The Auditor-General Audit Report No.48 2000–2001 Performance Audit

Air Traffic Data Collection

Airservices Australia

Australian National Audit Office

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Canberra ACT 07 June 2001

Dear Madam President Dear Mr Speaker

The Australian National Audit Office has undertaken a performance audit in Airservices Australia in accordance with the authority contained in the *Auditor-General Act 1997*. I present this report of this audit, and the accompanying brochure, to the Parliament. The report is titled *Air Traffic Data Collection*.

Following its tabling in Parliament, the report will be placed on the Australian National Audit Office's Homepage http://www.anao.gov.au.

Yours sincerely

P. J. Barrett Auditor-General

The Honourable the President of the Senate The Honourable the Speaker of the House of Representatives Parliament House Canberra ACT

AUDITING FOR AUSTRALIA

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Abbreviations/Glossary

AOPA	Aircraft Owners and Pilots Association of Australia
ANAO	Australian National Audit Office
ARFF	Aviation Rescue and Fire Fighting
AvCharges	Aviation Charges (Airservices' customer billing system)
AvGas	Aviation Gasoline
GAAP	General Aviation Airport
IFR	Instrument Flight Rules
LAPP	Light Aircraft Pricing Plan
MTOW	Maximum Take-Off Weight
TAAATS	The Australian Advanced Air Traffic System
VFR	Visual Flight Rules

Summary and Key Findings

Summary

Introduction

1. Airservices Australia (Airservices) is a statutory authority established in July 1995 with responsibility for the safe and efficient management of air traffic across Australia's sovereign airspace and international airspace over the Pacific and Indian Oceans, covering 11 per cent of the earth's surface. Services provided include air traffic control, airspace management, aeronautical information, radar communications, radio navigation aids, environmental management and aviation rescue and firefighting. Airservices operates on a commercial basis, largely funded by aviation charges.

2. Airservices derived some \$596 million in total revenue during 1999–2000; maintains a \$400 million fixed asset base; and employs over 3100 staff. In the same period, over three million aircraft movements at airports were recorded.¹ There are 28 Air Traffic Control towers located throughout Australia and teams of aviation rescue and fire fighters are stationed at 16 airports.

3. Traffic data plays an important role in informing decisions about the safety of the airways system, including such matters as the need for navigation facilities, communication links, Air Traffic Control towers and rescue/fire fighting services. It is also used for a variety of other purposes, including as a basis for environmental and local government planning and community consultation. Accurate movements data is crucial for raising Airservices' revenue of some \$568 million annually from aviation charges of which \$176 million is derived from terminal navigation charges arising from aircraft movements at airports. The data is also sold to operators of privatised airports throughout Australia who rely on it for raising their revenue through charges imposed on aircraft operators using their facilities.

4. Following concerns raised with the Auditor-General by representatives of the Aircraft Owners and Pilots Association of Australia about possible overstating of aircraft movements data, the ANAO undertook preliminary inquiries into the accuracy of air traffic data collection in Airservices. In the light of the issues identified by the preliminary inquiries, it was decided to undertake a limited scope audit in the public interest.

¹ Movements at an airport are generally determined by multiplying the sum of aircraft arrivals by two.

Audit objective, scope and methodology

5. The objective of the limited scope audit was to examine and report on the accuracy of the data on air traffic movements collected by Airservices Australia. The audit focused on the accuracy of air traffic movements data over the last two to three years and included examination and selective testing of the manual procedures and computer systems supporting the collection and validation of the air traffic movements data published by Airservices.

Overall conclusion

6. Although a number of factors currently impact on the accuracy of aircraft movements recorded by Airservices, the ANAO considers that the present system is a considerable improvement over that in place about three years ago. In general, the movements data automatically collected at larger airports is now reliable. However, there remain some problems affecting the accuracy of data manually collected at the smaller airports, which Airservices is moving to address.

Key Findings

7. Before mid-1998, Airservices' movements statistics were collected by tower staff which, for a variety of reasons, were not particularly reliable. There were no uniform national procedures for determining the number of movements and practices varied widely across locations. For example, some towers counted the flight strips each day, some used a rough gauge based on the number of strips per centimetre in the stack, some simply estimated the number of flights, while others used a formula-driven approach based on the number of radio communications with inbound pilots. Airservices' senior managers also advised that, in some instances, staff had inflated movement numbers for certain towers that were under threat of closure.

8. In most cases there is no independent data that allows cross checking of the accuracy of Airservices' traffic data. About three-quarters of the data on aircraft movements is collected automatically through The Australian Advanced Air Traffic System (TAAATS), which covers all major airports in Australia. Movements records captured by TAAATS are electronically transmitted to the Airservices customer billing system, known as AvCharges. Data on aircraft movements at the smaller regional and general aviation airports is manually recorded on flight strips by staff in Air Traffic Control towers. Some 750 000 strips each year are sent to Canberra for keying into AvCharges. As can be expected with a predominantly manual process of data capture, such a system is inherently more prone to errors occurring.

9. The ANAO found that, although some initial teething problems affecting TAAATS data accuracy were experienced in 1998–99, the system is now relatively stable with a generally low error rate. Representatives of the major Australian airlines consulted by the ANAO also confirmed that the incidence of Airservices' billing errors has substantially declined in recent times. As Airservices uses the data from AvCharges to produce the aircraft movements statistics for each airport, the ANAO considers that the accuracy with which Airservices bills its customers provides a reasonable indicator of the reliability of the movements data. ANAO has used the incidence of credit notes raised by Airservices as an indicator of billing accuracy. In 1999–2000, over 13 000 flights (or around 0.9 per cent of total flights invoiced) were queried by Airservices' clients. This resulted in the issue of more than 9500 credit notes.

10. The ANAO's global benchmarking data for global industries indicates that around 3.5 per cent of the total number of accounts receivable remittances contain errors. The median rate for Australian companies is 1.8 per cent and for Commonwealth organisations is 1.2 per cent. Airservices' internal management information reports indicate that the overall rate of errors for the AvCharges system is about one per cent. However, at the time of the audit fieldwork there was no reporting of error rates by industry sector, type of charge, or tower. Nevertheless, the data that was available at the time indicated that most of the errors for the general aviation sector occurred at non-TAAATS towers. Airservices has since advised that it has introduced a new set of reports which the ANAO considers will facilitate more comprehensive and systematic analyses by Airservices of the underlying errors that result in the issue of credit notes. The ANAO concluded that the billing errors arising from non-TAAATS entries, while occurring frequently, usually involve small dollar amounts that are not material in the overall context of Airservices' revenue.²

11. The only data with which to directly compare Airservices' movement data was collected by the airport operator at Jandakot, Western Australia, one of the busiest airports in Australia. The ANAO found that Airservices' movements data for this airport was about 8 per cent higher than the flight records independently collected by Jandakot Airport Holdings for a sample period covering four months during tower operating hours in 2000.³ The ANAO was unable to reconcile fully the differences between the two sets of movements data, which the ANAO suggested may warrant further investigation by Airservices.

12. Airservices advised that it has since reviewed the reasons for the differences between the Airservices and Jandakot movements data, finding that Airservices included some movements which it understands are not charged for by Jandakot Airport Holdings and are therefore excluded from the airport operator's database.

² Revenue from the general aviation sector in 1999–2000 totalled about \$11.5 million, which is less than 2 per cent of Airservices' total revenue.

³ The sample is too small to allow extrapolation of the results nationally.

13. Airservices is aware of shortcomings affecting the accuracy of its movements data and has initiated corrective action. In early 2000, Airservices commenced a review of its charging system as a result of concerns about the integrity of the system and its inability to reliably support the collection of revenue. Airservices' own customer satisfaction surveys in 1999 and 2000 also highlighted concerns about the accuracy of invoicing. In October 2000, the Airservices Board approved a \$2.2 million proposal for automating the data capture at the manual towers and the acquisition of a data warehouse facility. This is expected to improve the efficiency of the charging system and provide better management information. The initiatives are expected to be in place by December 2001. Airservices also introduced its Light Aircraft Pricing Plan effective from October 2000, which provides optional revised charging arrangements designed to simplify the billing process for customers operating light aircraft. While this latter initiative is designed to reduce billing errors, it is not designed to improve the accuracy of underlying aircraft movements data.

Airservices' response

14. Airservices noted the improvements in the collection and validation of movement data in recent years and the general reliability of data automatically collected at larger airports. However, Airservices agreed that there remain some problems affecting the accuracy of data manually collected at the smaller airports, though action is under way to address these and implementation is expected towards the end of 2001.

1. Introduction

About Airservices Australia

1.1 Airservices was established on 6 July 1995 as a Government Business Enterprise, under the *Air Services Act* 1995. Its reporting and accountability arrangements are set out in the *Commonwealth Authorities and Companies Act* 1997. Airservices operates on a commercial basis, largely funded by aviation charges.

1.2 Airservices' specific responsibilities include airspace management, air traffic flow management, air traffic control, traffic and flight information, navigation services, aeronautical information, search and rescue alerting, and rescue and firefighting in accordance with the Chicago Convention on International Civil Aviation. These services are provided to aircraft operators in the Australian Flight Information Region, which comprises Australia's sovereign airspace and international airspace over the Pacific and Indian Oceans, encompassing some 56 million square kilometres or 11 per cent of the earth's surface.

1.3 Airservices is wholly owned by the Australian Government and is governed by a Board of Directors appointed by the Minister for Transport and Regional Services. Airservices' organisation structure at the time of the audit fieldwork comprised a Commercial Operations Group, an Operations Support Group and a small corporate office.

1.4 Airservices employed a total of 3169 staff in 1999–2000, including 1036 Air Traffic Controllers and 473 firefighters. It received total revenue of \$596 million during the year, some \$568 million, or 95 per cent, of which was from fees charged for the provision of air traffic and rescue and fire fighting services. In providing services to more than three million aircraft movements annually, Airservices maintains a \$400 million fixed asset base, including more than 3300 airways system infrastructure facilities at various locations around Australia. Figure 1.1 shows the components of Airservices' 1999–2000 Air Traffic and Rescue Services Revenue. Appendix 1 provides a breakdown of Airservices' revenue by type for 1999–2000.

Figure 1.1 Airservices' Air Traffic and Rescue Services Revenue—1999–2000



Source: Airservices.

1.5

International flights provided about 57 per cent of Airservices' revenue from enroute charges⁴ in 1999–2000, while domestic flights for aircraft weighing 20 tonnes or more accounted for 39 per cent. Domestic flights for smaller aircraft contributed only around four per cent of enroute charges.⁵

1.6 More than 90 per cent of Airservices' revenue from terminal navigation charges⁶ was raised at the major airports operating under The Australian Advanced Air Traffic System (TAAATS). Regional airports provided 5 per cent, with the General Aviation (GAAP) and military airports contributing about 2 per cent each. Around 80 per cent of the revenue from Aviation Rescue and Fire Fighting (ARFF) charges relates to services provided at the major airports.⁷ Sixteen tower locations received a Location Specific Pricing Subsidy from Government in 1999–2000. Airservices also derived some \$17 million in revenue from other business in 1999–2000.⁸

⁴ Enroute charges apply to flights operating under Instrument Flight Rules (IFR) only within Australian airspace. Charges are based on the weight of the aircraft (under or over 20 tonnes) and the distance of the flight. Current rates are 1.18 and 5.29 cents per kilometre respectively.

⁵ Most light aircraft fly under Visual Flight Rules (VFR), which do not attract enroute charges.

⁶ Terminal navigation charges apply only where an Air Traffic Control tower service is available. Charges are based on the weight of the aircraft (under or over 5.7 tonnes) and the rate per tonne varies from airport to airport under Location Specific Pricing, ranging from \$3.31 to \$9.09.

⁷ Aviation rescue and fire fighting charges apply to aircraft weighing 2.5 tonnes or greater and the rate per tonne also varies from airport to airport under Location Specific Pricing, ranging from \$0.64 to \$17.14.

⁸ This included the provision of air traffic management services; publications services; ATS training; facilities management; engineering and technical consultancies; flight inspection; and technical safety and operational training for customers in Australia and several other countries.

1.7 Figure 1.2 shows the breakdown of Airservices' revenue by major source.







Source: Airservices.

1.8 Figure 1.3 shows the sources of Airservices' revenue from the general aviation sector and in particular the replacement of the AvGas levy by Location Specific Pricing from 1 July 1998. The latter resulted in annual savings to the sector of around \$11.5 million. Airservices' general aviation revenue fell from \$21.9 million in 1997–98 to \$11.2 million in 1998–99. However, this was offset by the introduction of the Location Specific Pricing Subsidy from 1 July 1998.

1.9 All Airservices' charges are calculated on each tonne of the Maximum Take-Off Weight (MTOW) prescribed in the flight manual for the aircraft, with any part of a tonne charged on a pro-rata basis.⁹

⁹ Airservices also collects a Meteorological Service Charge on behalf of the Bureau of Meteorology as well as the Noise Levy Charge on behalf of the Department of Transport and Regional Services, where applicable.

Figure 1.3





Source: Airservices.

Background to the audit

1.10 Audit planning work by the ANAO highlighted that the overall accuracy of Airservices' aircraft movements data is important for several reasons. The underlying data is used for a variety of significant purposes, both within and outside Airservices, particularly in informing decisions about the safety of the airways system. It is essential for planning the vital navigation and communication links throughout Australian airspace and is used in determining whether an Air Traffic Control tower or ARFF service is warranted and the level of investment in manning, equipment and other resources required. Federal, State and Local Government authorities as well as the private sector also draw on the data for a variety of planning and other purposes, such as activity level forecasting, strategic planning, noise monitoring and community consultation.

1.11 Accurate movements data is also crucial for raising Airservices' revenue of some \$568 million annually in aviation charges. In addition, Airservices' movements data is made available for sale to the public and is relied upon by airport owners and operators who levy additional charges on those aircraft operators using their facilities.

1.12 In July 1999, the Aircraft Owners and Pilots Association of Australia (AOPA) wrote to the Auditor-General expressing concerns about an overstatement of the number of aircraft movements at Australian airports by Airservices. Following subsequent discussions with industry representatives in September/October 1999, an audit of air traffic data

collection in Airservices was included in the ANAO's 2000–2001 Audit Work Program. The ANAO undertook preliminary inquiries into the accuracy of air traffic data collection in Airservices. In the light of the issues identified by the preliminary inquiries, it was decided to undertake a limited scope audit in the public interest.

Objective of the audit

1.13 The objective of the audit was to examine and report on the accuracy of the data on air traffic movements collected by Airservices Australia.

Methodology and scope

1.14 The audit focussed on the accuracy of air traffic movements data over the last two to three years. The methodology involved:

- discussions with Airservices staff and selected stakeholder representatives;
- examination of relevant files and other records, including previous review reports, Airservices' client surveys, statistics and performance indicators;
- examination of procedures and computer systems supporting the collection and validation of aircraft movements data; and
- selective testing of the accuracy of Airservices' movements data, including verification against independently sourced data, where available.

1.15 The scope of the audit was limited in so far as it did not involve the same level of review, analyses and testing that is normally performed for a full performance audit. The audit commenced in October 2000 and was conducted in accordance with ANAO auditing standards at a cost to the ANAO of \$75 000.

2. Aircraft Movements Data

2.1 Aircraft movements data is collected and published by Airservices for those airports where an Air Traffic Control tower service is provided.¹⁰ Figure 2.1 shows the location of towers in operation at 30 June 2000. In the past, the movements data was derived from statistics collected by tower staff, however, from July 1998 Airservices has used its AvCharges customer billing system data as the basis for the movements records.

Figure 2.1





Source: ANAO.

¹⁰ Aircraft movements data for each month is posted on the Airservices Internet webpage. The monthly data was also included in the Airservices Bulletin until this publication ceased in March 2000.

2.2 Appendix 2 shows the movements for each airport during 1999–2000. There were over 3.1 million movements in total, an increase of 6 per cent on the previous year. The data covers movements during tower hours only. Movements are calculated by multiplying the number of aircraft arrivals (and training circuits, where applicable) by two.¹¹

2.3 In order to provide users with timely movements data, Airservices publishes a snapshot of the movements recorded in its database as at the accounting closedown for each month. Although later amendments may be made to correct any errors detected in the AvCharges records for the flights occurring in a particular month,¹² it is Airservices' policy that the movements data for the month is not adjusted once it has been published.

Previous methods of determining aircraft movements

2.4 Airservices staff advised that there were several historical factors that contributed to inaccuracies in the movements data in the past when it was compiled from statistics collected by towers. For example, there were no uniform national procedures for determining the number of movements and practices varied widely across locations.¹³

2.5 Some towers physically counted the flight strips, while others used a variety of means to estimate the number of flights each day. These included the use of broad gauges (such as height of the flight strip stack multiplied by a set number per centimetre), or estimating whether traffic was roughly the same as the previous day or slower/busier by a factor of, say, 10 per cent. Some towers also used a formula-driven approach based on the daily number of radio communications with inbound pilots.

¹¹ It is assumed that for every aircraft arrival, there is a corresponding departure. Each training circuit (conducted by Flight Training Schools) is assumed to involve one take-off and landing. Although Airservices records the total number of circuits for determining movements, it only charges for the first circuit in any session of circuit training undertaken.

¹² For example, by issuing Credit Notes to Airservices' customers.

¹³ At the time of the audit fieldwork, Airservices had still not introduced standardised procedures for recording movements at towers, but had documented existing local practices as an initial step in this process.

2.6 The methods of determining the numbers of training circuits flown also varied among towers. In addition, some towers included overflights in the statistics (where a flight passed through the control tower's airspace but did not land within the control zone). Airservices' senior managers also advised that, in some instances, staff had inflated movement numbers for certain towers that were under threat of closure. Tower statistics were manually keyed into a database in Central Office, which at times was affected by transcription errors and incorrect, missing or illegible data.

2.7 The overall accuracy of aircraft movements numbers considerably improved from July 1998 following the decision to use AvCharges data rather than tower statistics. An important and fundamental control over the accuracy of the data introduced by this initiative was that users could be expected to challenge any cases where charges are levied for flights that did not occur.

2.8 Appendix 3 illustrates the significant drop in recorded monthly movements at an example airport (Jandakot) that resulted, at least in part, from this change. Appendix 4 shows the annual movements at all airports, which declined at many locations during 1998–99. Industry reaction to the introduction of Location Specific Pricing during that year was also a factor that contributed to the overall reduction in movements.

Two sources of aircraft movements entries

2.9 In terms of revenue collected by Airservices, most of the data on aircraft movements for invoicing purposes is now automatically recorded and transmitted to the AvCharges system from TAAATS, using electronic flight strips. Where data is not able to be captured by TAAATS, it is manually recorded on flight strips or daily running sheets by staff in Air Traffic Control towers and Flight Service Centres. The data recorded in this manner is then interpreted and keyed into the AvCharges system by staff in Central Office. This is still a large undertaking, as some 750 000 of the two million flights recorded for 1999–2000 were manually entered from flight strips.

2.10 TAAATS has been progressively introduced since July 1998. Airservices has subsequently identified several issues that adversely affect the ability of the system to record, store and transmit chargeable event data to the AvCharges system, including problems with:

- internal records transfer;
- non-transmission and/or multiple transmission of records;
- system downtimes for software and database changes;
- backup and recovery in the event of software failures;
- system configuration management constraints;
- node capacity;
- network loading; and
- record storage media.

2.11 However, pending the implementation of longer-term solutions, Airservices has put a number of manual controls and procedures in place to alleviate the adverse impacts of many of the above shortcomings.

2.12 An additional control over the accuracy and completeness of movements data is also provided within the AvCharges system, in that aircraft continuity checking is performed for movements by all aircraft weighing over 20 tonnes. In essence, the system tracks the departures and arrivals for each individual aircraft and highlights any gaps in the sequential records for investigation. Airservices advised that over 2700 missing flights were detected through continuity checking in 1999–2000. However, the total value of Airservices' charges for these flights was not readily available. Airservices considers that it is currently not cost-effective to perform continuity checking for aircraft weighing less than 20 tonnes.

2.13 Figure 2.2 shows an overview of manual and electronic flight strip processing.

Figure 2.2 Overview of flight strip processing



FLIGHT STRIP PROCESSING

23

Source: ANAO.

Indicators of data accuracy

2.14 Because the aircraft movements data is sourced from AvCharges, the ANAO examined available indicators of the accuracy of data recorded in this system.

2.15 The ANAO found that, on average, about 5 per cent of AvCharges entries fail the system's in-built validation tests due to insufficient, mismatched, incorrect or illegible information on the electronic or manual flight strips. Appendix 5 shows the rejection rates for each location during August 2000. In 1999–2000, there were over 87 000 invalid entry records. Airservices has two full-time staff who research and correct invalid flight records, which is a time consuming and labour intensive process. Between 100 and 200 flights each month are eventually deleted because there is insufficient information to correct them.

2.16 In 1999–2000, over 13 000 flights (or around 0.9 per cent of total flights invoiced) were queried by Airservices' clients. This resulted in the issue of more than 9500 credit notes. The main reasons recorded by Airservices for issuing the credit notes are summarised in Figure 2.3.



Figure 2.3 Major reasons for credit notes issued during 1999–2000

Source: Airservices. Note: IFR = Instrument Flight Rules; VFR = Visual Flight Rules.

2.17 Other reasons for issuing credit notes included landings outside the control zone, maintenance flights and repeat training flights within a training session (these are non-chargeable events), together with changes in aircraft ownership or changes to the registered MTOW of the aircraft.

2.18 The ANAO noted that the 9500 credit notes issued in 1999–2000 represents about 0.7 per cent of the number of flights billed and, at \$6.3 million in total, represents just over 1 per cent of total billings. Taken at face value, this would appear to indicate a generally acceptable rate of error. By comparison, the ANAO recently reported that the global benchmark is around 3.5 per cent of the total number of Accounts Receivable remittances containing errors, with a benchmark median error rate of 1.2 per cent for Commonwealth Government organisations.¹⁴ The benchmark rate for Australian companies is 1.8 per cent.¹⁵

2.19 Anecdotal evidence suggests that the error rates in Airservices' invoices for the light aircraft/general aviation sector are high relative to those experienced in the remainder of the industry. At the time of audit fieldwork Airservices produced a monthly management report that monitors the total number and value of all credit notes issued, along with a listing of the top 10 per cent of credit notes (by value). However, there was no performance reporting on the percentage error rates in invoicing by respective industry sector and type of aviation charge, that is, enroute, terminal navigation or ARFF charge. Likewise, there was no analysis or reporting on the number and value of credit notes issued in respect of each tower.¹⁶

2.20 In the absence of such information, ANAO's analysis of available data covering all credit notes issued for the general aviation sector during 2000 indicated that most of the credit notes for this sector appear to reflect movement errors at non-TAATS towers. The data also indicate that the total value of credit notes attributable to general aviation was around \$0.5 million. This represents some 4.5 per cent of Airservices' revenue from this sector. In the wider context, however, it equates to less than 0.1 per cent of Airservices' total annual revenue.

¹⁴ Audit Report No.25 2000–01 *Benchmarking the Finance Function*, December 2000, pp. 65 and 114.

¹⁵ Arthur Andersen Global Best Practice® KnowledgeBase.

¹⁶ There are practical difficulties in allocating errors in enroute charges to towers, as the information contributing to the error may not have originated from the airport tower at the ultimate destination of the flight. However, errors in terminal navigation and ARFF charges could be matched to towers.

2.21 Airservices has advised that, since the audit fieldwork was completed, it has introduced a new set of reports on credit notes which are distributed on a monthly basis to all Business Centres. It advised that these reports cover the:

- value of credit notes by customer;
- number and value of credit notes issued by location and charge type;
- reasons for the issue of the above credit notes; and
- number of credit notes by tower and the reason for the issue.

2.22 The ANAO considers that the format of the new reports facilitates more comprehensive and systematic analyses by Airservices of the underlying errors that result in the issue of credit notes.

Other sources of comparative data

2.23 In most cases, there is no independently collected data available that allows cross-checking of the validity of the air movements data for Australian airports published by Airservices. However, Airservices' Noise and Flight Path Monitoring System collects some independent data on jet aircraft movements at Sydney Airport and Airports Co-ordination Australia collects slot information in relation to the cap of 80 jet movements per hour. The audit did not extend to an examination of this data, mainly because industry complaints of inaccurate movements data tended to be centred on the smaller airports.

2.24 Although most operators of airports serviced by Air Traffic Control towers purchase their movements data from Airservices, one GAAP airport has collected its own movements data on a 24 hours per day basis since May 1999. Data for four months during 2000 (covering tower operating hours only)¹⁷ was provided to the ANAO by the airport operator, Jandakot Airport Holdings, for analysis and comparison to the published movements data collected by Airservices. The ANAO found that the number of movements recorded by Airservices was about 8 per cent higher than recorded by the airport operator. The results are summarised in Figure 2.4.

¹⁷ Jandakot tower operates from 8.00 am to 6.00 pm seven days a week.

Figure 2.4

Comparison of Jandakot movements recorded by Airservices and Airport Operator—January to August 2000

Month	Airservices number of movements	Airport Operator number of movements	Difference	Percentage difference	
Jan 2000	20 140	18 750	1390	7.4	
Feb 2000	19 990	18 866	1124	6.0	
Jul 2000	21 190	19 490	1700	8.7	
Aug 2000	22 488	20 744	1744	8.4	
TOTAL	83 808	77 850	5958	7.7	

Source: ANAO—based on data from Airservices and Airport Operator.

2.25 Detailed comparative testing of individual flight records for one day selected at random in August 2000 revealed several reasons for the differences in the two sets of data. These included:

- some duplicate flight records in Airservices' data (the majority of which were corrected over subsequent months);
- some differences in the number of training circuits recorded (this may occur during busy periods where tower staff concentrate on operational safety, giving a lesser priority to record keeping requirements); and
- some missed flights (such as where two aircraft flying in formation land at the aerodrome and only the details of the first aircraft are recorded).

2.26 The ANAO was unable to reconcile fully the differences between the two sets of movements data, which the ANAO suggested may warrant further investigation by Airservices. However, the sample is too small to allow extrapolation of the results nationally.

2.27 Airservices advised that it has since reviewed the reasons for the differences between the Airservices and Jandakot movements data, finding that Airservices included some movements which it understands are not charged for by Jandakot Airport Holdings and are therefore excluded from the airport operator's database. These movements relate to specific types of helicopter movements and 'overshoots' of the runway (missed approaches carried out for training purposes).

Industry views

2.28 Airservices' management has been aware for some time that the organisation is not meeting its customers' expectations in relation to the accuracy of invoices issued, which are based on movements data. The August 2000 External Customer Satisfaction Research commissioned by Airservices surveyed 86 representatives from nine customer groups. It used a scoring system to report on performance gaps whereby a result of more than negative 1.5 is a significant deficiency, as perceived by customers, and if more than negative 2.5 is perceived a critical deficiency that requires response. Figure 2.5 shows the results.

Figure 2.5

Airservices External Customer Satisfaction Research—August 2000

Attribute	Performance Gap
The basis for charging is clear	-2.14
Airservices provides accurate invoices	-2.99

Source: Airservices.

2.29 The 1999 Customer Satisfaction Study of External Customers was conducted with major domestic, international and regional airlines and airport owners. It did not cover general aviation. It also found, however, that external customers expressed dissatisfaction with Airservices' performance in relation to incorrect invoicing. A number of important initiatives were also highlighted by customers during the study, including the need to review and identify an effective and efficient pricing and invoicing system between Airservices and the Airlines.

2.30 The ANAO also noted that there were several references in the minutes of the meetings of the Regional Airspace Users Advisory Committees where concerns were raised about the accuracy of invoices. These committees are the consultative forum in each State/Territory for discussion of all matters relating to Airspace and Procedures in Australia. Membership is open to all significant airspace users and through the major industry associations and organisations.

2.31 A number of submissions from the general aviation sector to the Senate Rural and Regional Affairs and Transport References Committee *Inquiry Into Airspace 2000 and Related Issues* also raised concerns about the accuracy of Airservices' invoices.¹⁸ However, representatives of the major airlines advised the ANAO in December 2000 that the frequency of Airservices' billing errors had reduced considerably as TAAATS had bedded-in.

Another submission stated that the invoices from Airservices Australia:

¹⁸ For example, one witness wrote:

In the period July 1998 to June 1999, Airservices sent this business 16 statements covering 38 separate invoices. 25 of those invoices—that is, 66%—contained errors. In the same period Airservices has issued 18 credit notes to this business for admitted errors. Several reported errors remain outstanding. (Submissions p. 5).

Another wrote that:

A fair percentage of the charges that have come to us are incorrect and require additional, time consuming, notification of the errors and resulting credit notes for minor amounts. (Submissions p. 8).

^{...} contain a high error rate (approximately 30–40 per cent) and charges are not verifiable. (Submissions p. 52 and Hansard 1 May 2000 p. 49).

One airport operator installed a voice activated recording system to capture aircraft movements data because of:

the large error rate ... in the data it was purchasing from Airservices Australia. (Submissions p. 94).

3. Airservices' Response to the Issues

Report of the Charging System Analysis Project

3.1 In early 2000, Airservices commenced a review of its charging system as a result of concerns about the integrity of the system and its inability to reliably support the collection of revenue. The May 2000 report of the review identified the following matters affecting the accuracy and reliability of flight data used for chargeable events:

- lack of end-to-end system management and accountability;
- lack of automated and systemic data integrity checks throughout the process;
- problems related to revenue leakage and/or duplication of billing;
- processing limitations through manual data capture and inherent errors; and
- availability of operational data for analysis with limited storage of 30 days.

3.2 In October 2000, the Board approved a \$2.2 million project proposal to improve the integrity of the overall Airservices charging system through the creation of a new electronic flight data capture interface with the TAAATS system and towers, along with the transfer and storage of operational flight data into a dedicated data warehouse. Airservices expects this initiative will deliver key improvements to the overall integrity of the charging system as well as enhancing customer confidence in its capacity to bill correctly and to provide quality data in support of invoices. Implementation is expected by December 2001.

3.3 The ANAO understands that Airways Corporation of New Zealand¹⁹ tower staff have been entering data directly into its billing and movements recording system for a number of years.

¹⁹ The New Zealand equivalent of Airservices Australia.

Revised charging arrangements for light aircraft

3.4 The Board of Airservices Australia approved revised charging arrangements under the Light Aircraft Pricing Plan (LAPP) in June 2000. This new pricing initiative is expected to be revenue neutral while providing a simplified billing process for customers operating light aircraft. About 9750 aircraft are eligible. Effective from 1 October 2000, high activity customers (with 200 or more flights per annum) can elect to pay an annual charge based on the average paid to Airservices per aircraft in the previous year. Low activity customers can choose from a matrix of pricing options, based on aircraft weight and activity groupings. Airservices advised that about 18 per cent of eligible customers switched to the new charging regime during the first five months of operation.

3.5 While LAPP is expected to reduce billing errors, it is not an initiative designed to improve the accuracy of underlying aircraft movements data.

Tower reviews

3.6 Airservices has periodically reviewed tower operations at a number of locations in recent years. Figure 3.1 depicts the reductions in tower staff numbers at each location since mid-1996. Total tower staffing has decreased by more than 30 per cent over this period. Airservices advised the ANAO that it is currently reviewing staffing at Adelaide, Perth and Cairns airports. Appendix 6 shows the movements in Airservices' total revenue from 1996–97 to 2000–01 and total staffing from 1995–96 to 2000–01.

3.7 The ANAO also noted that the Civil Aviation Safety Authority is the agency responsible for establishment of the risk management methodology and minimum criteria for airspace classification and levels of air traffic services. Although initially due by 30 June 1999 and subsequently by 30 June 2000, these standards had not been issued as at the time of preparation of the audit report. Early finalisation of the standards would assist Airservices by providing the appropriate foundation criteria for any future tower reviews.

3.8 The Civil Aviation Safety Authority advised that there have been delays because of other legal drafting priorities.



Figure 3.1 Airservices Australia tower staffing—July 1996 to July 2000

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Canberra ACT 07 June 2001

P. J. Barrett Auditor-General

Appendices

Appendix 1

Airservices' Revenue Breakdown—1999–2000



Source: Airservices

Note: Some figures have been rounded

Key: GA = General Aviation; RPT = Regular Public Transport

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8 Appendix 2

1999–2000 Movements at Australian Airports

Location	Over 136 tonnes	7 tonnes to 136 tonnes	Under 7 tonnes	Helicopter	Unknown	Military	Total	Rank
Bankstown	0	1 418	264 804	28 642	542	568	295 974	1
Sydney	83 436	163 100	32 316	12 052	400	944	292 248	2
Moorabbin	0	54	231 802	27 768	230	58	259 912	3
Jandakot	0	12	247 634	10 260	358	118	258 382	4
Archerfield	0	100	164 478	7 584	296	628	173 086	5
Melbourne	47 844	109 382	6 408	382	146	376	164 538	6
Brisbane	23 798	113 460	23 492	718	202	680	162 350	7
Parafield	0	60	151 188	490	26	56	151 820	8
Canberra	14	40 746	53 982	6 544	228	29 262	130 776	9
Adelaide	2 188	59 992	45 458	4 822	108	1 400	113 968	10
Tamworth	4	11 510	96 620	336	666	816	109 952	11
Cairns	7 574	29 778	60 494	8 852	118	556	107 372	12
Perth	13 110	55 118	32 278	1 348	92	430	102 376	13
Darwin	2 374	20 004	58 520	4 766	548	12 686	98 898	14
Coolangatta	5 382	16 072	55 958	15 930	64	206	93 612	15
Camden	0	128	89 572	3 272	292	74	93 338	16
Maroochydore	2	7 208	40 184	40 994	168	496	89 052	17
Townsville	46	23 856	35 410	1 784	76	9 604	70 776	18
Essendon	2	2 328	56 168	8 072	174	220	66 964	19
Coffs Harbour	0	13 376	28 318	610	72	490	42 866	20

continued next page

Location	Over 136 tonnes	7 tonnes to 136 tonnes	Under 7 tonnes	Helicopter	Unknown	Military	Total	Rank
Mackay	0	10 136	27 202	2 858	46	456	40 698	21
Albury	0	9 564	26 330	280	18	352	36 544	22
Rockhampton	98	10 830	20 992	956	54	2 206	35 136	23
Alice Springs	2	12 570	17 970	714	42	442	31 740	24
Launceston	32	9 094	17 220	252	54	176	26 828	25
Cambridge	0	10	25 344	1 232	10	8	26 604	26
Hamilton Island	492	3 044	13 790	3 900	30	46	21 302	27
Hobart	114	9 444	2 750	84	12	306	12 710	28
TOTAL	186 512	732 394	1 926 682	195 502	5 072	63 660	3 109 822	

Source: Airservices.

Note: Military flights are recorded but at present are not charged by Airservices.

'Unknown' refers to instances where a flight occurs but the weight of the aircraft is not known to Airservices at the time the monthly statistics are published.

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Monthly Aircraft Movements at Jandakot Airport—July 1997 to November 2000



Source: Airservices.

Appendix 4

Annual Aircraft Movements by Airport—1997–98 to 1999–2000



ω Source: Airservices.

Appendix 5

AvCharges Rejection Rates by Tower for August 2000

The ANAO noted that although the national average of the rejection rate for invalid AvCharges entries during the month of August 2000 was 4.7 per cent, the rate varied from tower to tower, as shown below. These rejection rates are based on input errors rather than final invoicing errors.



Rejection Rates at Major Towers in August 2000



Rejection Rates at Regional Towers in August 2000



Rejection Rates at GAAP Towers in August 2000

Control Tower

Source: Airservices.

Note: Hobart includes Cambridge. Airservices does not currently impose a Terminal Navigation Charge for flights into Hamilton Island.

Appendix 6

Airservices' Revenue and Staffing



Airservices' total revenue-1996-97 to 2000-01



Airservices' total staffing-1995-96 to 2000-01

Source: Airservices.

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