
the performance of the integrated mail processors**

Aspects of performance	Minimum performance
Read rate for inward mail	76%
Read rate for outward mail	71%
Error rate	Not exceeding 0.8%
Overflow rate	Not exceeding 0.5%
Jam rate	Not exceeding 0.01%

Source: Post Office records

Audit observations

Read rate of the IMPs

3.5 The read rates of the IMPs for the period from April 1999 to September 2004 for inward mail and outward mail are shown in Appendices B and C respectively. During this period:

- (a) the read rate for inward mail ranged from 28% to 40%. The minimum read rate specified in the Contract was 76%; and
- (b) the read rate for outward mail ranged from 37% to 49%. The minimum read rate specified in the Contract was 71%.

Dispute over the contractual requirements in respect of the read rate

3.6 In 1999 and 2000, the Post Office repeatedly requested the Contractor to improve the unsatisfactory read rates of the IMPs. However, the Contractor said that:

- (a) the Contract stated that the reading performance of the IMPs should be assessed using test packs. The Post Office had defined representative test packs and told the Contractor that the test packs reflected the characteristics of live mail. The Contractor had tuned the IMPs to read that type of mail;
- (b) the test packs were used for the site acceptance tests of the IMPs in December 1997. The tests results met the contractual requirements (Note 13);
- (c) during the confidence trial, the IMPs processed live mail. The End of Confidence Trial Report issued by the Consultant in October 1998 did not mention any complaints about the read rates of the IMPs. The low read rates of the IMPs were reported to the Contractor six months after the end of the confidence trial period (Note 14);
- (d) at the end of the hardware warranty period (October 1999), the Contractor tested the IMPs using the test packs. The read rates of the IMPs were the same as the read rates of the acceptance tests carried out in December 1997 and October 1998; and
- (e) the low read rates of the IMPs in processing live mail showed that the characteristics of live mail had changed. According to the Contract, the Contractor was not required to adapt the IMPs to the changes in characteristics of live mail after the IMPs had passed the acceptance tests.

Note 13: *Audit found that the read rates for processing the test packs in the site acceptance tests of the IMPs did not meet the contractual requirements (see para. 2.12(a)). Furthermore, the Contract did not provide that the read rate requirements applied to test packs only.*

Note 14: *According to the Contract, the performance of the IMPs in processing live mail should be equal to, or better than, the performance in processing test packs (see para. 2.19(l)).*

Postcode system to improve the read rates

3.7 A postcode is a series of alphabets and/or numbers assigned to an address to expedite the sorting and delivery of mail. Postcode is adopted by many developed and developing countries (such as Australia, Canada, India, Japan, Singapore, the Philippines, the United Kingdom and the United States of America). In 1997, the Consultant advised the Post Office that the introduction of a postcode system in Hong Kong could improve the read rates of the OCRs. The Consultant recommended the Post Office to introduce a postcode system with seven digits.

3.8 In July 2003, in response to a Legislative Council question on the launching of a postcode system in Hong Kong, the Economic Development and Labour Bureau said that:

- (a) the Government had completed the study on the introduction of a postcode system. Generally speaking, the introduction of a postcode system was to improve the efficiency of the postal operation (i.e. improving the read rate of the OCR and obviating the need for a postman to sort the letters before delivery);
- (b) the postcode adopted in overseas countries consisted typically of five to seven digits, denoting the buildings by district and by street. The study concluded that a separate postcode had to be assigned to each of the 2.5 million postal addresses in Hong Kong and the postcode could involve up to 15 digits. A possible alternative was to have a postcode with eight random digits, including the “checksum” digit. However, such a postcode gave no indication of the actual address;
- (c) the Economic Services Panel of the Legislative Council agreed at its meeting in June 2000 that the use of the postcode should be on a voluntary basis;
- (d) the use of the postcode by business organisations would depend on their line of business, volume of mail, need for address data management and information technology infrastructure. The use of the postcode by the general public would also influence those organisations’ use of the postcode. If the usage among the general public was low, the postcode could not be expected to be widely adopted by business organisations;
- (e) a postcode with eight random digits would not be user-friendly to the public because a person wishing to use the postcode would have to memorise not only his or her own postcode, but also those of the recipients of the mail. It was likely that people would be inclined to use the postal address;

- (f) in view of the constraints, popular adoption of an eight-digit postcode in Hong Kong was not expected. In addition, the Post Office would replace the existing letter sorting machines in 2005 to achieve efficiency in the sorting of mail. The OCR of the new letter sorting machines would have a better read rate and reduce the benefits to be obtained from the adoption of the postcode system; and
- (g) it was not suitable to introduce a postcode system in Hong Kong at that time.

Error rate of the IMPs

3.9 The error rates of the IMPs for inward mail and for outward mail are shown in Appendices D and E respectively. Audit noted that:

- (a) the error rate for inward mail for the period from April 1999 to September 2004 ranged from 2.6% to 7.5%. The maximum error rate specified in the Contract was 0.8%; and
- (b) the Post Office did not keep record of the error rate of the IMPs for outward mail prior to March 2001. The error rate for outward mail for the period from March 2001 to September 2004 ranged from 0.9% to 2.2%. The maximum error rate specified in the Contract was 0.8%.

Overflow rate of the IMPs

3.10 Overflow occurs when:

- (a) the IMP is unable to process a particular mail item at a particular moment, due to technical problem of the IMP; or
- (b) the collection unit for the mail item is full.

The overflow problem due to (a) can only be solved by rectification of the IMPs. The overflow problem arising from (b) can be solved by clearing the sorted letters from the filled collection units on time.

3.11 The Contract specifies that the maximum overflow rate for the IMPs is 0.5%. No mention is made whether the maximum overflow rate refers to the overall overflow rate or the component overflow rates. During the period from April 1999 to September 2004, the overall overflow rate of the IMPs ranged from 1.6% to 5.1%. Details are given in Appendix F. Starting from February 2002, the Post Office recorded both the overflow rate due to technical problems of the IMPs and the overflow rate due to filled collection units. For the period from February 2002 to September 2004, the overflow rate of the IMPs due to technical problems of the IMPs ranged from 1.3% to 2.8%, and that due to filled collection units ranged from 0.1% to 0.3%.

Jam rate of the IMPs

3.12 The jam rate of the IMPs for the period from April 1999 to September 2004 is shown in Appendix G. The jam rate for this period ranged from 0.03% to 0.05%. The maximum jam rate specified in the Contract was only 0.01%.

Post Office's views in 2001

3.13 In response to audit enquiries, the Post Office, after taking into account the views of the Consultant, informed Audit in August 2001 that:

Read rate of the IMPs

- (a) the Consultant confirmed that the read rate was an ongoing problem;

Error rate of the IMPs

- (b) the Post Office had observed that the error rates of the IMPs were fluctuating from month to month. It was one of the Post Office's concerns on the performance of the IMPs that the Post Office had been pursuing with the Contractor;

Overflow rate of the IMPs

- (c) the overflow rate of the IMPs was dependent on the postal staff and not the mechanical design. The rates could be reduced to the minimal by having plenty of staff to clear sorted letters from all collection units before any of them was full. It could be arranged during the acceptance tests but was hardly possible in day-to-day operation as the Post Office also needed to economise on the use of staff resources. The overflow rate specified in the Contract only served to ensure that machine-related overflow was kept to an acceptable level and there was no inherent fault with the IMPs; and

Jam rate of the IMPs

- (d) the maximum jam rate of the IMPs specified in the Contract referred to the tolerance limit when the machine was tested with test packs. In processing live mail, it would be difficult to keep the jam rate below the level as mail items fed to the machine might include non-compliant items (i.e. those not suitable to be processed by machine). The postal staff were only able to pick out the obviously non-compliant items when mail items were being fed to machine and could not prevent the obscure items from going into the machine. In the Post Office's view, the jam rate was acceptable taking into consideration the additional staff resources required to lower it to the level required by the Contract by intensively screening out the non-compliant items.

Action taken by the Post Office to improve the performance of the integrated mail processors

3.14 To improve the performance of the IMPs, the Post Office had:

Read rate

- (a) updated the address database of the IMPs, and stepped up the promotional efforts urging bulk mail senders to improve the machine readability of their letters in 2001;
- (b) enhanced the address database of the IMPs in 2002; and

Error rate

- (c) fine-tuned the address coding function of the IMPs in 2001.

Counterclaim against the Contractor for unsatisfactory read rate of the integrated mail processors

3.15 In the legal proceedings concerning the Contractor's claim against the Government, the Government made a counterclaim in respect of the unsatisfactory read rate of the IMPs. In September 2003, the Government reached a settlement agreement with the Contractor (see para. 1.3). The settlement took into account the Government's counterclaim.

Performance of the packet sorting systems

The Packet SSs capable of sorting wide range of packets

3.16 According to the Contract, the Packet SSs shall be capable of accepting the full range of mail packaging materials, including plastic-sealed and wrapped envelopes, and both supple and stiff items (such as magazines, newspapers, books and cardboard-wrapped items). The physical dimensions and the weights of packets that can be handled by the Packet SSs are shown in Table 4. Packets outside these physical dimensions and weights are automatically rejected by the machine.

Table 4

**Physical dimensions and weights of packets
that can be sorted by the packet sorting systems**

	Length (mm)	Height (mm)	Thickness (mm)	Weight (g)
Minimum	100	80	0.2	10
Maximum	400	300	220.0	9,000

Source: Post Office records

Operation of the Packet SSs

3.17 To put the Packet SSs in full operation, each Packet SS is manned by four staff (i.e. coders) who key in the sorting codes of the packets. In addition, each Packet SS is manned by two staff who are fully engaged in clearing the sorted packets at the outlets of the Packet SS. In sorting inward packets, one additional staff is required to feed packets from trolleys into the Packet SS. In sorting outward packets, the staff who open the mail bags and segregate the outward mail items into different categories feed the packets to the Packet SS at the same time. Therefore, each Packet SS is manned by seven staff in sorting inward packets, and by six staff in sorting outward packets.

Contractual throughput of the Packet SSs

3.18 In October 1993, in its draft Study Report on the proposed design of the POMS, the Consultant stated that each Packet SS would be able to process at least 9,000 packets per hour under live operating conditions. Commenting on the report, the Post Office queried the Consultant whether it was realistic to expect each coder to process 2,250 packets (9,000 packets ÷ 4 coders) per hour. In reply, the Consultant said that the hourly processing rate of 2,250 packets per coder was realistic.

3.19 In January 1994, in its final Study Report to the Post Office, the Consultant reiterated that each Packet SS would be able to process at least 9,000 packets per hour under live operating conditions. The Consultant also included a cost-benefit analysis based on the hourly processing rate of 9,000 packets for a Packet SS. According to the analysis, compared with manual sorting, sorting packets at the AMC using the Packet SSs would result in an annual saving of \$0.6 million in staff cost. Based on the cost-benefit analysis, Audit observed that, in order to justify the purchase of the Packet SSs for sorting packets at the AMC, the Packet SSs must achieve an hourly throughput of at least 7,150 packets (i.e. 1,790 packets per coder).

3.20 In February 1994, based on the final Study Report, the Post Office sought the approval of the Finance Committee for funding of the POMS. It was stated in the Contract that each of the Packet SSs should be capable of “processing mail items having the characteristics specified in the Contract at an overall system throughput of better than 10,000 items per hour”. It was also stated in the Contract that, if the packets were sorted by bar code reading instead of keyboard coding, the minimum hourly throughput of each Packet SS should be 14,000 packets (i.e. 3,500 packets per coder).

3.21 In February 1996, the Contractor advised the Consultant that it would be extremely difficult to maintain the hourly processing rate of 2,500 packets per coding station for keyboard coding specified in the Contract. However, the Consultant maintained its view that the hourly throughput of each Packet SS had to be at least 10,000 packets (2,500 packets per coder × 4 coders).

Audit observations

Contractual throughput of the Packet SSs not achieved

3.22 In November 1998, the Industrial Engineering Section of the Post Office conducted a review on the operations of the AMC. About the Packet SSs, the Industrial Engineering Section pointed out that there was a significant gap between the planned hourly throughput of 10,000 packets and the actual hourly throughput of 3,000 packets.

3.23 In July 1999, the Post Office provided the Contractor with a List of Defects of the Packet SSs. The Post Office stated that even when processing very good quality packets, a Packet SS could not achieve an hourly throughput of more than 3,000 packets. In August 1999, the Post Office asked the Contractor to rectify the defects by 30 September 1999.

3.24 In August 1999, the Post Office conducted a time and motion study on the operations of the AMC. Based on the results of the study, Audit calculated the hourly output per staff of the packet sorting process. The results are summarised in Table 5. Audit noted that the hourly output per staff was higher if the packets were sorted manually.

Table 5

Output of the packet sorting process

Sorting method	Output per staff per hour
By the Packet SSs	524 packets
Manually	618 packets

Source: Post Office records

3.25 During the period from April 1999 to September 2004, the hourly throughput of the Packet SSs ranged from 3,399 to 4,928 packets (i.e. an average hourly throughput of 3,873 packets). Details are given in Appendix H. This fell short of the minimum hourly throughput of 10,000 packets specified in the Contract.

3.26 According to the cost-benefit analysis conducted by the Consultant in 1994, based on the expected hourly throughput of 9,000 packets, the annual staff costs for sorting packets manually and by the Packet SSs were \$2.9 million and \$2.3 million respectively. The Packet SSs were expected to give an annual saving of \$0.6 million in staff cost. The annual staff cost, based on the actual hourly throughput of 3,873 packets for the period from April 1999 to September 2004, would be \$5.3 million (i.e. \$2.3 million \times 9,000 \div 3,873). The additional annual staff cost for using the Packet SSs would be \$2.4 million (\$5.3 million – \$2.9 million).

Other performance problems of the Packet SSs

3.27 ***Jam rate.*** During the period from April 1999 to September 2004, the jam rate of the Packet SSs ranged from 0.08% to 0.16%. This was four to eight times the maximum jam rate of 0.02% specified in the Contract. Details are given in Appendix I.

3.28 **Overflow rate.** Overflow occurs when:

- (a) the Packet SS is unable to process a particular packet at a particular moment due to technical problem of the Packet SS; or
- (b) the collection mail bag for the packet is full.

The overflow problem due to (a) can only be solved by rectification of the Packet SSs. The overflow problem arising from (b) can be solved by replacing filled mail bags on time.

3.29 In July 1999, the Post Office informed the Contractor that:

- (a) the overflow rates of the Packet SSs were high. They were over 3% and, at times, as high as 20%; and
- (b) the Packet SSs had extremely high overflow rates when all four coding stations were operating at the same time.

In August 1999, the Contractor advised the Post Office that the high overflow rates were due to the wrong adjustment of the Packet SSs and their “bad preventive maintenance”.

3.30 The Contract specifies that the maximum overflow rate for the Packet SSs is 0.5%. No mention is made whether the maximum overflow rate refers to the overall overflow rate or the component overflow rates. During the period from April 1999 to September 2004, the overall overflow rate of the Packet SSs ranged from 4.3% to 9.5%. Details are given in Appendix J. Starting from October 2001, the Post Office recorded both the overflow rate due to technical problems of the Packet SSs and the overflow rate due to filled mail bags. For the period from October 2001 to September 2004, the overflow rate of the Packet SSs due to technical problems of the Packet SSs ranged from 1.6% to 4.2%, and that due to filled mail bags ranged from 2.4% to 2.9%.

Post Office’s views in 2001

3.31 In response to audit enquiries, the Post Office, after taking into account the views of the Consultant, informed Audit in August 2001 that:

Throughput of the Packet SSs

- (a) the then actual throughput of the Packet SSs was a reasonably high operational throughput. It took into account the availability of packets (the input of which could hardly be continuous throughout the operation), the speed of keyboard input, and the speed at which the operators picked up packets to read the address and dropped them back to the system upon completion of coding work. The throughput of the Packet SSs specified in the Contract was the mechanical throughput which the machine could attain if the manual steps were carried out continuously at a very high speed;
- (b) the Consultant explained that the estimated hourly output of 2,250 packets per coder was achievable when, for example, the packets being processed were scanned by machines such as automatic feeders;
- (c) during the planning stage, the outward air packet traffic was growing fast with a year-on-year increase of more than 10%. The Post Office needed to look for a sorting system that could accommodate new technology inputs for fast processing of packets without compromising performance. The Packet SSs, with a mechanical hourly throughput of 10,000 items, were capable to fulfill such need;
- (d) to sort outward packets manually would need the process of secondary sorting. Secondary sorting was the re-sorting of items at another group of drop-bag fittings because the group of drop-bag fittings for the initial round of sorting (i.e. primary sorting) did not have enough drop-bag fittings for all the destinations of the sorting plan. According to the Post Office's experience, the total volume of mail that had to undergo secondary sorting at the drop-bag fittings was around 10% of the overall volume of inward and outward mail. Therefore, manual sorting was less effective than sorting by the Packet SSs;
- (e) the Post Office had revised the sorting plans for sorting outward packets by the Packet SSs and raised the hourly throughput per coder substantially. Following the calculating method used by Audit, the output of the Packet SSs was increased to 668 items per staff per hour. Hence it was more cost-effective to use the Packet SSs to sort packets;
- (f) the use of the Packet SSs also had the following advantages:
 - (i) health and safety at workplace was enhanced;
 - (ii) higher efficiency in postal operations was achieved;

- (iii) the chance of damage to packets was minimised; and
- (iv) a consistent higher output was maintained especially in times of pressure (such as the arrival of Christmas postings);

Other performance problems of the Packet SSs

- (g) the maximum jam rate specified in the Contract was based on the test pack that was made to represent the general make-up of the packet-size items at the time of the Contract in around 1994. Over the years, the Post Office observed significant change in that aspect. Though the jam rate was above the rate specified in the Contract, it was considered acceptable from the viewpoint of operational efficiency; and
- (h) the overflow rate was largely dependent on the frequency of replacing filled mail bags at the collection units. The Post Office had taken suitable measures to minimise the overflow rate, including the revision of sorting plans, minimising the frequency of changing mail bags and the use of mail bags of better quality for collecting packets.

Action taken by the Post Office to improve the performance of the packet sorting systems

3.32 In September 2001, with a view to minimising the overflow of the Packet SSs, the Post Office:

- (a) revised the inward sorting plan for the Packet SSs to minimise the frequency of replacing mail bags at the outlets; and
- (b) conducted a study on suitable mail receptacles for the sorted packets at the outlets of the Packet SSs.

After the revision of the inward sorting plan, the Post Office observed that the overflow rate of the Packet SSs was reduced from 10% to 5%.

3.33 In 2002, the Post Office contacted the Contractor and a supplier to explore whether voice recognition device could be used to improve the throughput of the Packet SSs. According to the quotations from the Contractor and the supplier, the estimated total cost required for the installation of such devices to the Packet SSs ranged from \$0.8 million to \$1.4 million. In January 2004, owing to the high cost, the Post Office decided to shelve the proposal.

3.34 In 2003, the Post Office modified the packet collection units at the outlets of one of the Packet SSs. After the modification, it became easier for the postal staff to replace the filled mail bags. The Post Office found that the overflow rate was reduced slightly. The Post Office planned to make the same modification on the remaining Packet SS. The Post Office also tried to use trays to collect the sorted inward packets at the outlets of the Packet SSs. However, after the trial run, the Post Office found that only limited improvement in the overflow rate and it was not justified to make the alteration. In 2003, the Post Office decided to shelve the proposal.

Performance of the parcel sorting system

Contractual requirements

3.35 According to the Contract, the Parcel SS should be capable of processing parcels of any shape, provided that the parcels can remain in a stable position on a moving surface. The physical dimensions and the weights of parcels that can be handled by the Parcel SS are shown in Table 6. Parcels outside the physical dimensions and weights are handled manually.

Table 6

**Physical dimensions and weights of parcels
that can be sorted by the parcel sorting system**

	Length (mm)	Width (mm)	Depth (mm)	Weight (kg)
Minimum	125	125	5	0.1
Maximum	1,500	800	800	30.0

Source: Post Office records

It is stated in the Contract that the Parcel SS shall reliably sort parcels at a maximum throughput rate of 5,500 per hour.

Audit observations

3.36 The throughput of the Parcel SS during the period from April 1999 to September 2004 is given in Appendix K. During this period, the hourly throughput of the Parcel SS ranged from 1,393 to 2,085 parcels. This fell substantially short of the capacity specified in the Contract. Although the trays of the Parcel SS moved at an hourly rate of 5,500 trays, the speed of the coding stations of the Parcel SS in processing parcels did not catch up with the speed of the moving trays. As a result, more than half of the trays moved around without carrying a parcel.

Post Office's views in 2001

3.37 In response to audit enquiries, the Post Office, after taking into account the views of the Consultant, informed Audit in August 2001 that:

- (a) the Contract did not specify the minimum throughput of the Parcel SS. It only stated 5,500 in terms of trays per hour, which represented the maximum capacity of the mechanical speed of the Parcel SS. This meant that the trays of the system could run at a speed that allowed the sorting of 5,500 parcels per hour if sufficient sorted parcels were fed to the trays incessantly. The mechanical throughput should not be compared to the operational throughput of 2,000 parcels per hour because the latter was determined by the availability of flow of parcels to the coding stations of the Parcel SS, the speed of locating the address on the parcel and the speed of coding by the coder; and
- (b) theoretically, the Post Office could put more staff at the coding stations to feed parcels to the Parcel SS incessantly, thus maximising the machine's mechanical output. However, the existing traffic volume did not have as many as 5,500 parcels arriving at the AMC within an hour, and the quality of service standards did not require the Post Office to sort all the parcels on hand on an hourly basis.

Audit recommendations

3.38 The performance of the POMS is crucial to the efficient and effective operation of the AMC. According to the Consultant, the introduction of the postcode system can improve the read rates of the OCR and enable the mail sorting system to sort mail items with Chinese addresses. The Postmaster General needs to further improve the performance of the POMS and ensure that similar shortcomings will not recur in purchasing postal systems and equipment in future.

3.39 **Audit has recommended that the Postmaster General should:**

- (a) **continue to explore ways to further improve the performance of the POMS up to the standards specified in the Contract and seek the assistance of the Contractor and the Consultant, if necessary;**
- (b) **consider introducing a postcode system to improve the performance of the POMS and the overall efficiency of postal operation;**
- (c) **in consultation with the Department of Justice:**

- (i) **critically examine whether there are breaches of the contractual terms in respect of the performance of the POMS; and**
- (ii) **ascertain the remedies (e.g. compensation from the Consultant and the Contractor) available under the Contract; and**

- (d) **ensure that in future, in purchasing equipment, including postal equipment:**
 - (i) **the justification for the purchase is based on realistic and achievable performance;**
 - (ii) **only realistic and attainable requirements are specified in the contract;**
 - (iii) **the performance requirements applicable to actual operation are explicitly stated in the contract; and**
 - (iv) **the performance of the equipment fully complies with the contractual requirements.**

Response from the Administration

3.40 The **Secretary for Economic Development and Labour** has said that:

- (a) the POMS had not been premised on and/or designed for the introduction of a postcode system; and
- (b) even if a postcode system were introduced in Hong Kong, improvement to the performance and the utilisation of the POMS would at best be minimal because:
 - (i) the constraints of a postcode system for Hong Kong will limit its use by the local community; and
 - (ii) over 60% of the mail items handled at the AMC are outward air mail, a postcode system for Hong Kong would not make any difference in their processing by the POMS.

3.41 The **Postmaster General** has said that he generally agrees with the audit recommendations. The Post Office will continue to make endeavours to bring the performance of the POMS closer to the contractual standards. The Postmaster General has also said that:

General response

- (a) the Post Office accepted the system and issued acceptance certificates that the POMS met the requirements specified in the Contract. Over time, there have been changes in the mail mix and mail volume handled by the POMS. An example is that quite a large volume of air mail items, which normally have very good address quality, have been diverted to the Bulk Air Mail stream with items pre-sorted to their destinations by senders and hence do not need processing by the POMS. This results in a smaller quantity of good quality mail items processed by the POMS and it affects the overall read rate, error rate and other performance aspects of the system. There are also changes in the packing and format of mail items as more plastic wrappers are used by customers, and many items are now posted in the form of a flimsy flat. The volume of mail items with address in Chinese is also increasing. These changes affect adversely the performance of the POMS. It should be appreciated that the performance of the system in actual operation would not be as good as it is in the laboratory condition. It is not realistic to expect that the system can always perform up to the standards as specified in the Contract in view of the above changes. Nevertheless, the Post Office has been enhancing the performance of the POMS as far as practicable. For example, in the past years, the Post Office has observed improvement in the error rate of the IMPs;
- (b) the Post Office notes the views of the Secretary for Economic Development and Labour on the introduction of a postcode system;
- (c) the Post Office has sought legal advice on whether there are breaches of the contractual terms in respect of the performance of the POMS and concluded that there was insufficient evidence to pursue a claim against the Contractor and the Consultant;
- (d) the Post Office will follow the approaches recommended by Audit in purchasing equipment. The performance requirements applicable to actual operation are assessed at the time of preparation of contract based on a set of assumptions on mail volume, mail characteristics and operational procedures which could change over time. The Post Office undertakes to make the best professional estimate when drawing up the machine specifications for the contract but has to accept performance deviations due to changes in circumstances;

Performance of the Postal Mechanisation System

- (e) while the Post Office acknowledged the Contractor's procedural arguments quoted in paragraph 3.6, the Post Office considered that the read rates of the IMPs were unsatisfactory. The issue was subsequently settled as a counterclaim against the Contractor in response to its claim against the Government. The Contractor has no further liability on this performance issue;
- (f) the error rates of the IMPs for inward mail are dependent mainly on the accuracy of the address database in the IMPs and the address quality of mail items. When the address database is not updated, for example, after a revision of the postmen's delivery routes in a district, or when the address shown on an envelope is not proper or is confusing, error could easily occur. The Post Office has taken actions to update on a timely basis the address database and educate local customers to put correct and proper addresses on mail items. The Post Office has found that the error rate for inward mail has been on a downward trend since 2001 as reflected in Appendix D. The check conducted by the Post Office at the AMC in February 2005 revealed that the error rate was 1.3%. The Post Office will continue the efforts to bring the error rate further down;
- (g) the error rates of the IMPs for outward mail are affected by the address quality of mail items. Besides, letters sorted to a wrong city within the same country are regarded as errors, whereas according to the Contract, they are not. The check conducted by the Post Office at the AMC in February 2005 revealed that the error rate was 0.3% when the video coding and city-sorting elements (i.e. items miscoded by coders and items sorted to another city but within the same country) were excluded;
- (h) the Post Office has noticed that there are other reasons causing overflow of the IMPs, including machine jams and filled collection unit for rejected items. If the jam factor is excluded, the overflow rate during the period from February 2002 to September 2004 would become 0.16% to 1.08%. To lower the overflow rate, the Post Office has been taking measures to reduce the machine jams and to step up the preventive maintenance;
- (i) since April 2001, the jam rate of the IMPs has stood at a level not higher than 0.04% and this is acceptable;
- (j) the throughput of the Packet SSs of 10,000 packets per hour was the mechanical throughput and was achieved in the site acceptance tests. The average throughput of 3,873 packets per hour was reasonably high. In particular after the Post Office had revised the sorting plan of the Packet SSs in October 2001, the average operational throughput increased to 4,194 packets per hour. Adopting the calculation method used by Audit, the output of the Packet SSs has

been raised to 639 packets per staff per hour which is higher than the manual output of 618 packets per staff per hour (see para. 3.24). It is therefore clear that sorting packets by the Packet SSs would incur less staff hours than sorting them manually;

- (k) Audit's computation of staff cost for using the Packet SSs was based on the mechanical throughput of 9,000 packets per hour and a projected average annual traffic for the planning period from 1997-98 to 2010-11. A more valid comparison of staff cost should be based on the machine output of 639 packets per staff per hour and the manual output of 618 packets per staff per hour mentioned in (j). When these rates are applied for the 2003-04 actual traffic of 14.7 million items, the annual staff cost for sorting packets manually and by the Packet SSs would be \$4.5 million and \$4.3 million respectively;
- (l) as regards overflow caused by technical problems of the Packet SSs, it included overflow caused by machine jams. The Post Office will seek further improvement in consultation with the maintenance service provider; and
- (m) despite the lower than expected traffic handled by the Parcel SS, the Post Office can confirm that the use of the equipment is still more cost effective than manual handling.

3.42 The **Department of Justice** has said that on the issue of the contractual terms in respect of the performance of the POMS, the Postmaster General had already been advised on the merits of any possible claim against the Contractor and the Consultant.

3.43 The **Director of Government Logistics** has said that:

- (a) regarding the proposed installation of voice recognition device of the Packet SSs in 2002, no request for contract variation had been received by the Government Logistics Department; and
- (b) tender specifications in respect of the purchase of equipment, including postal equipment, should be drawn up based on the actual operational and functional requirements, and the standards set should be realistic and achievable. Reference should be made to the Guidelines for Drawing up Tender Specifications stipulated in the Stores and Procurement Regulations.

PART 4: UTILISATION OF THE POSTAL MECHANISATION SYSTEM

4.1 This PART reviews the utilisation of the POMS and suggests measures for improvement.

Expected utilisation of the Postal Mechanisation System

4.2 In the early 1990s, in planning the construction of the AMC, the POMS was designed to have sufficient capacity to handle the air mail traffic on peak days up to 2010-11. The Post Office projected that the number of air mail items to be sorted by the POMS in 2010-11 would be 628,800 items per day, reaching 716,900 items on peak days. The Post Office expected that upon the commissioning of the POMS, human involvement in its operation would be reduced to an absolute minimum. According to the design of the POMS, almost all mail including letters, packets and parcels processed at the AMC would be sorted by the POMS. In the Consultant's 1994 Study Report, it was stated that:

- (a) the vast majority of mail items would be finally sorted by the IMPs (using either the OCR or the VCS) or the Packet SSs;
- (b) the manual sorting commitment would be restricted to those air mail items that could not be finally sorted by the Packet SSs. This would include a very small volume of mail with physical characteristics that the Packet SSs could not cope with, and items destined for countries which attracted the smallest volumes of mail from Hong Kong. In total, these categories were not expected to amount to more than 5% of the mail volume (Note 15);
- (c) outward air parcels (the Post Office planned to sort inward air parcels at the GPO and the IMC) would be sorted by the Parcel SS; and
- (d) the volumes of outward registered air mail and outward express air mail would not warrant the application of any form of automation. The Post Office planned to sort inward registered air mail and inward express air mail at the GPO and the IMC.

Note 15: *The mail volume excluded registered air mail and express air mail which were sorted manually.*

4.3 In the cost-benefit analysis included in the Study Report, the bases used by the Consultant in the analysis were that:

- (a) 90% of the letters would be sorted by the IMPs and 9.9% out of the remaining 10% would be sorted by the Packet SSs. Only 0.1% of the letters required manual sorting; and
- (b) 99% of the packets would be sorted by the Packet SSs. Only the remaining 1% of the packets required manual sorting.

4.4 According to the Contract:

- (a) letters suitable for presentation to the IMPs consist of letter items in good condition and with dimensions and weights lower than the specified maximums (see Table 2 in para. 3.3). All other items are to be presented to the Packet SSs;
- (b) all air mail items that cannot be sorted using the IMPs are to be presented to the Packet SSs;
- (c) the Packet SSs are expected to be capable of handling all items except particularly bulky, misshaped or roll packets. The Packet SSs are used to sort items to 100 collection units, with any residue sorting being sent to a small manual section for sorting;
- (d) outward air parcels (the Post Office planned to sort inward air parcels at the GPO and the IMC) are to be sorted by the Parcel SS; and
- (e) outward registered air mail is to be handled manually and outward express air mail needs to be provided with dedicated manual sorting facilities. The Post Office planned to sort inward air mail at the GPO and the IMC.

Audit observations

4.5 Audit examined the utilisation of the POMS. During the years from 1999-2000 to 2003-04, on average, the projected and the actual daily number of mail items sorted by the POMS were 478,618 and 218,269 respectively. Details are given in Appendix L.

Audit also examined the percentage of mail items sorted manually (Note 16) vis-à-vis the percentage of mail items sorted by the POMS (Note 17), and the operating hours of the POMS (Note 18) for the years from 1999-2000 to 2003-04. Audit found that during this period, the utilisation was low. Large proportions of letters and packets were sorted manually and the average number of daily operating hours of the POMS was small. Besides, a number of the supporting systems have been left idle.

IMPs

4.6 During the years from 1999-2000 to 2003-04, the percentage of letters sorted by the IMPs ranged from 47% to 66%. This means that 34 million to 70 million letters were sorted manually at the AMC each year. Details are given in Figure 1. Each IMP operated, on average, 3.9 hours to 4.8 hours per day in sorting letters. Audit noted that the design of the POMS was that, with only a few exceptions, the IMPs should be able to process all types of letters. However, the IMPs were used to sort, on average, only 55% of the letters at the AMC each year.

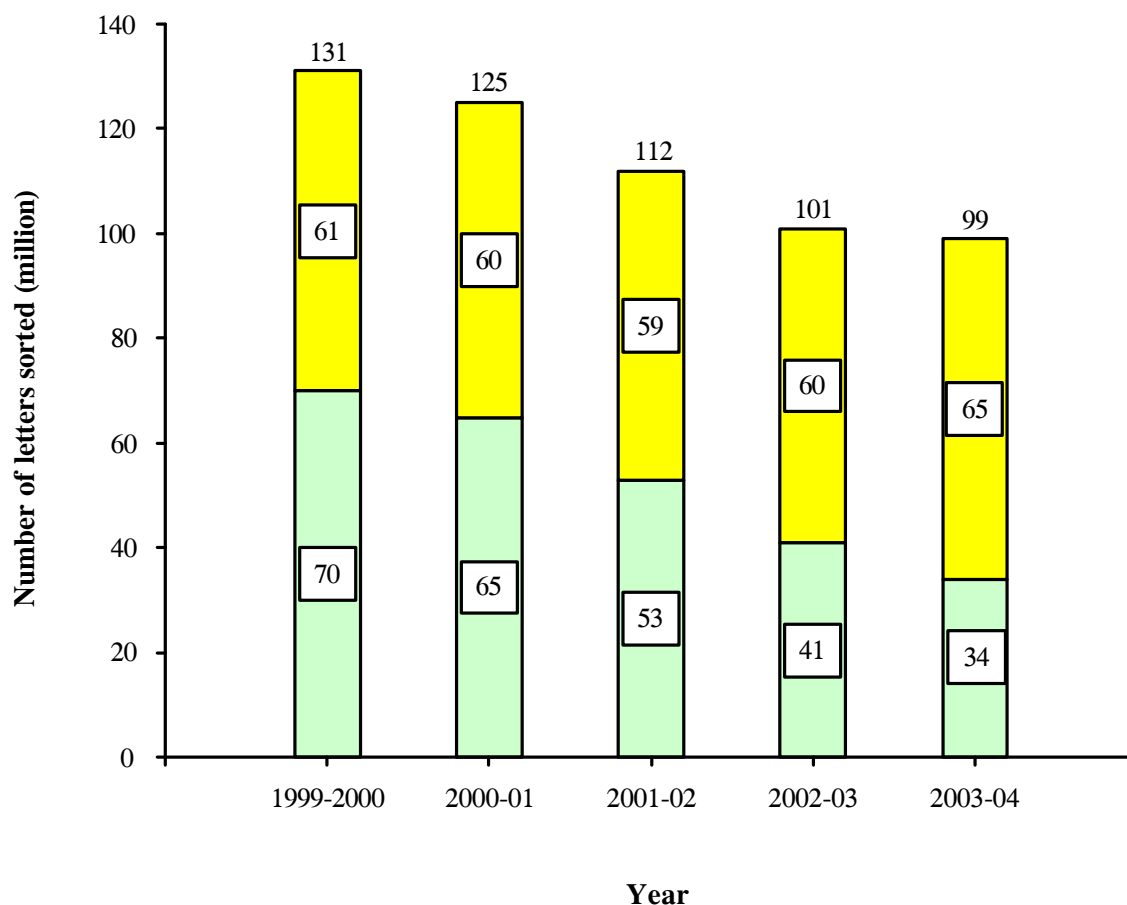
Note 16: *Mail items sorted manually excluded those mail items which the POMS failed to sort to the collection units and were eventually sorted manually.*

Note 17: *Mail items sorted by the POMS referred to those mail items successfully sorted by the POMS, and those mail items which the POMS failed to sort to the collection units and were eventually sorted manually.*

Note 18: *The operating hours included all the time when the machine was in the operational mode. The time when the IMPs were used for date-stamping of letters was excluded because the IMPs were not intended for use as such. Date stamping could be performed by a much simple and much less expensive machine.*

Figure 1

**Number of letters sorted by
the integrated mail processors and sorted manually
(1999-2000 to 2003-04)**



Legend: ■ Letters sorted by the IMPs
■ Letters sorted manually

Source: *Post Office records*

Note: *Letters sorted by the IMPs referred to letters successfully sorted by the IMPs, and letters which the IMPs failed to sort to the collection units and were eventually sorted manually. On average, at the AMC, the number of letters sorted by the IMPs and those sorted manually each year were 61 million and 53 million respectively.*

4.7 In January 2005, Audit conducted a survey on the physical characteristics of the letters handled by the AMC on three days. Audit selected a sample of 5,300 letters screened out by the staff at the AMC as not suitable for sorting by the IMPs and measured their physical dimensions and weights. Audit found that 81% of these letters were within the physical dimensions and weights (see Table 2 in para. 3.3) specified in the Contract as suitable for sorting by the IMPs.

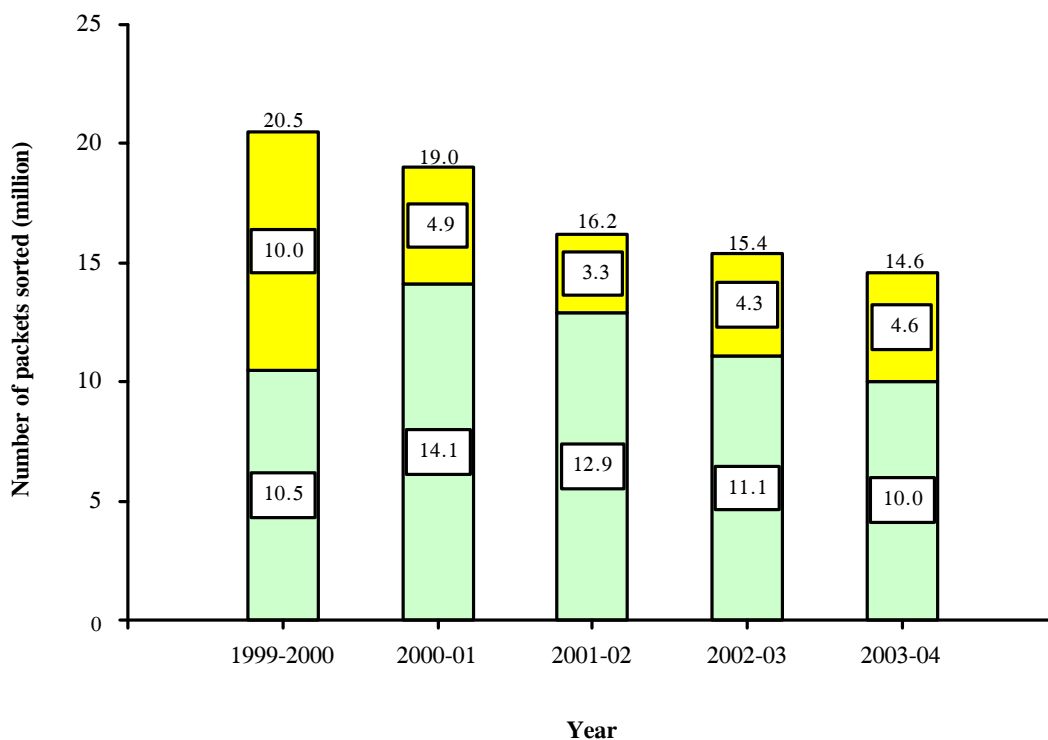
Packet SSs

4.8 During the years from 1999-2000 to 2003-04, the percentage of packets sorted by the Packet SSs ranged from 20% to 49%. This means that 10 million to 14.1 million packets were sorted manually at the AMC each year. Details are given in Figure 2. The average daily operating hours of each Packet SS ranged from 2.6 hours to 7.2 hours. On average, the Packet SSs were used to sort only 31% of the packets at the AMC each year. In addition, the Packet SSs had not been used for sorting Speedpost items (Note 19), contrary to the design of the POMS.

Note 19: *The design of the POMS was that Speedpost items of letter and packet size would be sorted by one of the Packet SSs.*

Figure 2

Number of packets sorted by the packet sorting systems and sorted manually (1999-2000 to 2003-04)



Legend: Packets sorted by the Packet SSs
 Packets sorted manually

Source: *Post Office records*

Note: *Packets sorted by the Packet SSs referred to packets successfully sorted by the Packet SSs, and packets which the Packet SSs failed to sort to the collection units and were eventually sorted manually. On average, at the AMC, the number of packets sorted by the Packet SSs and those sorted manually each year were 5.4 million and 11.7 million respectively.*

4.9 In January 2005, Audit conducted a survey on the physical characteristics of the packets handled by the AMC on three days. Audit selected a sample of 3,300 packets screened out by the staff at the AMC as not suitable for sorting by the Packet SSs and measured their physical dimensions and weights. Audit found that 90% of these packets were within the physical dimensions and weights (see Table 4 in para. 3.16) specified in the Contract as suitable for sorting by the Packet SSs.

Parcel SS

4.10 All outward parcels and large size outward Speedpost items were sorted by the Parcel SS (Note 20). During the years from 1999-2000 to 2003-04, the number of parcels and large size outward Speedpost items sorted by the Parcel SS ranged from 1.6 million to 2.3 million. The average daily operating hours of the Parcel SS ranged from 9.9 hours to 13.9 hours.

Conveyor system

4.11 The POMS includes a conveyor system which is made up of five components (Units A, B, D, E and F). Unit D, a major part of Unit E and a major part of Unit F are purposely built for conveying inward Speedpost items. The capital cost of Units D, E and F is \$16.6 million. According to the design of the POMS, inward Speedpost items of letter and packet size are to be sorted by one of the Packet SSs, and those of parcel size are to be sent to the GPO in Central or the IMC in Hung Hom for sorting. Inward Speedpost items are to be segregated into two categories as follows:

- (a) letter-size and packet-size items are to be conveyed by Unit D to Unit F and then to a Packet SS for sorting; and
- (b) parcel-size items are to be conveyed by Unit D to Unit E and then to an loading area at the AMC for subsequent delivery to the GPO or the IMC.

4.12 Audit has noted that Unit D is used only occasionally (see para. 4.21), and a major part of Unit E and a major part of Unit F are left idle because inward Speedpost items are not processed by the POMS as designed. The Post Office working procedures are that:

Note 20: *Inward parcels and large size inward Speedpost items were sorted into only a few lots for subsequent action by the parcel delivery offices and Speedpost teams. The Post Office considered that it was more cost-effective to sort them manually.*

- (a) all inward Speedpost items received by the AMC in the morning are transferred to the GPO or the IMC for processing; and
- (b) all inward Speedpost items received by the AMC at other times of the day are processed at the AMC, without using the conveyor system designed for inward Speedpost items.

Container storage and retrieval system

4.13 The container storage and retrieval system (CSRS — see Photograph 4) installed at the AMC consists of 504 storage bins arranged in six levels for temporary storage of processed mail before despatch to outbound aircraft. Processed mail in storage bins are put into and retrieved from the CSRS by using automatic high-lift storage and retrieval vehicles controlled by a computer system. The capital cost of the CSRS is \$7.1 million. In addition to the CSRS, the following storage facilities are also provided at the AMC:

- (a) ***Mail bag segregation and storage area.*** An area of about 330 square metres is designated for the purpose of segregating and storing mail bags containing processed mail pending despatch to outbound aircraft; and
- (b) ***Elevating transfer vehicle.*** An elevating transfer vehicle (ETV — see Photograph 5) provides facilities for the loading, storage and despatch of unit load devices (ULDs — Note 21). It transfers the ULDs to roller decks (with 20 loading spaces) for loading of mail and then stores the loaded ULDs in a rack structure with 50 storage spaces pending delivery to outbound aircraft.

Note 21: *A unit load device is a standardised container for goods used in the air freight industry.*

Photograph 4

Container storage and retrieval system



Source: Photograph taken by Audit staff

Photograph 5

Elevating transfer vehicle



Source: Photograph taken by Audit staff

4.14 Audit has noted that the CSRS has never been used to store mail since the opening of the AMC in July 1998. The storage capacity provided at the mail bag segregation and storage area and the ETV is sufficient to meet the storage needs of the AMC.

Vacuum lifting devices

4.15 The purpose of installing the vacuum lifting devices (VLDs — see Photograph 6) at the AMC is to facilitate the lifting of mail bags and emptying of their contents by postal staff. In October 1993, after studying the draft design submitted by the Consultant, the Post Office expressed concern that the VLDs might not improve the efficiency of lifting and emptying mail bags. In response, the Consultant replied that it would include requirements in the Contract to ensure that the VLDs would be properly designed to meet the needs of the AMC. Eventually, 14 VLDs were installed at the AMC as proposed by the Consultant at a total capital cost of \$1.8 million. Audit has noted that these devices have been left idle since their installation because postal staff preferred lifting and emptying mail bags manually.

Photograph 6
Vacuum lifting device



Source: Photograph taken by Audit staff

Unit load device transfer system

4.16 The unit load device transfer system (UDTS — see Photograph 7) is a system for transferring ULDs. The capital cost of the UDTS is \$1.6 million. According to the design of the AMC, inward mail are despatched to the GPO and the IMC together with the ULDs without the need to open and unload the ULDs at the AMC. In doing so, it is expected to improve the efficiency of despatching inward mail. To increase the utilisation of the POMS at the AMC, inward mail was also sorted at the AMC. As a result, the proposal of transporting the ULDs directly to the GPO and the IMC had been shelved. Audit has noted that the UDTS has been left idle since the opening of the AMC.

Photograph 7

Unit load device transfer system



Source: Photograph taken by Audit staff

Mail segregation system

4.17 The mail segregation system (MSS — see Photograph 8) is a system consisting of two conveyor belts for segregating letters and packets for further processing by the IMPs and the Packet SSs. The capital cost of the MSS is \$0.4 million.

Photograph 8

Mail segregation system



Source: Photograph taken by Audit staff

4.18 Audit has noted that the MSS has not been used by postal staff because of the following reasons:

- (a) outward letters and packets have already been segregated in other sorting centres and branch offices before despatch to the AMC. As a result, no further segregation is necessary at the AMC; and
- (b) the MSS was designed to segregate mail items into only two categories (i.e. letters and packets). However, in actual practice, mail items have to be segregated into the following four categories:
 - (i) letters suitable for processing by the IMPs;
 - (ii) letters not suitable for processing by the IMPs (for example, letters with flimsy envelopes);
 - (iii) packets suitable for processing by the Packet SSs; and
 - (iv) packets not suitable for processing by the Packet SSs (for example, packets wrapped in plastic bags).

Post Office's views in 2001

4.19 In response to audit enquires, the Post Office, after taking into account the views of the Consultant, informed Audit in August 2001 that:

Design of the POMS

- (a) mail centres played a very important role in postal service. It took a long time to plan a mail centre, identify and work with different government departments and bureaux to secure a site, construct a building and install mechanisation equipment. The capital investment was high and once a mail centre was established, it would need to operate at the premises for a considerable length of time, usually over 20 years in the case of Hong Kong. For such reasons, the infrastructure and equipment of a mail centre had to be so designed that they would be capable to meet the requirements for the anticipated growth in mail traffic in the coming years, otherwise the operations and the quality of service would be seriously jeopardised when the mail volume grew faster than the planned capacity of the mail centre. The capacity of the AMC was designed to cope with traffic growth for 15 years. Understandably, individual equipment and subsystems of the POMS at the AMC would not have built up to their design capacity in their early years of service. Air mail volumes had also declined because of the economic downturn in the region and the fast changing competitive environment including keen competition from other operators (such as the joint venture formed by some postal administrations);

- (b) the original design concept was for the AMC to process all the outward air mail and the inward Speedpost items. For other inward air mail, including letters, packets and parcels, they would continue to be forwarded from the AMC to the GPO and the IMC for processing, similar to the practice adopted by the old AMC. The UDTS was designed in the AMC to facilitate the forwarding of inward air mail in ULDs to the GPO and the IMC. The POMS at the AMC was planned to have the capacity to sort inward air letters and packets at least during the early years after its commissioning;
- (c) the system specification stated that the POMS used an approach that reduced human intervention in the system to an absolute minimum. That only meant the systems should be highly automated. It did not imply that the systems should sort all types of mail with only the exceptions listed in paragraph 4.2(b) and (d). In fact, all types of mail traffic would certainly contain items that could not be sorted by the machines because of their shape, thickness, size or weight. The exceptions mentioned in paragraph 4.2(b) and (d) were some but not all the exceptions that required manual sorting;

Utilisation of the IMPs, the Packet SSs and the Parcel SS

- (d) since the POMS was designed to have sufficient capacity to handle air mail traffic on the peak days up to 2010-11, it was understandable that the systems were not yet used to their full capacity. Moreover, at the time of design of the POMS in early 1994, based on the growing trend in the preceding years, steady mail traffic growth had been expected for the planning period. At that time, no one could ever predict the Asian financial crisis in 1997, which resulted in economic downturn and the slowing down of the mail traffic growth. The keen competition in the market, including the joint venture of some overseas postal administrations, had also affected the Post Office's mail volume. That further explained why there was traffic just sufficient for the Packet SSs and the Parcel SS to be operated for a few hours daily. It should, however, be noted that the average operating hours calculated by Audit represented only the machine run time for processing mail items. They excluded the time periods when the operators were preparing the mail items for feeding to the machines (Note 22). The time the coders of the Packet SSs and the Parcel SS awaited the arrival of mail items at the coding stations was also not included. According to the log sheets kept by the operators of the IMPs, the periods during which they stationed at the machines to process mail totalled eight to ten hours daily. It showed that the total time in which the machines were actually used by the operators was more than the operating hours as calculated by Audit;

Note 22: *Audit's calculation of the average operating hours included all the time when the machine was in the operational mode (see Note 18 to para. 4.5).*

- (e) apart from mail volume, the utilisation of the POMS needed to match with the operational mode and mail arrival patterns. The outline design was prepared in 1993-94 while the AMC was commissioned in 1998. Over the intervening period, there had been some changes, such as mail mix, mail characteristics and even mail arrival and dispatch patterns. All of them affected the operational mode of the Post Office and in turn the utilisation of the machines. For instance, the original design of the AMC was not meant to handle inward letters and packets, but in order to make full use of the available resources, the Post Office had added those new functions to the AMC;
- (f) all the outward air parcels and large size Speedpost items were put through the Parcel SS for sorting. That could not happen on letters to the IMPs or on packets to the Packet SSs because quite a number of letters and packets were unsuitable for putting into the machines. They were classified as non-machinable items (e.g. those in plastic, or glossy or poor-quality envelopes, or window envelopes with part of the address hidden, those bearing poor address formats, or with address shown outside the appropriate zone on the cover, those containing stiff contents, and those which are undersize, oversize, or overweight) and had to be handled manually. Hand-written addresses, especially those written in Chinese vertically, were also not preferred by the machines. Example of non-machinable packets might include loosely wrapped plastic covers, flimsy flats, undersize or oversize items as well as those in poor wrappings. The Post Office had been trying hard to advise and educate local customers to post items that were machinable, including visits paid by Postal Services Representatives and Account Managers to the bulk mailers to seek their co-operation. However, the Post Office could do very little for overseas mailers. Many of the inward mail items, including letters and packets, were not machinable and had to be sorted manually;
- (g) the Post Office had endeavoured to put as many machinable items as possible into the machines for sorting to achieve cost-effectiveness. As the majority of mail arrived at the AMC in the evening, especially the outward mail, the machines were then much busier than at other time of the day. It was not necessary to operate the machines for mail sorting throughout the day, as the mail did not arrive evenly on an hourly basis. It also did not serve useful purpose if mail items which were apparently not suitable for sorting by machine were fed into the machines. It would not only result in extremely low output but also cause overflow and jam easily, and could potentially damage those mail items, which could raise complaints against the Post Office;

- (h) the air packet traffic had decreased significantly since 1998-99. That explained the relatively low utilisation of the Packet SSs. Furthermore, the AMC also processed surface air-lifted packets (i.e. surface mail flown to Hong Kong because of surplus aircraft loading available). The majority of these packets were non-machinable and therefore contributed to the relatively low utilisation of the Packet SSs;
- (i) the Post Office had taken on a new function by processing inward mail at the AMC to maximise the use of the POMS. The Post Office would continue to explore ways to maximise the usage;

Utilisation of supporting systems of the POMS

- (j) the conveyor system was primarily designed for segregation of large size inward Speedpost items for despatching to the GPO and the IMC. That was the concept in 1993-94. When the new AMC started operation in 1998, the circumstances of operations had changed. Owing to the growth of inward mail traffic as well as Speedpost traffic, the GPO and the IMC had become so congested that they could not find enough space in the late evening for processing inward Speedpost traffic. The processing of inward Speedpost items arriving at the AMC in the late afternoon was centralised at the AMC for processing during the night;
- (k) the storage facility of the CSRS was designed to cater for traffic growth up to 2010-11. In the meantime, the need for that short-term storage facility had fallen due to the much greater frequency of despatches. The Hong Kong International Airport had attracted many more direct, daily flights to more destinations world-wide than anticipated. As mail volumes grew again, it would become necessary to utilise the CSRS for storage of mail awaiting despatching to keep the floor areas clear for mail movement. Meanwhile, the Post Office had already arranged to find alternative uses of the facility. The logistics service, which was recruiting customers, would use the CSRS for storage of merchandise of customers awaiting delivery orders. In a recent plan to streamline the handling of empty mail bags at the IMC, empty mail bags were processed at the AMC and the bags were stored at the CSRS;
- (l) the VLDs were included in the POMS for health and safety reasons. It was meant to reduce the risk of back injury for staff, which was quite common among staff handling heavy mail bags. In addition, to explore more business opportunities, the Post Office had negotiated with other postal administrations to handle freight items and heavy weight items up to 60 kg. Unfortunately, both did not materialise. On one hand, there had been resistance from staff using the device as it required much coordination between the staff to manipulate the device effectively. On the other hand, the handling of items over 30 kg (the prevailing agreed parameter among postal administrations) did not meet the agreement of the postal partners of the Post Office;

- (m) the UDTS was installed to facilitate the transfer of the ULDs to the GPO and the IMC. The plan did not materialise mainly because of changes in operation. Incoming mail was processed at the AMC and distributed to delivery offices in order to ease the very high congestion at the GPO and the IMC;
- (n) the MSS was designed primarily for the segregation of letters and packets (already franked with postage by customers) received from the branch post offices. However, owing to the Post Office's drive in recent years to containerise the inter-office transfers of letter-size items to enhance operational efficiency, the arrival of outward letters and packets at the AMC in mixed condition had become rare. There was therefore little opportunity to put the MSS into use at the moment;

Changes in circumstances

- (o) before Audit commissioned its review, the Post Office had constantly reviewed the situation and would continue to explore ways to utilise the idle systems. The supporting systems had become idle mainly because of changes in circumstances that were not foreseen at the design stage of the POMS. It had to be stressed that the design and procurement of the POMS was done on the best available knowledge and forecasts at the time and according to best practice cost-benefit analysis. Indeed, the Post Office had always adapted to the changing circumstances. The Post Office had constantly reviewed its operations to make the best use of available resources to enhance efficiency, quality of service and utilisation of the facilities. For example, the Post Office had transferred from the GPO and the IMC the sorting functions of all inward air mail, including letters, packets and parcels to the new AMC when it opened on 6 July 1998. The Post Office had also made use of the POMS to set up an operation centre for the new logistics service and transshipment service. The CSRS had also been utilised for the storage of foreign empty air mail bags pending return to their countries. This had streamlined the processing of empty bags and enhanced efficiency. In addition, there were two postal operations committees which conducted constant reviews and planned for new initiatives for optimum utilisation of resources and facilities; and
- (p) the Post Office would, as always, endeavour to take into consideration all probable changes in circumstances in the procurement of a new mail processing system in future.

Action taken by the Post Office to increase the utilisation of the Postal Mechanisation System

IMPs and the Packet SSs

4.20 To increase the utilisation of the IMPs and the Packet SSs, since July 2001, the Post Office has transferred some local mail and inward surface mail, which are originally sorted in the GPO and the IMC, to the AMC for sorting. After sorting, the mail is sent back to the GPO and the IMC for further transportation to delivery offices.

Conveyor system

4.21 Since September 2003, the Post Office has used Unit D occasionally to segregate inward parcels into two lots (one lot to be delivered to the GPO and the other lot to be delivered to the IMC). The average weekly utilisation of Unit D for this purpose is about one hour.

Audit recommendations

4.22 Audit examination indicated that, based on the 2003-04 data, the utilisation of the POMS was low. A significant quantities of letters (i.e. 34 million or 34%) and packets (i.e. 10 million or 68%) required manual sorting. There is a need for the Postmaster General to review the overall situation on the utilisation of the POMS, especially on the ways to utilise the idle supporting systems (i.e. the conveyor system, the CSRS, the VLDs, the UDTS and the MSS).

4.23 **Audit has recommended that the Postmaster General should:**

- (a) **modify and tune the IMPs and the Packet SSs so that the systems would process the majority of the mail items and minimise the mail items requiring manual sorting;**
- (b) **transfer mail from the GPO and the IMC to the AMC for sorting only when the GPO and the IMC cannot cope with the workload;**
- (c) **explore ways to put the supporting systems into beneficial use;**
- (d) **take into account the spare capacity of the POMS when planning the replacement of the mail processing systems at the GPO and the IMC;**

- (e) **consider mothballing the idle equipment which cannot be put into beneficial use and reassess the schedule maintenance for such equipment with a view to minimising the operating cost of the AMC; and**
- (f) **in future procurement of equipment (including postal equipment), determine the expected utilisation rates and make use of the utilisation rates in evaluating the costs and benefits of the equipment.**

Response from the Administration

4.24 The **Postmaster General** has said that he generally agrees with the audit recommendations. The Post Office has reviewed the overall situation on the utilisation of the POMS and will continue to do so on a regular basis. The Postmaster General has also said that:

General response

- (a) system tuning of the IMPs and the Packet SSs is a regular feature of corrective and preventive maintenance. The Post Office will consider the modification in the light of operational requirements and cost implications;
- (b) since October 2002, the Post Office has conveyed letters and packets collected from some street posting boxes and branch offices in the New Territories to the AMC for processing by the POMS to enhance operational efficiency, instead of conveying them to the IMC for handling. The Post Office has also conveyed some bulk mail from the GPO and the IMC to the AMC for processing in order to relieve the workload of the GPO and the IMC arising from the influx of traffic. Processed mail items are sent directly to the delivery offices via the transport hub of the GPO or the IMC. These arrangements aim to increase the utilisation of the POMS and improve the overall postal operational efficiency;
- (c) the Post Office will continue its efforts to explore ways to put the supporting systems into beneficial use in line with the audit recommendation;
- (d) the Post Office has, as recommended by Audit, taken into account the spare capacity of the POMS when planning the replacement of the mail processing systems at the GPO and the IMC;

- (e) the Post Office will, in consultation with the maintenance service provider, follow up the audit recommendation of mothballing the idle equipment which cannot be put into beneficial use and reassess the schedule maintenance for such equipment with a view to minimising the operating cost of the AMC;
- (f) the Post Office will continue to adopt the approach recommended by Audit in respect of the POMS project in future procurement of mechanised equipment;

Utilisation of the Postal Mechanisation System

- (g) the Post Office recognises that some equipment of the POMS is under-utilised. But these are to a large extent attributed to changed circumstances such as changes in mail characteristics and operational procedures, as well as the downturn of economy and stiffer competition which have made the previous traffic projection unrealistic;
- (h) the utilisation of the POMS could not be regarded as low. In 2003-04, the AMC handled on average 520,000 mail items daily, of which 180,000 items did not require processing by the POMS as they were already pre-sorted by customers or were required to be processed in secure cubicles as in the case of registered/insured items. For the remaining 340,000 items, 230,000 items (68%) were processed by the POMS;
- (i) the volume of the packet traffic had declined significantly from 20.5 million in 1999-2000 to 14.6 million in 2003-04 because of economic downturn and competition from other operators. Besides, some items have been diverted from the normal air mail stream to the Bulk Air Mail stream, which are pre-sorted by customers and therefore do not require processing by machines. The average daily volume of packets handled by the AMC is about 40,000 items and the times of arrival are scattered throughout the day. As the service standard does not require all the packets to be processed immediately after their arrival at the AMC, the Post Office operates the Packet SSs when there are sufficient volumes of packets on hand, in order to achieve economy of scale. This explains why the operating hours of the Packet SSs are limited;

- (j) one of the Packet SSs is not used to sort Speedpost items as originally planned because the volume of Speedpost items has not grown as fast as originally projected and the current volume is more cost-effectively handled manually to meet the stringent service standards for this time-sensitive product; and
- (k) the Post Office has been promoting the use of trays and trolleys for conveyance of mail between offices to increase operational efficiency and reduce the risk of work-related injuries. As a result, the need for bag opening using the VLDs has reduced.

4.25 The **Director of Government Logistics** has said that in future procurement of high value and complex equipment where there is rapid technology advancement, consideration can be given to adopt a marking scheme to evaluate the tender offers. This would allow separate assessment of the technical and price aspects, with predetermined relative weights attached to particular features which would help ensure selection of a better value for money offer.

PART 5: PAYMENTS FOR THE POSTAL MECHANISATION SYSTEM

5.1 This PART reports the results of the audit review on the payments for the POMS and suggests measures for improvement.

Discounts allowed in the Contract

5.2 According to the Contract, the Post Office is entitled to discounts on payments for the POMS as shown in Table 7.

Table 7

Discounts provided for in the Contract

Discounts	Amount (\$ million)
3 % discount (Note 1)	4.7
Special discounts (Note 2)	
Discount on training packages	0.4
Discount for settlements within one month of invoice date	0.8
Final discount	0.8
	—
Total	<u>6.7</u>

Source: Post Office records

Note 1: The Post Office is entitled to 3% discount on all payments except payments for the IMPs and payments for variations made after the signing of the Contract.

Note 2: In the first invoice issued by the Contractor in May 1995, the special discounts had been deducted from the amount due in proportion to the invoice amount.

Payment procedures

5.3 The Director of Architectural Services is the Controlling Officer of the funds for the POMS project. Prior to the establishment of the Post Office Trading Fund on 1 August 1995, the Architectural Services Department issued allocation warrants (Note 23) authorising the Post Office to incur expenditure on the POMS project. When the Post Office received the invoices, it prepared the payment vouchers and forwarded them to the Treasury for making payments to the Contractor.

5.4 After the establishment of the Post Office Trading Fund, the Post Office no longer submitted payment vouchers to the Treasury for payment. Upon receiving the invoices from the Contractor, a Senior Postal Officer of the AMC checked the invoices and passed the invoices to the General Manager in charge of the AMC. After checking, the General Manager certified the invoices for payments. The invoices were then forwarded to the Architectural Services Department for payments. In turn, the Architectural Services Department had to submit the payment vouchers to the Treasury for making payments to the Contractor.

Audit observations

Overpayments to the Contractor

5.5 In January 2001, Audit found that, up to 31 December 2000, the Post Office had paid \$200.1 million to the Contractor. This amount comprised:

- (a) \$14.9 million for which discounts had been deducted;
- (b) \$55.4 million for which there was no provision in the Contract for any discount; and
- (c) \$129.8 million for which the 3% discount and special discounts allowed in the Contract had not been deducted.

Note 23: *According to the Public Finance Ordinance (Cap. 2), allocation warrants provide a mechanism whereby a Controlling Officer can authorise another Controlling Officer to incur expenditure chargeable to the former Controlling Officer's expenditure subheads.*

5.6 Audit noted that overpayments had been made to the Contractor and requested the Post Office to review all its payments to the Contractor. The Post Office, after checking its payment records, found that there were overpayments of \$7.1 million to the Contractor. Details of the overpayments are as follows:

- (a) \$3.9 million in respect of the 3% discount;
- (b) \$0.8 million in respect of the special discounts; and
- (c) \$2.4 million in respect of a variation made after the signing of the Contract.

5.7 According to the Contract, the Post Office was entitled to special discounts for payments made within one month of the invoice date. In 2001, after receiving the audit observation on overpayments to the Contractor, the Post Office found that 15 payments had not been made within one month of receipt of the invoices from the Contractor. The special discounts forgone was \$0.2 million.

5.8 In mid-2001, Audit requested the Postmaster General to:

- (a) critically examine the Contract with a view to ascertaining whether any interest, in addition to the amount overpaid could be recovered from the Contractor and consult the Department of Justice, if necessary;
- (b) take prompt action to recover the total overpayments and the related interest, if any, from the Contractor; and
- (c) promptly tighten the Post Office's control procedures for making payments to its contractors and consider drawing up a checklist for checking and certifying invoices in future.

Administration's views in 2001

5.9 In response to audit enquiries, the Post Office, after taking into account the views of the Consultant, informed Audit in August 2001 that:

- (a) the omission of the discounts was not due to the absence of a master checklist, but rather stemmed from the absence in the Contract of a clear agreement with the Contractor on how and when the discounts were to be honoured. Apart from the few words at the end of the price list in the Contract concerning the discounts, there was no further elaboration on the discounts in the Contract; and

- (b) the Contractor advised that they were prepared to give back all the discounted amounts to the Post Office at the end of the software warranty period (i.e. by 2003). On the advice of the Department of Justice, the Post Office disagreed with such arrangement and asked the Contractor to reimburse the amounts to the Post Office immediately, together with the related interest. The Department of Justice was of the view that it was a trade practice to honour discounts when the relevant invoice was presented for payment.

5.10 The Financial Services and the Treasury Bureau informed Audit in August 2001 that it agreed with Audit that the Post Office should promptly recover the amount overpaid for the POMS from the Contractor and tighten the Post Office's payment control procedures.

5.11 The Treasury informed Audit in August 2001 that if the Post Office needed advice on any aspect of accounting control, the Treasury would be pleased to help.

Recovery of the overpayments from the Contractor

5.12 In October 2001, the Post Office found that the accrued interest for the overpayments made to the Contractor was \$0.9 million. In February 2002, the Post Office recovered \$8 million (i.e. the overpayments of \$7.1 million and the accrued interest of \$0.9 million) from the Contractor.

Audit recommendations

5.13 The terms of the Contract for the POMS include discounts on payments. There is a need for the Postmaster General to strengthen the payment checking procedures in order to ensure that mistakes such as those mentioned in paragraph 5.6 will not recur in handling payments under contract.

5.14 **Audit has recommended that the Postmaster General should strengthen the payment checking procedures, including procedures which would ensure that payments are made to the contractors:**

- (a) **after deducting all discounts specified in the contracts; and**
- (b) **within the time limit specified in the contracts in order to receive the discounts to which the Post Office is entitled.**

Response from the Administration

5.15 The **Postmaster General** has said that there was a lapse on the part of the officer responsible for monitoring the payment. The Post Office has tightened up the payment checking procedures to prevent recurrence of the error.

5.16 The **Director of Accounting Services** has said that the Post Office has taken action to tighten up its payment control procedures. The Treasury has provided the Post Office with payment control guidelines and drawn its attention to areas that should be covered when certifying and authorising payments.

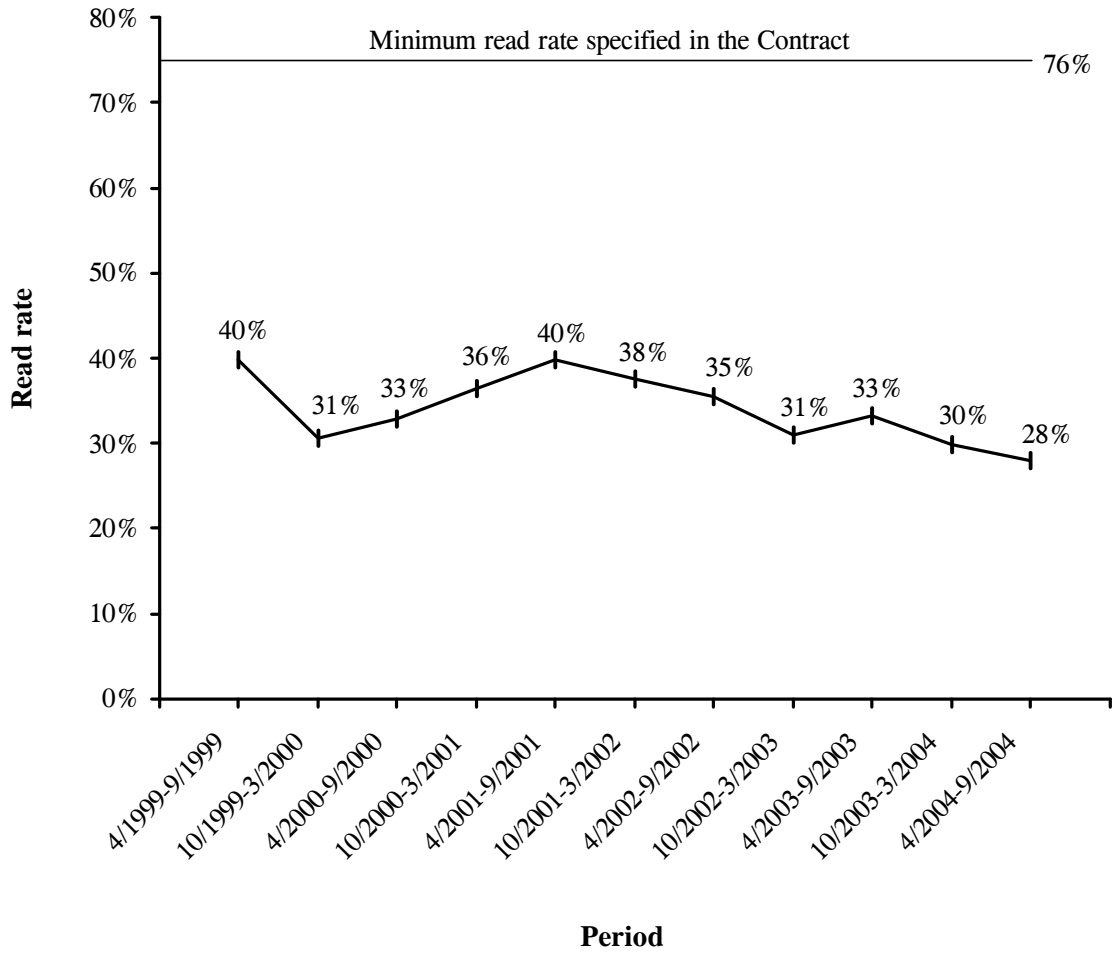
Capital costs of the components of the Postal Mechanisation System

Component	Capital costs	
	(\$ million)	(\$ million)
Integrated mail processors		43.9
Packet sorting systems		24.0
Parcel sorting system		17.0
Supporting systems:		
Conveyor system (Note)	Unit A	2.1
	Unit B	3.0
	Unit D	5.8
	Unit E	5.6
	Unit F	5.2
Elevating transfer vehicle		13.4
Container storage and retrieval system		7.1
Computer software		5.8
X-ray systems		3.6
Vacuum lifting devices		1.8
Unit load device transfer system		1.6
Mail segregation system		0.4
Miscellaneous equipment		12.4
		<u>67.8</u>
Project management		20.0
Training and manuals		13.6
Spares and tools		10.4
Delivery costs		5.6
Acceptance tests		5.0
Maintenance for the first year after the hardware warranty period		2.6
Special discounts		(2.0)
		<u>(2.0)</u>
	Total	<u>207.9</u>

Source: Post Office records

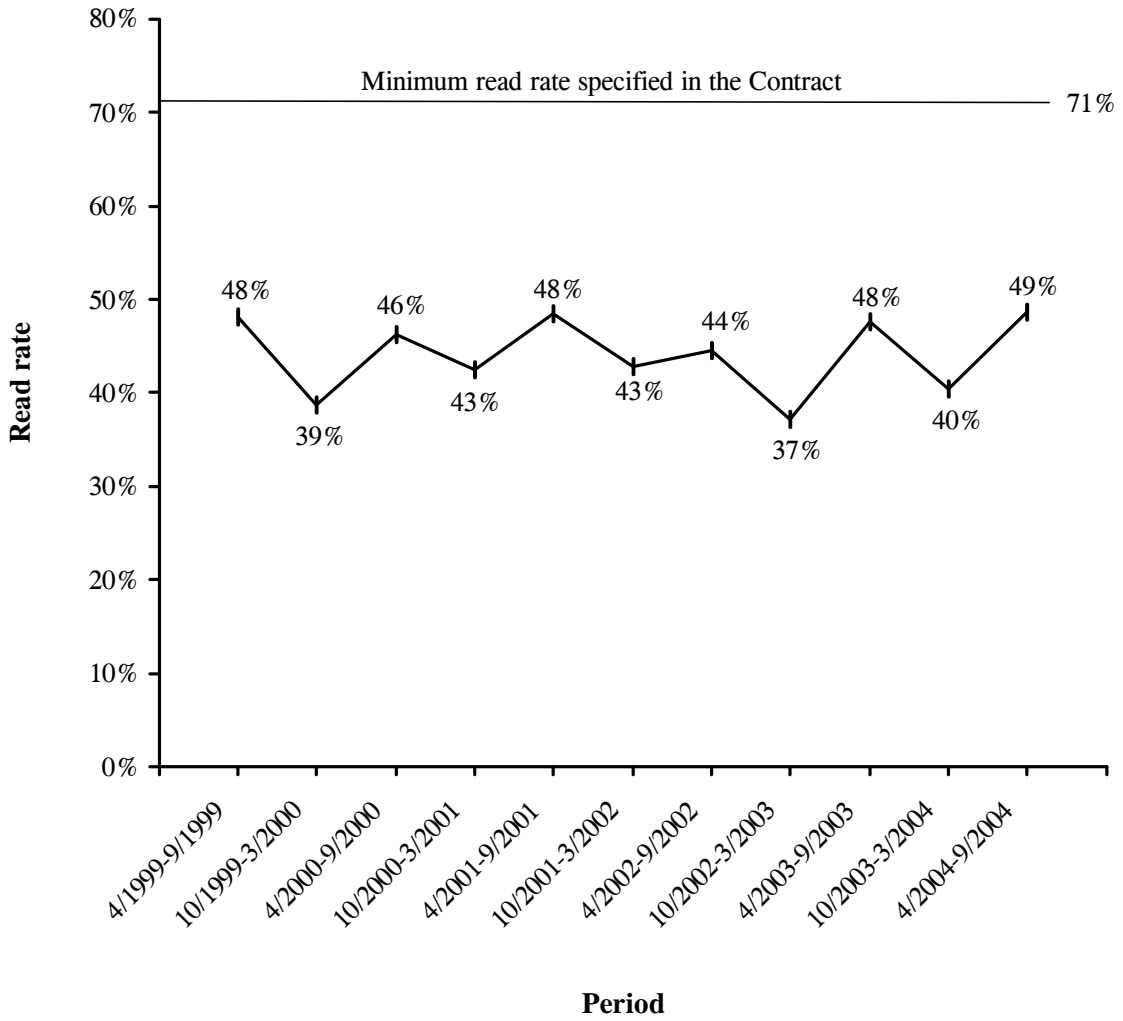
Note: In the Contract, Unit C of the conveyor system refers to the parcel sorting system.

**Read rate of the integrated mail processors for inward mail
(April 1999 to September 2004)**



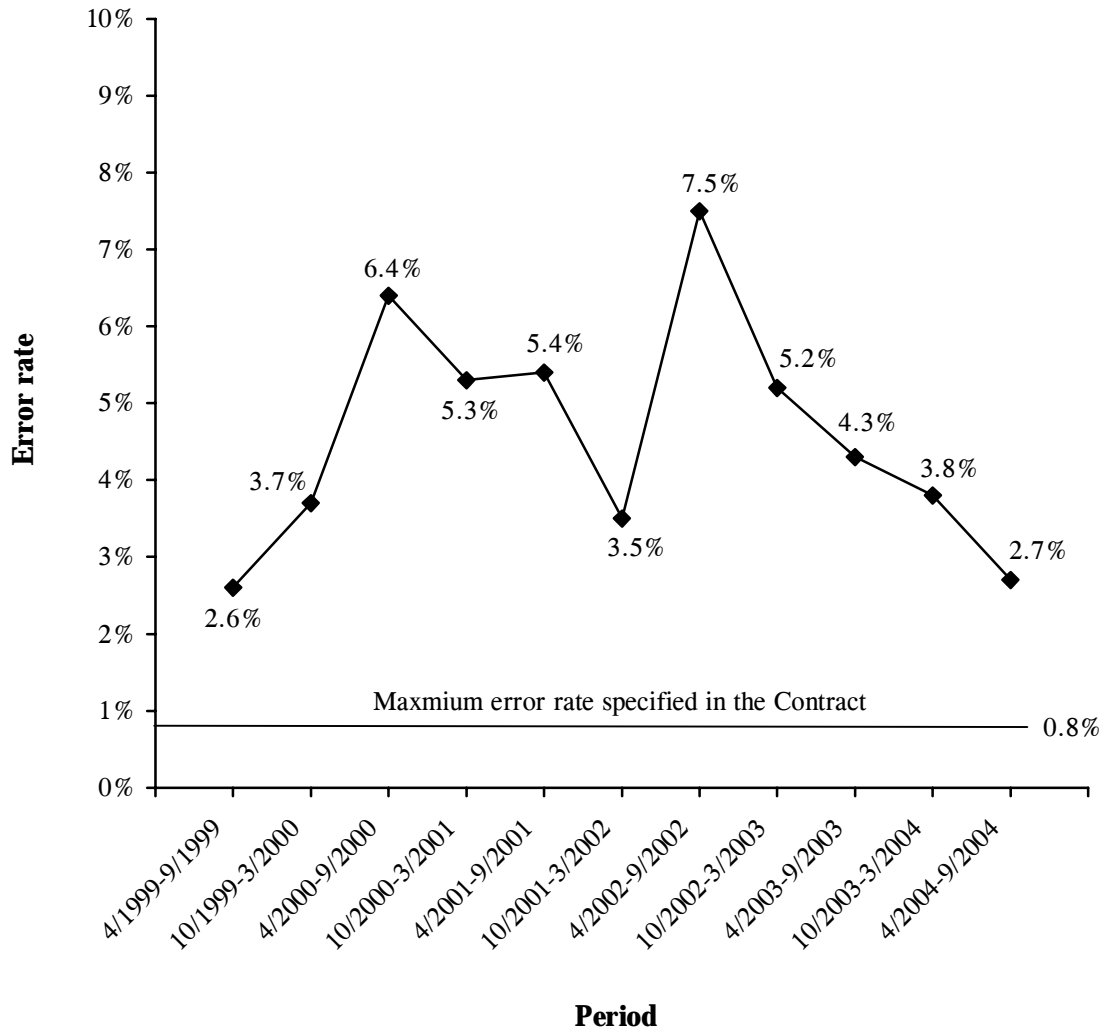
Source: Post Office records

**Read rate of the integrated mail processors for outward mail
(April 1999 to September 2004)**



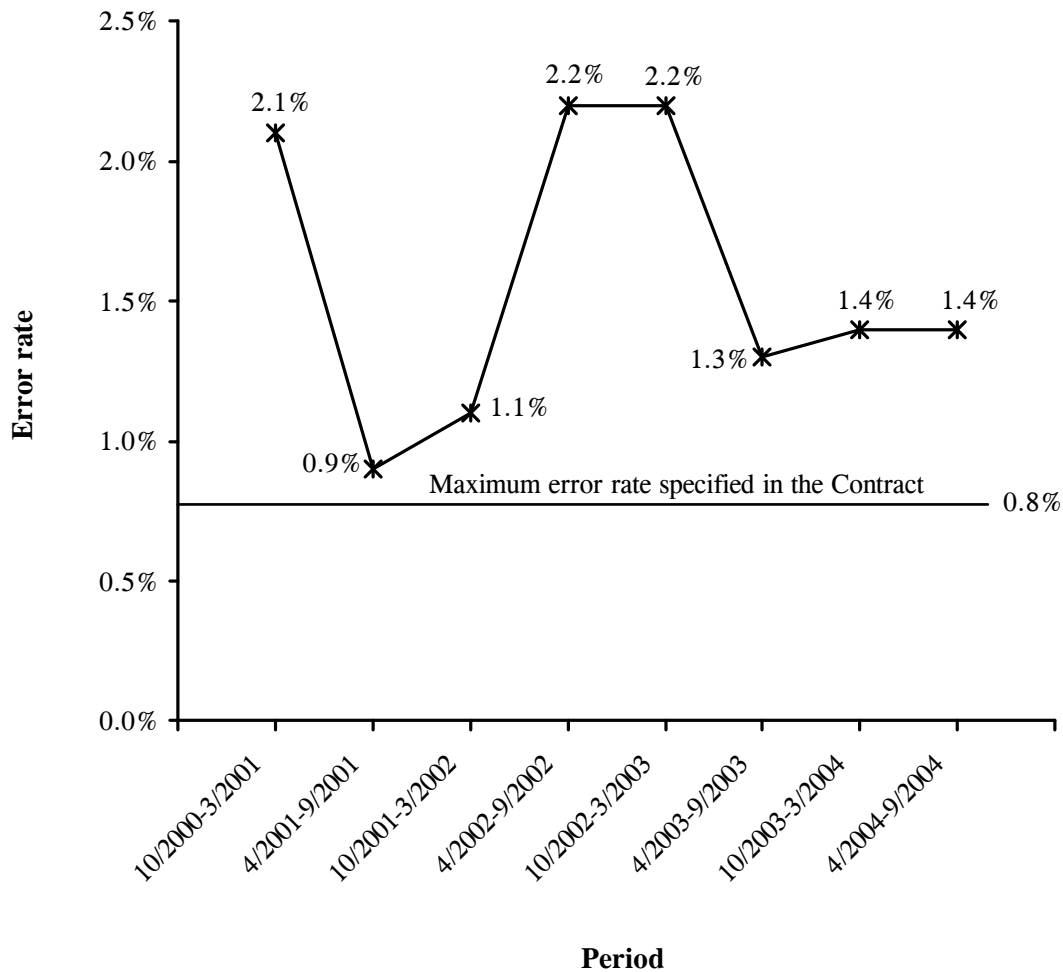
Source: Post Office records

**Error rate of the integrated mail processors for inward mail
(April 1999 to September 2004)**



Source: Post Office records

**Error rate of the integrated mail processors for outward mail
 (October 2000 to September 2004)**

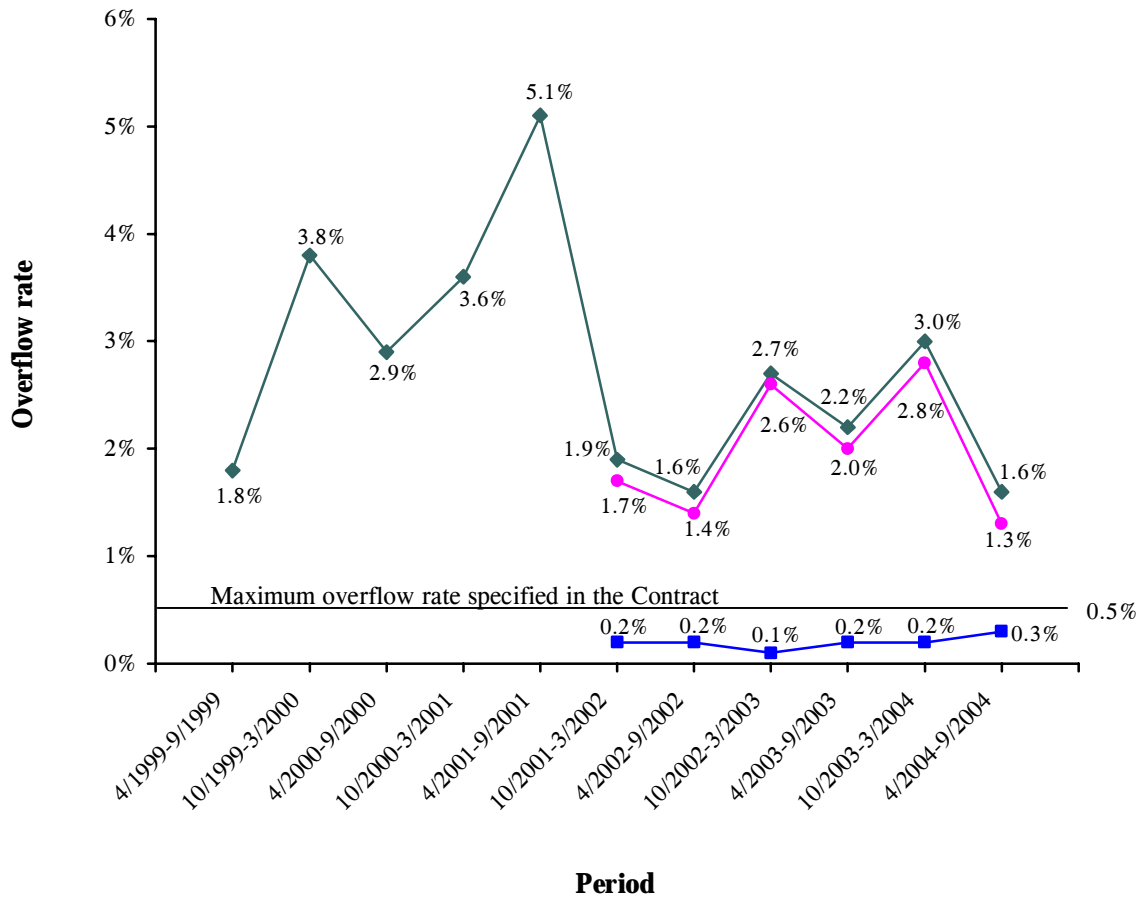


Source: Post Office records

Note 1: The error rate for the period from October 2000 to March 2001 was based on the error rate in March 2001 because the Post Office could not provide Audit with data prior to March 2001.

Note 2: The error rate might include errors made by the coders operating the VCS. The Post Office could not provide Audit with error rate data related only to the technical problem of the IMPs for outward mail.

**Overflow rate of the integrated mail processors
(April 1999 to September 2004)**

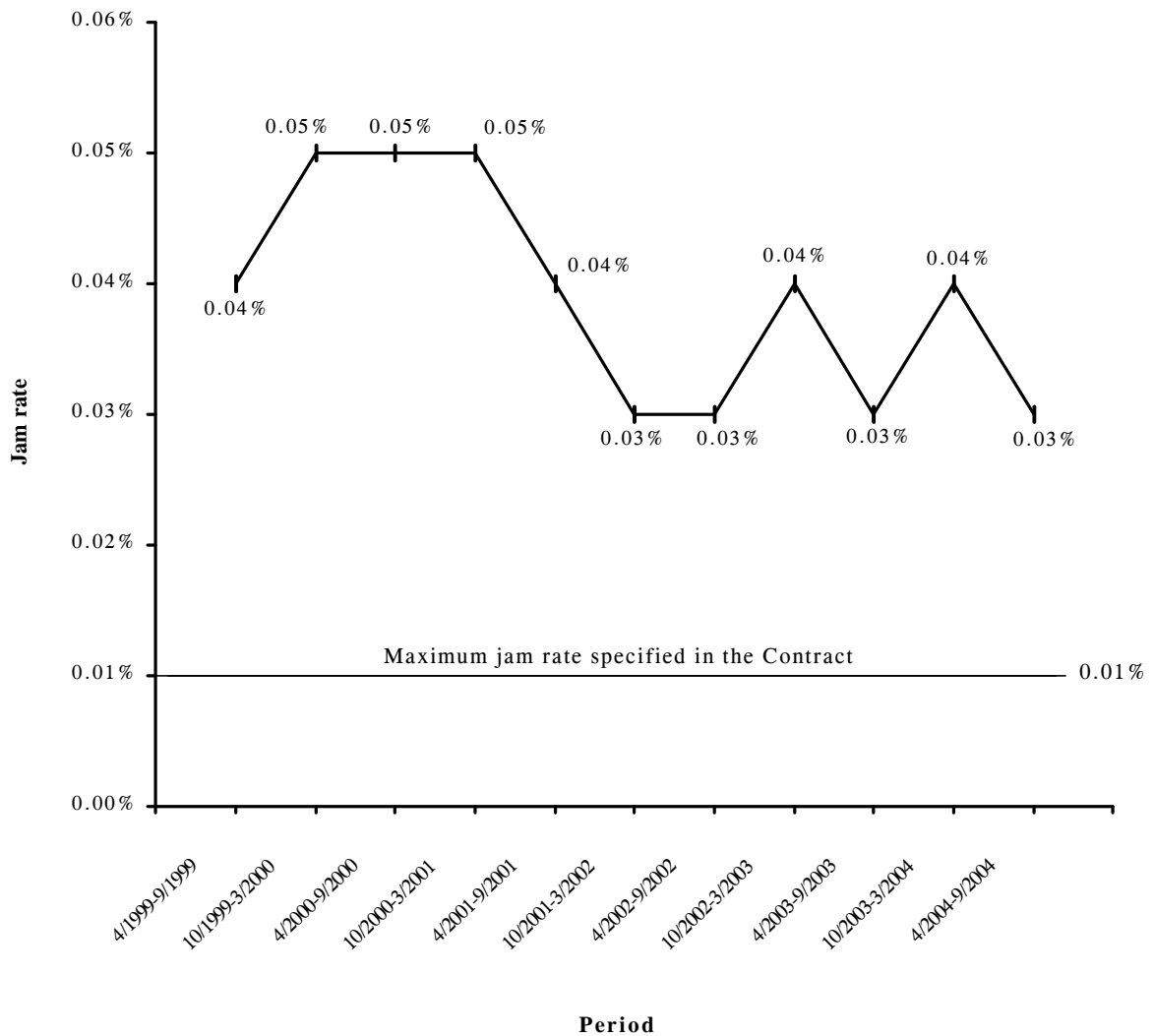


- Legend:
- ◆— Overall overflow rate
 - Overflow due to filled collection units
 - Overflow due to technical problems

Source: *Post Office records*

Note: *The overall overflow rate for the period from April 1999 to September 1999 was based on the overflow rate in September 1999 because the Post Office could not provide Audit with data prior to September 1999. The overflow rates which were due to filled collection units and technical problems for the period from October 2001 to March 2002 were based on the overflow rates in February and March 2002 because the Post Office could not provide Audit with data prior to February 2002.*

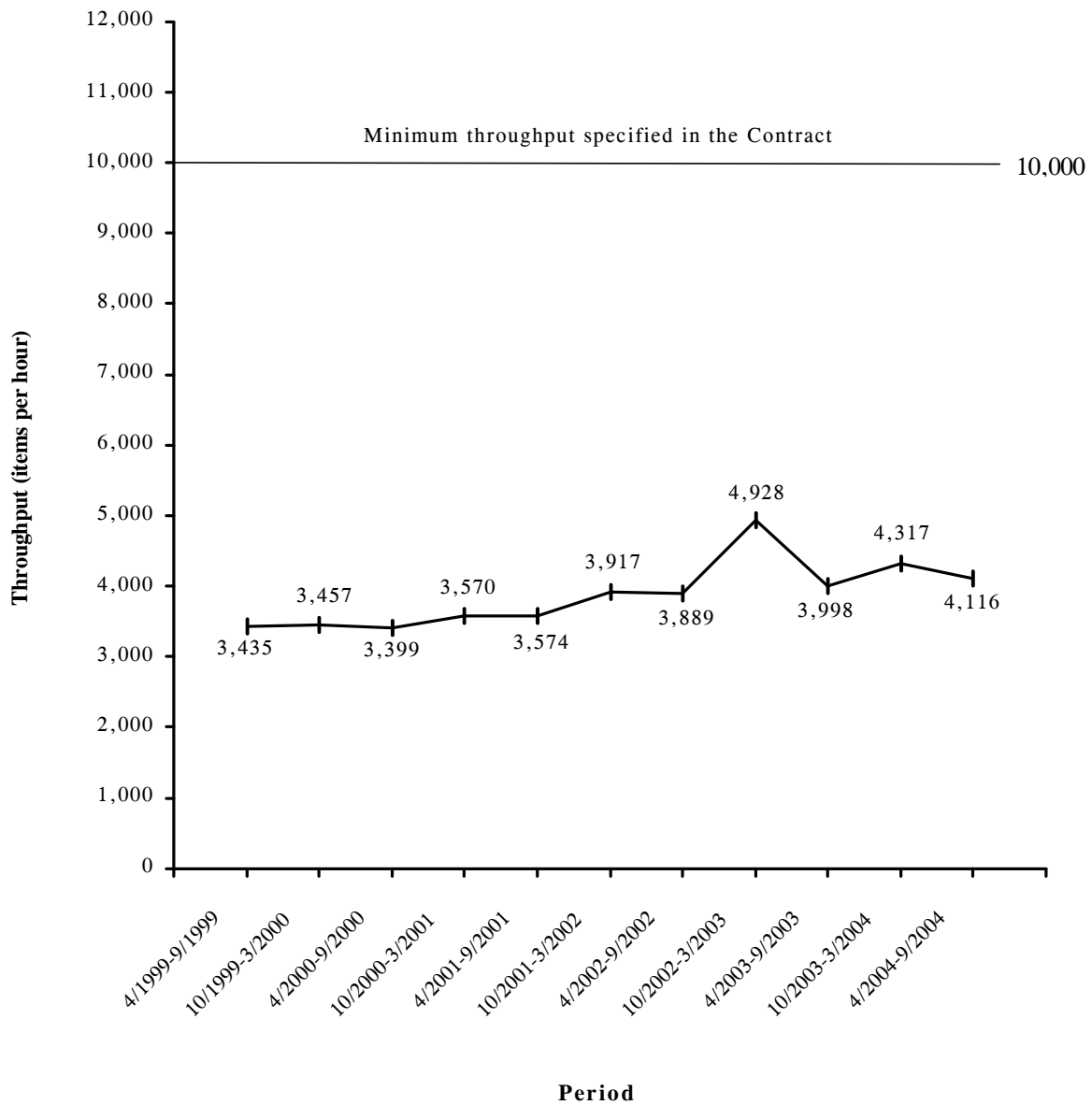
**Jam rate of the integrated mail processors
(April 1999 to September 2004)**



Source: Post Office records

Note: The jam rate for the period from April 1999 to September 1999 was based on the jam rate in September 1999 because the Post Office could not provide Audit with data prior to September 1999.

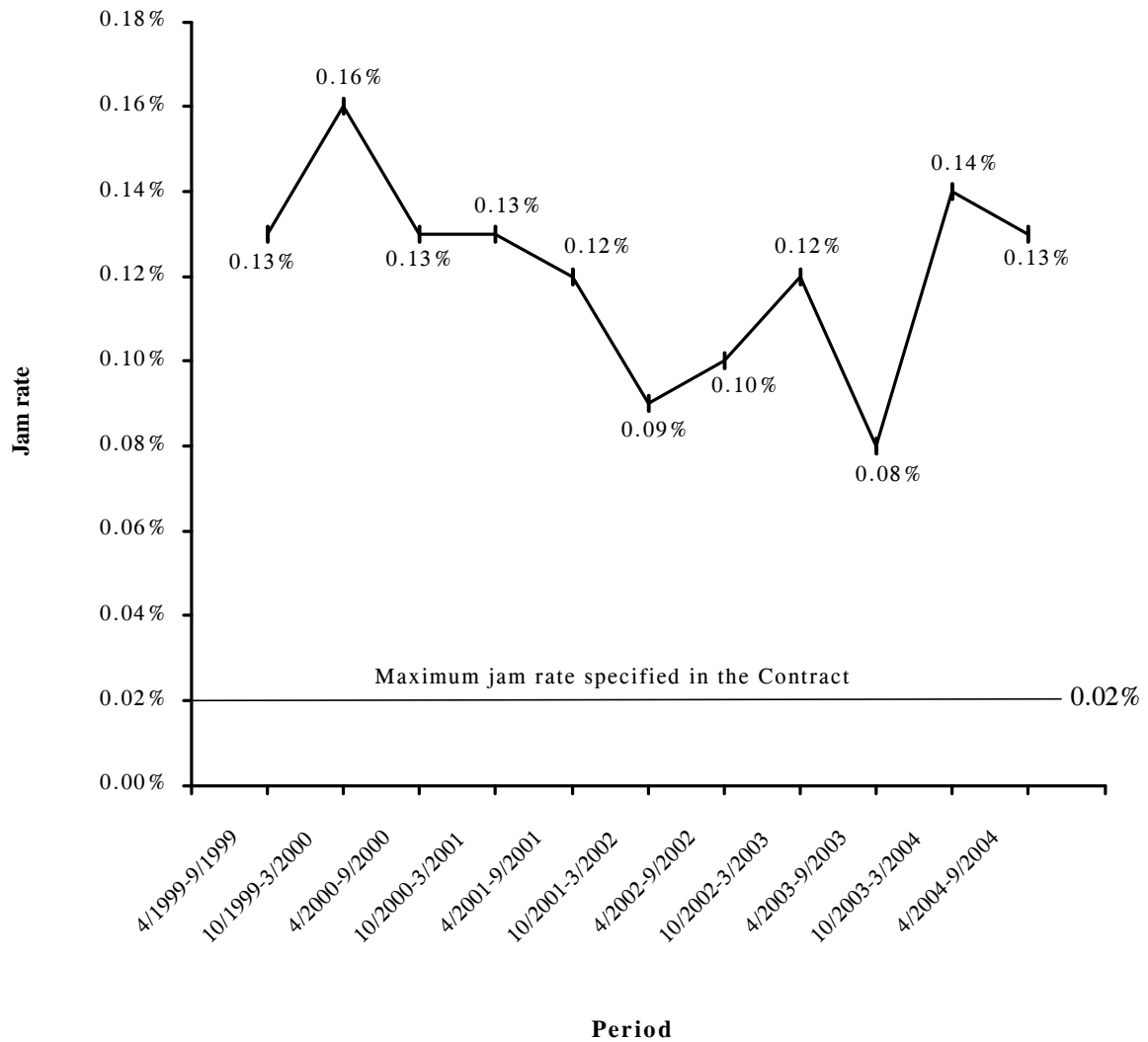
**Throughput of the packet sorting systems
 (April 1999 to September 2004)**



Source: Post Office records

Note: The throughput for the period from April 1999 to September 1999 was based on the throughput in September 1999 because the Post Office could not provide Audit with data prior to September 1999.

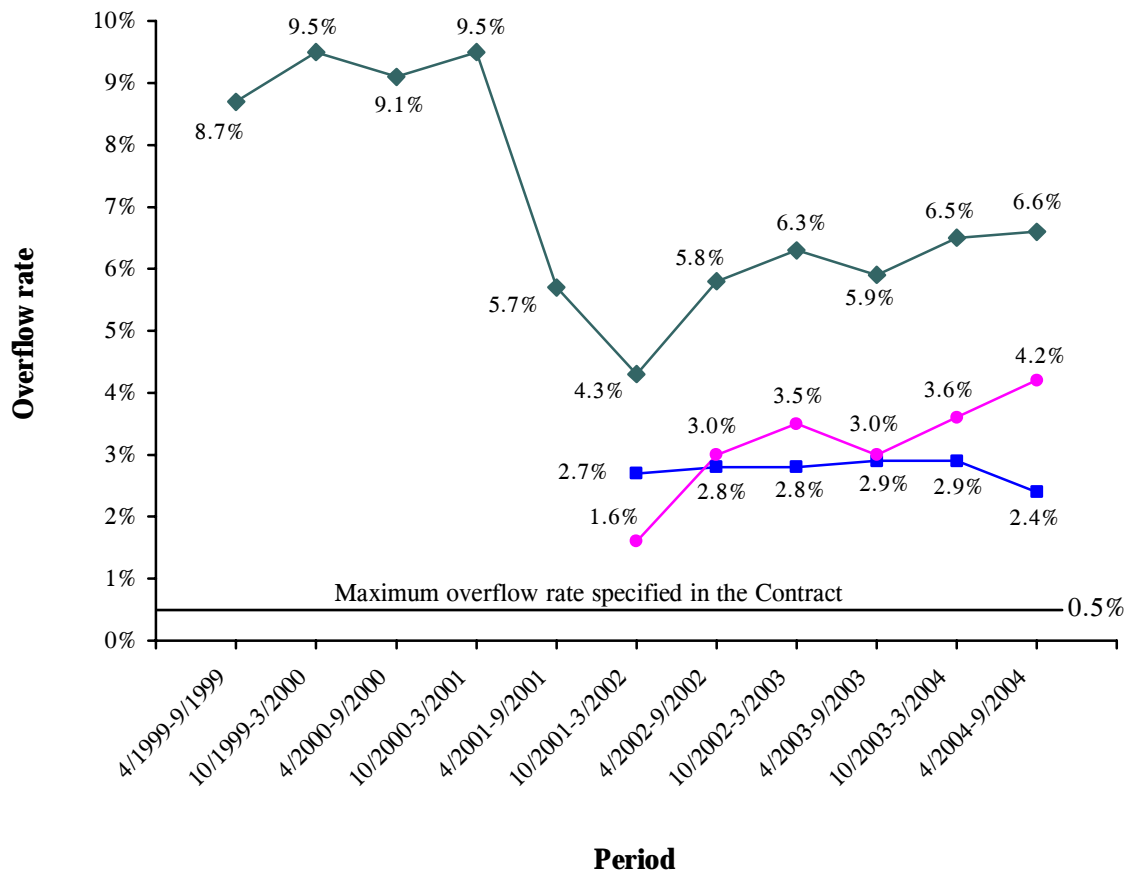
**Jam rate of the packet sorting systems
(April 1999 to September 2004)**



Source: Post Office records

Note: The jam rate for the period from April 1999 to September 1999 was based on the jam rate in September 1999 because the Post Office could not provide Audit with data prior to September 1999.

**Overflow rate of the packet sorting systems
(April 1999 to September 2004)**

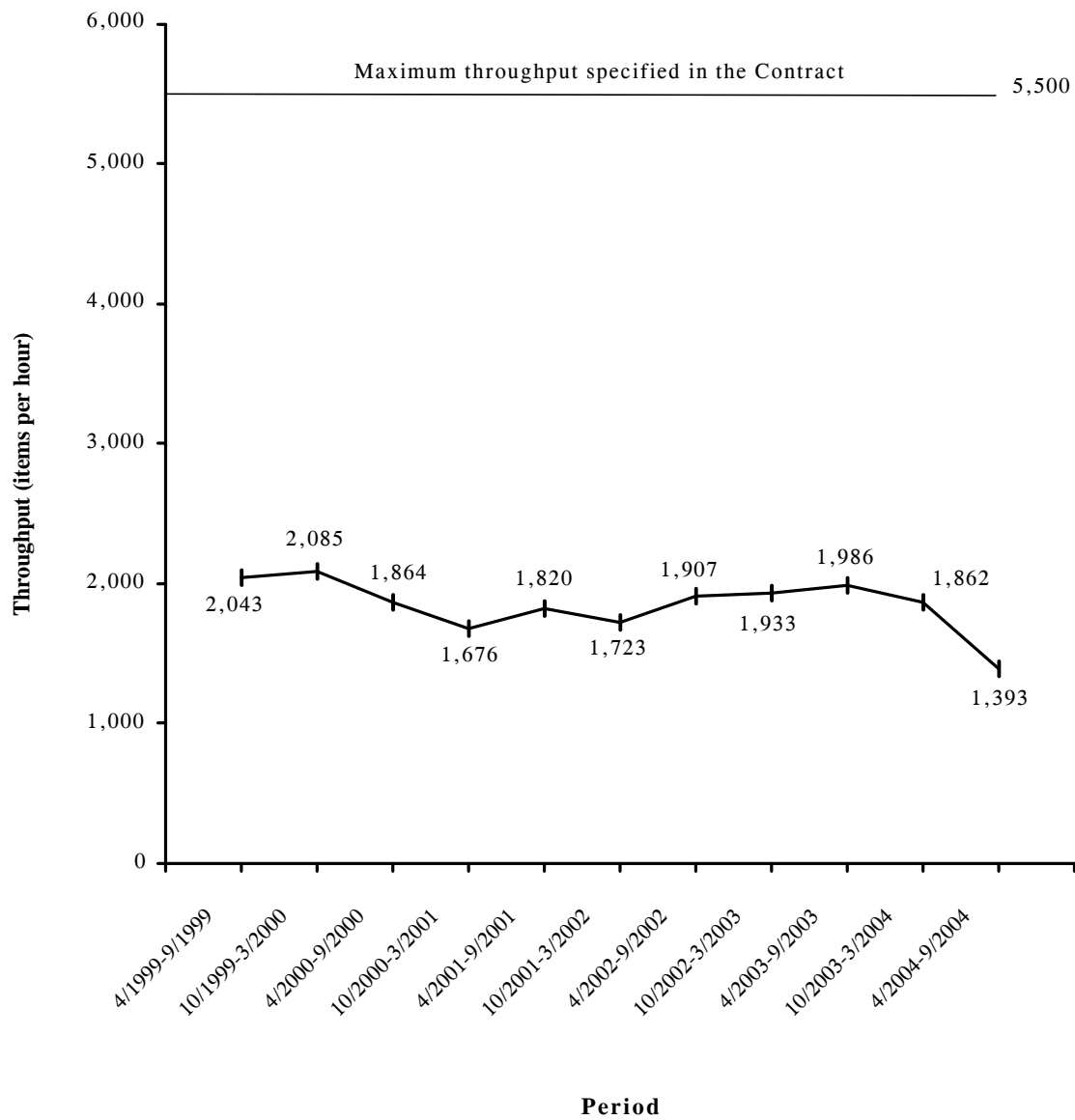


- Legend:
- ◆ Overall overflow rate
 - Overflow due to filled mail bags
 - Overflow due to technical problems

Source: *Post Office records*

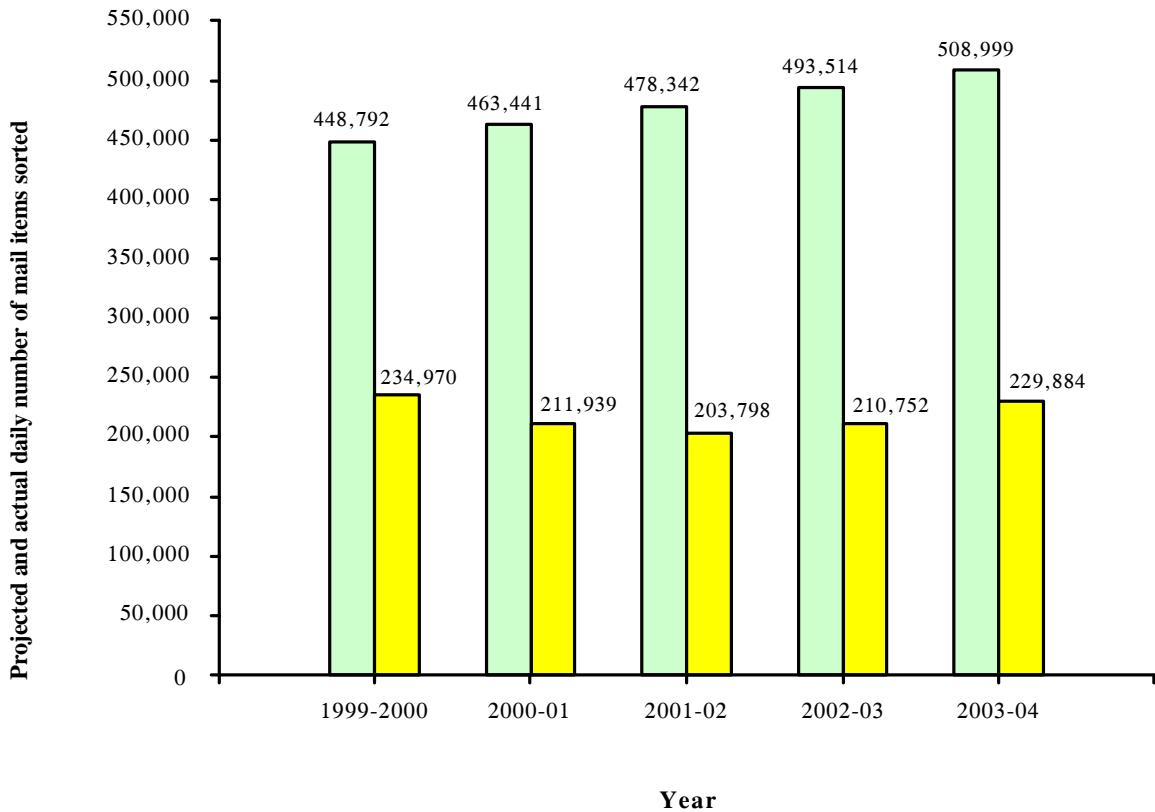
Note: *The Post Office could not provide Audit with data on the overflow rates which were due to filled mail bags and technical problems prior to October 2001.*

**Throughput of the parcel sorting system
(April 1999 to September 2004)**



Source: Post Office records

**Projected and actual daily number of mail items
sorted by the Postal Mechanisation System
(1999-2000 to 2003-04)**



Legend: Projected daily number of mail items
 Actual daily number of mail items

Source: Post Office records

Note: On average, the projected and the actual daily number of mail items sorted by the POMS were 478,618 and 218,269 respectively. The projections were made by the Consultant in 1994.

Acronyms and abbreviations

AMC	Air Mail Centre
Audit	Audit Commission
CSRS	Container storage and retrieval system
ETV	Elevating transfer vehicle
GPO	General Post Office
IMC	International Mail Centre
IMP	Integrated mail processor
MSS	Mail segregation system
OCR	Optical character recognition machine
Packet SS	Packet sorting system
Parcel SS	Parcel sorting system
POMS	Postal Mechanisation System
UDTS	Unit load device transfer system
ULD	Unit load device
VCS	Video coding system
VLD	Vacuum lifting device