



Performance audit report

The Civil Aviation
Authority's
progress with
improving
certification and
surveillance





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The Civil Aviation Authority's progress with improving certification and surveillance

This is an independent assurance
report about a performance audit
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Public Audit Act 2001.

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Glossary

Accident is an occurrence that is associated with the operation of an aircraft in which a person is fatally or seriously injured, the aircraft sustains damage or structural failure, or the aircraft is missing or is completely inaccessible.

Airline sector includes operators of aircraft weighing more than 5700kg or containing 10 or more passenger seats, and associated maintenance, training, design, manufacturing, and supply organisations.

Auditors are Civil Aviation Authority staff who carry out **certification** and **surveillance** work. There are airworthiness auditors and flight operations auditors. (The Civil Aviation Authority also refers to auditors as “inspectors”.)

Aviation document is any licence, permit, certificate, or other document issued under the Civil Aviation Act 1990 to, or about, any person, aircraft, aerodrome, aeronautical product, or aviation-related service.

Certification is the entry process to ensure that an applicant is able to comply with the Civil Aviation Act 1990 and with the associated **Civil Aviation Rules** before that applicant is issued with an **aviation document**. In this report, certification also refers to recertification and approving changes to aviation documents. However, when referring to actual examples of recertification, we use the term “recertification”.

Civil Aviation Rules (Rules) are a form of “secondary” legislation, like statutory regulations, made under Part 3 of the Civil Aviation Act. **Participants** in the civil aviation system are required to comply with the Rules that are relevant to the **aviation documents** that they hold.

Corrective actions are actions that the holder of an aviation document needs to complete to rectify any areas of non-compliance with the **Civil Aviation Rules** and return to an acceptable level of performance. The Civil Aviation Authority identifies corrective actions through findings issued during **surveillance**.

Entry Process Sheets are electronic checklists covering each step in the **certification** process.

Exposition is a suite of manuals containing information about an **operator’s** general policies, duties, operational control policy, and procedures, and the responsibilities of personnel. The exposition is the main way of showing that the management and control systems required under the **Civil Aviation Rules** are in place. The information that must be addressed in the exposition depends on the type of certificate and the scope of the **operation**.

General aviation sector includes operators of aircraft that weigh 5700kg or less and have nine passenger seats or less; all helicopter, agricultural, and balloon operations; and all sport and recreation aviation (both commercial and private).

Incident is an occurrence, other than an **accident**, that is associated with operating an aircraft that affects, or could affect, safety.

Inspection is used where the systems-based approach of a routine audit is not suitable (for example, for **participants** such as agricultural operators, who are not required to have an **exposition**). The focus is on checking safety practices, documents, and records.

Operation, in this report, means an air transport operation, a commercial transport operation, or an agricultural operation. The **Civil Aviation Rule** requirements are different for transport and agricultural operations.

Operators are **participants** in the civil aviation system – both individuals and companies. In this report, the term operator can refer to a participant who holds an air operator certificate or to a **participant** who holds an agricultural aircraft operator certificate.

Participants are defined in the Civil Aviation Act 1990 as anyone who does anything for which an **aviation document** is required. Participants include airline operators, pilots, and maintenance providers.

Safety Target Groups are the 13 groups of the civil aviation sector for which the Civil Aviation Authority measures safety targets. The groups are defined by a combination of aircraft type and the type of **operation** (for example, airline operation or other commercial operation).

Senior persons are people in an aviation sector organisation who have roles that are critical to aviation safety. They include the chief executive, chief pilot, and maintenance controller, who, under the Civil Aviation Act, have control over the “privileges” (duties and responsibilities) of an **aviation document**. Every senior person must be approved by the Civil Aviation Authority through the “fit and proper person” process.

Surveillance is the function of the Civil Aviation Authority that monitors **participants’** adherence to the Civil Aviation Act 1990, the **Civil Aviation Rules**, and the **operators’ exposition**. It includes identifying action that **participants** need to take to ensure that they comply with safety standards.

Auditor-General's overview

The Civil Aviation Authority (the CAA) is the regulatory agency that safeguards civil aviation in New Zealand. The CAA controls which operators enter the civil aviation system (certification) and monitors operators' ongoing adherence to safety standards (surveillance).

More than 96% of air travel in New Zealand occurs on aircraft carrying 10 or more passengers and operated by large airlines. The safety performance of these operators is good and comparable with that of large airline operators internationally.¹ Accidents involving smaller airlines carrying fewer passengers are more common, but still relatively infrequent.

Since 1997, my Office has carried out four audits of the CAA's certification and surveillance functions for civil aviation operators. Our audits looked at large airline operators and the operators of smaller airlines. This report sets out the findings of our fourth audit, carried out to establish whether the CAA had addressed the 10 recommendations in our 2005 report.

The CAA had accepted our 2005 recommendations and had worked on improvements to its certification and surveillance policies, processes, and tools. The CAA had also reported publicly that it was making good progress in strengthening its certification and surveillance functions. However, in my view, the CAA has not made adequate progress in addressing our 2005 recommendations.

Overall, the CAA has yet to make the changes necessary to better use its current resources to improve the effectiveness and efficiency of certification and surveillance. Some of the CAA's new policies, processes, and tools have been delayed or have been only very recently introduced, and they are not yet fully implemented or consistently applied. For example, the unit managers in the Airlines Group and the General Aviation Group are not tailoring Civil Aviation Rule checklists to reflect the size and risk of each operator's organisation as originally intended. Not tailoring the checklists in this way means that the scope and depth of surveillance is not adjusted and the operator's whole operation is subjected to the same level of audit – irrespective of the operator's overall level of risk.

Of the 10 recommendations made in 2005, I consider that only one – the introduction of a new risk assessment tool – has been fully addressed. This new risk assessment tool is improving the identification of an operator's risk, and the CAA is beginning to adjust the frequency of surveillance in response to that risk. However, eight of our 2005 recommendations have been only partly addressed, and one recommendation has not been addressed.

1 The CAA's implementation of its safety obligations under the Chicago Convention (see paragraph 2.3) were audited by the International Civil Aviation Organisation in 2006. The audit included an assessment of the CAA's surveillance of airline operators, and its performance compared favourably with that of aviation safety regulators in other developed countries.

The environment in which the CAA operates has not changed significantly in the last five years, and our 2005 recommendations remain relevant. The CAA's weaknesses that we have previously identified remain. These weaknesses affect the rigour, consistency, and transparency of regulation. They include:

- Decisions to certify some operators, despite their non-compliance with the Civil Aviation Rules, are not supported by enough evidence to verify the discretion exercised. For example, the CAA told an operator that it "did not meet the requirements for recertification, and to qualify for recertification a major overhaul of the company was needed". However, a week after the operator prepared a plan to address the CAA's main concerns, the CAA issued a six-and-a-half month certificate to the operator. My staff were not able to find evidence on file of the CAA's reasoning and judgement that the operator had the resources and capability to comply with the Civil Aviation Rules at the time that the certificate was issued. In my view, there had not been enough time for the operator to overhaul its organisation and it is doubtful that the operator met the requirements for certification.
- The depth of work completed before certifying operators is not adequately documented.
- Surveillance is not always targeted at higher-risk operators. My staff found that the General Aviation Group had increased the frequency of audits in response to the operator's higher risk profile for only half of the highest-risk operators that we reviewed. Some operators remained on an annual audit cycle despite their high risk profiles.
- Instances of non-compliance found by CAA auditors are not consistently reported and followed up. For example, a general aviation operator had used the main rotor blade of a helicopter for more than 20 hours beyond its airworthiness limit. The CAA auditor did not issue a finding for this non-compliance with the Civil Aviation Rules. In addition, my staff were also concerned to note that only one of 13 critical findings identified during 2008/09 was addressed by the relevant operator and accepted as addressed by the CAA by the due date.

In my view, the CAA has failed to understand and effectively address the underlying causes of the weaknesses in its certification and surveillance work. I consider that the following factors have contributed to the CAA's inadequate response:

- Governance of, and accountability for, the CAA's certification and surveillance functions are ineffective.

- The strength of the CAA's regulatory focus is unclear, and there is insufficient guidance to ensure that regulatory responses are appropriately and consistently applied.
- The CAA's management practices are not focused on improving staff performance, and it has not been receptive to change.
- The CAA's management oversight of implementing and using the new certification and surveillance processes is inadequate.
- The CAA has not given enough attention to improving its organisational proficiency in auditing.

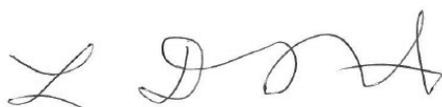
Our latest recommendations flow from these observations and should enable the CAA to make the necessary improvements to strengthen its certification and surveillance work.

I am pleased that the Chairman of the CAA's Board has accepted the recommendations in this report, and is committed to ensuring that the CAA addresses them. The CAA has also provided us with a description of the actions that it is taking in response to our recommendations (see Appendix 7) and a project overview that sets out the time frame for carrying out those actions (see Appendix 8). The Chairman has arranged monitoring of, and reporting on, the CAA's implementation of our recommendations and those resulting from recent internal reviews conducted by the CAA (see Appendix 9).

I note that, in the past, the CAA has given my predecessors similar commitments and that the necessary improvements have still not been carried out. I therefore consider that the responsibility for ensuring that the CAA takes the appropriate action will require closer monitoring and follow-up than my Office can provide.

I recommend that the Ministry of Transport, as part of its ongoing monitoring of the CAA, focus specifically on the CAA's progress in addressing the changes that we recommend. I am looking to the Board and the Ministry of Transport to provide assurance that real change has taken place.

I thank the Director and staff of the CAA for their co-operation and assistance during our audit.



Lyn Provost
Controller and Auditor-General

21 June 2010

Our recommendations

Our recommendations are aimed at assisting the Civil Aviation Authority (the CAA) to address the reasons for its inadequate progress with earlier recommendations and to make effective improvements to strengthen certification and surveillance. Our recommendations include those parts of our 2005 recommendations that the CAA has yet to address.

Two of our recommendations are addressed to the CAA's governance body (which we refer to as "the Board"). We also make one recommendation to the Ministry of Transport.

The recommendations are grouped according to our observations on why the CAA has been slow to change (as outlined in the Auditor-General's overview).

More effective governance of, and accountability for, the CAA's certification and surveillance functions

We recommend that:

1. the Civil Aviation Authority put in place measures to better assess the effectiveness of its certification and surveillance functions and use these measures to report and account to the Board for its performance in achieving its outcomes;
2. the Board extend its internal audit of the Civil Aviation Authority to include assurance over the executive management team's assessment of how well the Airlines Group's and General Aviation Group's certification and surveillance are contributing to its strategic priorities and achieving its overall goals and objectives;
3. the Board's Audit and Risk Management Committee take a more active role to ensure that the Airlines Group and the General Aviation Group actually address the internal audit findings; and
4. the Ministry of Transport, on behalf of the Minister of Transport, more actively monitor the Civil Aviation Authority to provide assurance to the Minister of Transport that the Civil Aviation Authority is addressing our recommendations and performing certification and surveillance effectively and efficiently.

Clarifying the CAA's regulatory focus, and providing better guidance to ensure that regulatory responses are appropriate and consistent

We recommend that the Civil Aviation Authority:

5. prepare and implement better measures of the strength and effectiveness of its regulation of the civil aviation sector, including measures to assess the relative effectiveness of advisory and enforcement actions;
6. clarify how its regulatory focus is to be applied in practice through certification, surveillance, and other regulatory action by providing more detailed guidance to staff about what circumstances constitute a significant risk to public safety, and what action they should take when these safety risks are identified; and
7. give priority to completing the project to improve the integrity and reliability of safety data in its Management Information System, and improve the analysis of this data so that it can be used to better inform regulatory decision-making.

Improving the CAA's management practices to focus on improving performance and introducing continuous quality improvement

We recommend that the Civil Aviation Authority:

8. assess and, where necessary, provide training to improve its managers' capability to effectively manage and lead staff. This includes improving the staff performance assessment process in the General Aviation Group.

Improving the CAA's management oversight of new certification and surveillance processes

We recommend that the Civil Aviation Authority:

9. give priority to completing the project to review and improve the surveillance process and tools, and ensure that all managers and auditors are using the new certification and surveillance processes;
10. introduce more robust quality assurance of certification and surveillance work, including input into planning for certification and surveillance, reviewing the results, and moderating auditors' findings;
11. provide better guidance to its auditors on the level of documentation that needs to be retained as evidence of the certification and surveillance work that has been carried out, and reinforce the importance of clearly documenting the basis for decisions that involve serious consideration of evidence for a judgement to be made; and
12. provide better guidance to its auditors on how to apply the "fit and proper person" criteria when carrying out assessments of senior persons.

Focusing staff training on improving organisational proficiency in auditing

We recommend that the Civil Aviation Authority:

13. give priority to providing training in risk-based audit methodologies for its auditors, to ensure that they have the appropriate skills to carry out effective certification and risk-based surveillance; and
14. provide detailed guidance to its auditors on risk-based auditing, including how information about risk can be used to tailor audits at the planning stage, how this information should be documented, how systems-based auditing should be applied, and how risk influences the size of samples checked during audits.

Part 1

Introduction

- 1.1 In this Part, we explain:
- the purpose of our audit;
 - how we carried out our audit; and
 - the structure of this report.

The purpose of our audit

- 1.2 The purpose of our audit was to establish whether the Civil Aviation Authority (the CAA) had addressed the 10 recommendations in our 2005 report, *Civil Aviation Authority: Certification and surveillance functions*.²
- 1.3 As a result of our audit work, we also decided to consider why the CAA had not fully addressed our previous recommendations. In doing this, we drew on our audit work, our wider knowledge of the CAA from our work in recent years, and reviews of the CAA by others.

Background

- 1.4 This is the fourth time that we have audited the certification and surveillance functions of the CAA in relation to operators in the airline sector and the general aviation sector.³
- 1.5 Our audits in 1997⁴ and 2000⁵ identified problems with the CAA's surveillance function. We found that the CAA had problems identifying and targeting high-risk operators, and that there were inconsistencies between CAA auditors in their approach to routine audits. We recommended that the CAA develop systems to identify and target high-risk operators, and build staff capability.
- 1.6 Our 2005 audit report of the CAA's certification and surveillance functions noted that the CAA had taken little action to address the recommendations in our 1997 and 2000 reports. We found that, although the certification processes used by the CAA's Airlines Group were generally sound, the General Aviation Group auditors needed to be more rigorous in their assessment of operator capability to comply with the Civil Aviation Act 1990 (the Act) and the Civil Aviation Rules (the Rules).

2 This report is available on our website, www.oag.govt.nz.

3 On 6 June 2003, an aircraft crashed on approach to Christchurch International Airport, killing the pilot and seven passengers, and seriously injuring two other passengers. At the Minister of Transport's request, we looked at how the CAA and the Ministry of Transport considered, responded to, and reported on each of the Coroner's recommendations. We reported on this in May 2008 in our report, *Responses to the Coroner's recommendations on the June 2003 Air Adventures crash*. This report is available on our website, www.oag.govt.nz. We have not counted this performance audit among the audits we have conducted on the CAA's certification and surveillance functions since 1997.

4 Controller and Auditor-General (1997), *Fourth Report for 1997*, pages 77-121.

5 Controller and Auditor-General (2000), *Civil Aviation Authority Safety Audits – Follow-up Audit*.

- 1.7 We also continued to have significant concerns about the surveillance function. We were particularly concerned about:
- the effectiveness of the CAA's risk analysis and risk assessment processes;
 - how the CAA ensures that the risk analysis “feeds through” to the surveillance process; and
 - how the CAA ensures that operators (or groups of operators) who are assessed as “high-risk” are appropriately targeted, in relation to both depth and frequency of the surveillance carried out.
- 1.8 During our audit fieldwork for our 2005 audit report, we discussed our concerns with the CAA. We were pleased to note that the CAA had identified actions that it intended to take in response to our recommendations and had begun a review of its surveillance function before our report was presented to Parliament.
- 1.9 The CAA told us that it was going to integrate its risk assessment, certification, and surveillance processes to create an integrated audit supported by an electronic system and tools that provided for effective and efficient regulation of the civil aviation system.
- 1.10 At the request of the then Minister of Transport, in May 2008 we also reported on the CAA's responses to the Coroner's recommendations on the June 2003 Air Adventures crash. We had intended to follow up on our 2005 recommendations as part of that audit. However, the CAA had not implemented its redeveloped surveillance tool until the beginning of May 2007. The final version of the system software for operating the tool was not introduced until February 2008. The CAA's auditors had consequently not carried out enough audits and follow-up actions using the new tool and process for us to test a representative sample, and therefore we decided to postpone this follow-up audit.

How we carried out our audit

- 1.11 To assess whether our 2005 audit report recommendations had been addressed, we interviewed:
- a range of staff at the CAA, including the Director of the CAA, the general managers, the unit managers, and the CAA auditors (who carry out certification and surveillance audits and inspections);
 - the Chairman of the Board (see paragraph 2.4); and
 - staff at the Ministry of Transport and the Transport Accident Investigation Commission.

- 1.12 We also selected a sample of airline and general aviation operators to assess how effectively the CAA was performing the certification and surveillance of these operators. Our sample selection was based on the CAA's risk profiles of the operators. We selected some of the highest-risk operators within each sector, as well as some operators that had been assessed as medium and low risk. This allowed us to look at how effectively the CAA was responding to risk. Our sample included:
- three airline sector operators (16% of airline operators), which included the flight operation and maintenance organisations associated with these airlines – two of these three were assessed as high risk; and
 - 26 general aviation sector operators (16% of general aviation operators), which comprised 13 fixed wing and 13 rotary wing and agricultural operators – 10 of these 26 were assessed as high risk.

- 1.13 We also:
- reviewed the certification and surveillance work carried out by the CAA's Aviation Security Unit⁶ on two operators;
 - surveyed by telephone 24 general aviation operators to get their views on the effectiveness of the CAA's certification and surveillance work;
 - observed three routine audits carried out by the CAA's Airlines Group (two by the Flight Operations Unit and one by the Airline Maintenance Unit), and two routine audits carried out by the General Aviation Group (both included flight operations and maintenance aspects); and
 - attended two training seminars run by the CAA for CAA staff.

The structure of this report

- 1.14 The remainder of this report is structured into three parts and nine appendices:
- Part 2 provides background information on the CAA and its functions;
 - Part 3 summarises how well the CAA has responded to the 10 recommendations that we made in 2005;
 - Part 4 considers why the CAA has been slow to improve certification and surveillance and what we consider needs to be done now; and
 - the first six appendices provide the supporting evidence and analysis that underpins our overall assessment of the progress that the CAA has made with our 2005 recommendations. The last three appendices relate to the actions the CAA now intends to take.

⁶ The Aviation Security Unit is responsible for certification and surveillance of airline security programmes, regulating air cargo agents, and security aspects of aerodromes, airports, and Airways New Zealand Limited.

Part 2

The Civil Aviation Authority's role, structure, and functions

- 2.1 In this Part, we provide background information about the CAA's role, structure, and functions. We explain:
- the CAA's roles and responsibilities;
 - the Director's role;
 - the structure of the CAA;
 - the civil aviation safety system;
 - how the CAA carries out certification and surveillance; and
 - the safety performance of civil aviation in New Zealand.

The Civil Aviation Authority's roles and responsibilities

- 2.2 On 10 August 1992, the CAA was established by amending the Act.
- 2.3 The Act specifies that the functions of the Minister of Transport (the Minister) include promoting civil aviation safety and security, and administering New Zealand's participation in the Chicago Convention⁷ and any other international aviation convention, agreement, or understanding to which the Government of New Zealand is a party.
- 2.4 The Act provides for the Minister to appoint a five-member Civil Aviation Authority. We refer to that body in this report as "the Board" because the organisation that carries out the day-to-day civil aviation safety activities is also referred to as "the Civil Aviation Authority".
- 2.5 The Aviation Security Service is a separate service unit of the Board that provides specialised aviation security services. It is outside the scope of this report.
- 2.6 The Board is the governance body of the CAA. The Act allows the Minister's functions and powers to be delegated to the Board.

⁷ The *Convention on International Civil Aviation (Chicago 1944)* – "the Chicago Convention" – established the International Civil Aviation Organisation (ICAO). The Chicago Convention was signed on behalf of the Government of New Zealand in Chicago on 7 December 1944. Article 37 of the Chicago Convention states that ICAO shall adopt international standards and recommended practices and procedures regarding safety, regularity, and efficiency of air navigation. Standards and recommended practices are designated as Annexes to the Chicago Convention. At present there are 18 Annexes. Each contracting state (including New Zealand) is responsible for developing and promulgating the national legislation, regulations, and standards necessary to comply with ICAO commitments, and to implement national decisions in discretionary areas. New Zealand legislation provides for this in section 14A(b) of the Act.

The Director's role

- 2.7 The Act also enables the Board to appoint a Director of Civil Aviation (the Director) and to delegate responsibilities and powers to that person.
- 2.8 The Act also gives the Director a range of functions and powers, including two functions that are relevant to certification and surveillance:
- controlling entry into, and operation within, the civil aviation system, through granting, suspending, revoking, or imposing conditions on aviation documents; and
 - taking any action that may be in the public interest to enforce the provisions of the Act and the Rules made under the Act, including inspections and monitoring.
- 2.9 In carrying out the statutory functions and exercising the statutory powers given by the Act, the Director acts independently, and is not responsible to the Minister or the Board in relation to any particular case.
- 2.10 The Act provides the Director with discretion on whether to suspend, revoke, or impose conditions on an aviation document.
- 2.11 The Director is also the chief executive of the CAA. In this role, the Director is accountable to the Board for the CAA's performance in achieving the strategic priorities and operating intentions in the CAA's statement of intent, including the performance measures.

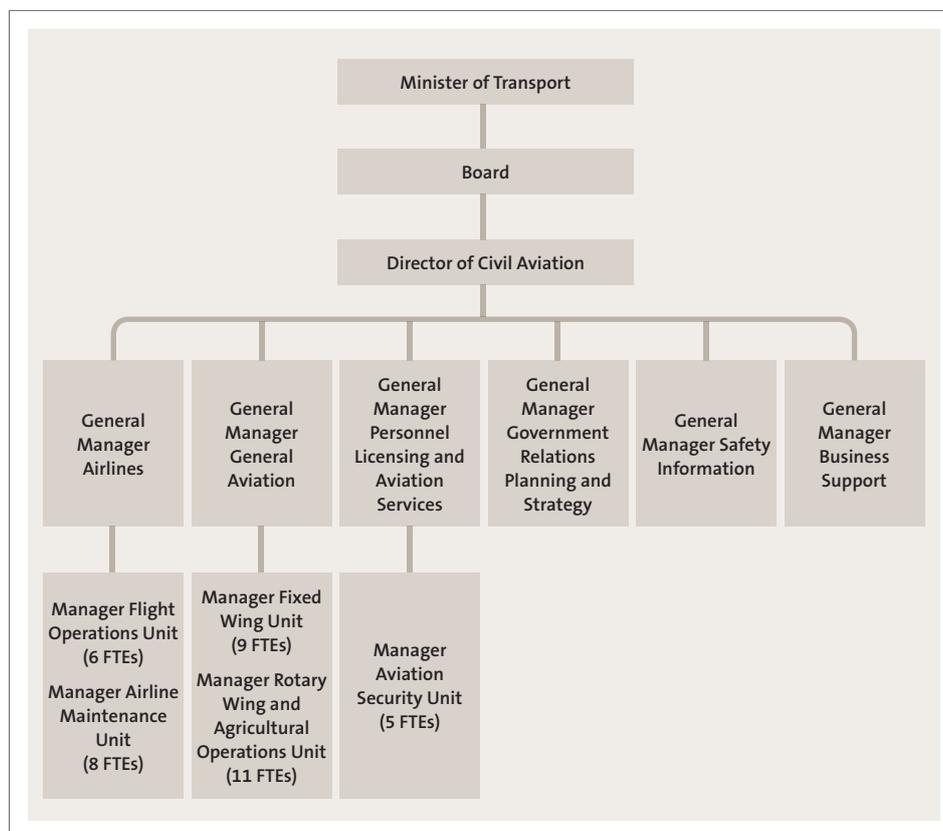
The structure of the Civil Aviation Authority

- 2.12 The CAA is organised into six groups. Three groups are aligned with sectors of the civil aviation industry:
- the Airlines Group is responsible for overseeing the activities of operators of aircraft weighing more than 5700kg, or containing 10 or more passenger seats, and organisations for maintenance, training, design, manufacturing, and supply;
 - the General Aviation Group is responsible for overseeing the activities of operators of aircraft that weigh 5700kg or less and have nine or fewer passenger seats; all helicopter, agricultural, and balloon operations; and all sport and recreation aviation operators (commercial and private); and
 - the Personnel Licensing and Aviation Services Group is responsible for:
 - licensing pilots, maintenance engineers, air traffic controllers, flight engineers, and flight examiners (including medical certification); and

- aviation services: air traffic service providers, airports and aerodromes, training organisations, meteorological services, communications services, aviation security, and dangerous goods.

- 2.13 We refer to these three groups as “the operational groups” of the CAA.
- 2.14 The CAA uses the terms “inspector” and “auditor” to describe the staff from each of the operational groups who carry out certification and surveillance work. In this report, we use the term “auditor”.
- 2.15 Figure 1 shows the organisational structure of the CAA, including the operational groups outlined in paragraph 2.12. It shows all the groups within the CAA, but at the unit level it includes only the units within each group that we looked at during our audit.

Figure 1
Organisational structure of the Civil Aviation Authority



Note: FTEs are full-time equivalent staff.

Resources and workload within the CAA groups

- 2.16 There are 178 organisations holding air operator certificates in New Zealand. The Airlines Group oversees 19 organisations that hold certificates for large or medium aeroplanes. The General Aviation Group oversees the rest, which hold certificates for small aeroplanes and helicopters. The General Aviation Group also oversees 108 operators with agricultural aircraft operator certificates. Some operators have more than one certificate. For example, an operator can have an air operator certificate and an agricultural aircraft operator certificate.
- 2.17 As at June 2009, there were 14 auditors in the Airlines Group (six in the Flight Operations Unit and eight in the Airline Maintenance Unit) carrying out certification and surveillance of airline operators. In the 12 months to 30 June 2009, these auditors dealt with 922 certification requests,⁸ and spent 5025 hours on routine audits and 333 hours on spot checks.
- 2.18 There were 20 auditors in the General Aviation Group (nine in the Fixed Wing Unit and 11 in the Rotary Wing and Agricultural Operations Unit) carrying out certification and surveillance of small aeroplane and helicopter operators. In the 12 months to 30 June 2009, these auditors dealt with 912 certification requests, and spent 3384 hours on routine audits and 811 hours on spot checks.

The civil aviation safety system

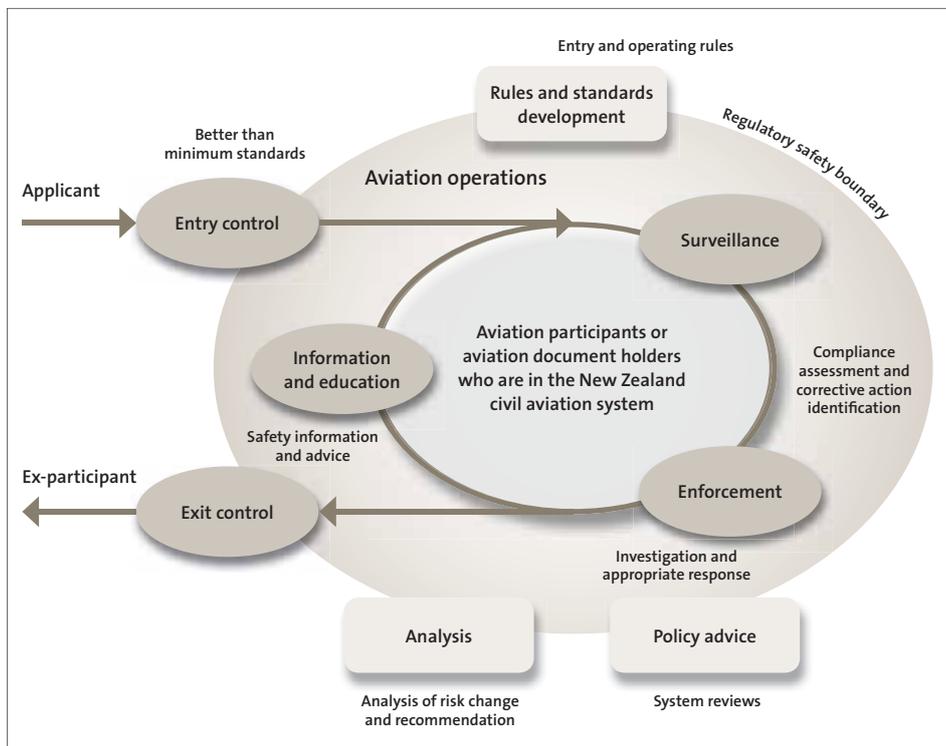
- 2.19 New Zealand's civil aviation safety system is based on the "life-cycle" approach advocated in the Swedavia-McGregor Report.⁹ This system is based on:
- setting a minimum standard of safety behaviour through the Rules, and by placing conditions on aviation documents;
 - allowing entry into the civil aviation system to those operators who have the capability to meet the required minimum standard for certification and the conditions placed on their aviation documents (certification);
 - providing information and advice to operators to help them comply with the Rules;
 - monitoring operator adherence to the safety standards and their aviation documents, including identifying action that these participants need to take to ensure that they comply with the safety standards (surveillance); and
 - where necessary in the interests of safety, imposing conditions on, suspending, or revoking the aviation document issued to the operator.

⁸ Certification requests include certifications, recertifications, and approving changes to aviation documents.

⁹ The Swedavia-McGregor Report (1988) was the result of a study "to consider the need, in the interests of safety, for regulatory controls of civil aviation and their enforcement, to identify the appropriate level of regulation, and to determine the resources needed for a civil aviation safety authority". At the time of the Swedavia-McGregor Report, the Ministry of Transport carried out that function. The findings and recommendations in the report are the foundation of the present regulatory framework in New Zealand.

2.20 Figure 2 shows the “life-cycle” approach to regulating civil aviation.

Figure 2
The “life-cycle” approach to regulating civil aviation



Source: *Brief for the Incoming Associate Minister of Transport, The Civil Aviation Authority of New Zealand, Civil Aviation Authority, 30 June 2009, page 21.*

- 2.21 All participants in the civil aviation safety system are required to take their share of responsibility for safety by fully understanding and complying with their obligations under the Act.
- 2.22 The Act requires participants to ensure that all activities and functions are carried out safely and in keeping with the relevant safety standards and practices. This includes ensuring that their employees are appropriately trained and supervised, that the organisation is appropriately resourced, and that its management system will ensure compliance with the Rules and any conditions attached to its aviation documents.

How certification and surveillance is carried out

Certification of operators and flight operations

- 2.23 Certification controls the entry of operators into the civil aviation system. The main purpose of certification is to ensure that prospective operators meet or exceed the required standards, and that they understand and have the competence and resources to comply with the Act and the Rules.
- 2.24 Rule Part 119 prescribes the certification requirements for operators to perform air operations for air transport (of passengers) and commercial transport (for example, of freight). It introduces two levels of certification:
- airline air operator certification, which permits operations in all sizes of aircraft; and
 - general aviation air operator certification, which permits air operations in aeroplanes with nine or fewer passenger seats and weighing 5700kg or less, or using a helicopter for air transport and commercial transport operations.
- 2.25 Prospective operators¹⁰ are required to complete an “exposition” (which provides information on the operator’s general policies, duties, operational control policy, and procedures, and the responsibilities of personnel). The CAA checks the exposition to ensure that it complies with the Rules. Airline operators must also have an internal quality assurance system in place that ensures compliance with the procedures specified in Rule Part 119. All prospective operators nominate staff members to perform key roles in the organisation (senior persons). The CAA checks that these staff members have the relevant qualifications, experience, and knowledge, and completes a “fit and proper person” assessment of them.
- 2.26 Once the CAA accepts the exposition (where applicable), staff nominations, and the internal quality assurance system, the auditors carry out an inspection.¹¹ If successful, the operator is certified for an initial period of six months. Within that period, the auditors perform a spot check and a “compliance inspection”.¹² At the end of this process, if the CAA requirements have been met, the operator is re-issued a certificate for a total period not exceeding five years.

10 In the air transport category, but not agricultural operators.

11 The main purpose of this inspection is to establish whether the management systems detailed in the exposition are in place. The inspection also involves on-site evaluations of support facilities, aircraft, training facilities, maintenance equipment and facilities, and an evaluation of the likely effectiveness of the policies, methods, procedures, and instructions described in the applicant’s exposition.

12 The purpose of a compliance inspection is to:

- confirm that the certificate-holder is able to demonstrate compliance with their documented systems and procedures; and
- establish whether their documented systems and procedures are adequate for the nature and size of the operation.

- 2.27 At the end of the term of the certificate, operators are required to “re-enter” the system by going through recertification. Although recertification is similar to the certification process, the inspection phase is replaced with the review phase, which includes a review of historical data (for example, audit report, compliance history, organisational changes, occurrences), which may be combined with a compliance audit or inspection. The operator still has to satisfy all the certification requirements.

Surveillance of operators and flight operations

- 2.28 The CAA considers that the main purpose of surveillance is to check that participants who have entered the civil aviation system continue to operate safely, in keeping with relevant prescribed safety standards and practices, and in compliance with the conditions attached to their aviation documents. It is therefore designed to:
- check that participants are complying with the Rules and the conditions of their aviation documents; and
 - identify and correct non-compliant behaviour and unsafe practices before they cause an accident or incident.
- 2.29 The CAA's surveillance policy sets out the CAA's surveillance requirements. The surveillance policy requires the type, depth, and frequency of the surveillance to be primarily driven by:
- international commitments, particularly International Civil Aviation Organisation (ICAO) guidance; and
 - the risk profile of the operator or type of operation.
- 2.30 The surveillance policy also sets out the following range of surveillance methods and guidance about when each of these should be used:
- Systems-based routine audit – carried out yearly (or as adjusted after evaluating risk profile results) for participants who have an operating certificate and documented systems. The focus is on checking what is being done against what the participant says they will do, as set out in the manual or exposition.
 - Inspection – for programmed surveillance of participants where the systems-based approach of a routine audit is not suitable (for example, participants who are not required to hold an exposition). The focus is on checking safety practices, documents, and records.
 - Spot check – used to check a participant's compliance on an unannounced basis, and which can be carried out at any time or as part of a programme to focus on specific areas or on a particular type of operation.

- Special purpose audit or inspection – used to focus on areas of risk or to find out the cause of poor safety performance, a high-risk profile, or other safety concern.
- Unobserved surveillance (covert surveillance) – used when the CAA has grounds to believe that a participant will significantly alter their compliance behaviour if they are aware of the intended surveillance.

2.31 The surveillance policy requires that all failures by an operator to comply with the Rules, the conditions of their aviation document, or their organisation's exposition are to be raised with the operator when they are identified. All findings are to be summarised at a meeting with the operator at the end of the audit visit and included in the audit or inspection report that is prepared for the Director and copied to the operator.

The safety performance of civil aviation in New Zealand

- 2.32 More than 96% of passenger seat hours¹³ in the New Zealand civil aviation system are provided by the airline operations (large aeroplanes) group of the public air transport category. This group has a good and internationally comparable safety performance record.
- 2.33 In 2006, New Zealand was audited by ICAO as part of ICAO's Universal Safety Oversight Audit Programme. The audit focused on assessing whether New Zealand was complying with the safety-critical elements of the Chicago Convention. The audit included an assessment of the CAA's surveillance processes for airline operators and found that the CAA's performance compared favourably with that of aviation safety regulators in other developed countries.
- 2.34 Figure 3 shows the rate of accidents (that is, the number of aviation accidents occurring in 100,000 flight hours) for all the Safety Target Groups. The rate has remained consistently low for the airline operations (large aeroplanes) group, improved for the airline operations (medium aeroplanes) group, and has fluctuated for the airline operations (small aeroplanes) group.
- 2.35 The Safety Target Groups with the highest rate of accidents are the agricultural operations (aeroplane), private helicopter operations, and private aeroplane operations groups.

¹³ Passenger seat hours are calculated by the number of passenger seats that are available on a flight, not the number of passengers who sat in those seats.

Figure 3
Rate of accidents for each Safety Target Group

| Aviation Safety Target Groups | Rate of accidents (number of aviation accidents for every 100,000 flight hours) | | | |
|--|---|-------|------|-------|
| | Year ending 30 June | | | |
| | 2006 | 2007 | 2008 | 2009 |
| Public air transport operations | | | | |
| Airline operations – large aeroplanes | 0.22 | 0.18 | 0.2 | 0.11 |
| Airline operations – medium aeroplanes | 1.86 | 1.26 | 1.3 | 0.50 |
| Airline operations – small aeroplanes | 4.40 | 1.09 | 6.6 | 2.89 |
| Airline operations – helicopters | 2.95 | 0.00 | 0.00 | 2.47 |
| Sport aviation transport operations | The CAA does not record flight hours for this target group. | | | |
| Other commercial operations | | | | |
| Other commercial operations – aeroplane | 4.27 | 8.89 | 5.8 | 5.18 |
| Other commercial operations – helicopter | 11.72 | 17.12 | 7.5 | 10.35 |
| Agricultural operations – aeroplane | 12.05 | 7.60 | 24.1 | 15.43 |
| Agricultural operations – helicopter | 10.50 | 6.16 | 7.10 | 9.93 |
| Agricultural operations – sport aircraft | The CAA does not record flight hours for this target group. | | | |
| Non-commercial operations | | | | |
| Private operations – aeroplane | 19.14 | 22.55 | 12.9 | 21.83 |
| Private operations – helicopter | 54.14 | 35.06 | 32.9 | 24.20 |
| Private operations – sport aircraft | The CAA does not record flight hours for this target group. | | | |

Source: Civil Aviation Authority annual reports, 2005/06 to 2008/09.

Part 3

The Civil Aviation Authority's response to our 2005 recommendations

- 3.1 In our 2005 report, we made 10 recommendations for the CAA in six broad categories:
- improving the analysis of safety information;
 - developing the risk assessment tools;
 - ensuring that the CAA auditors follow certification policy and procedures;
 - increasing the effectiveness and efficiency of surveillance resources;
 - ensuring that findings¹⁴ are issued and prompt action is taken for non-compliance; and
 - improving the use of resources, including investing in training and complying with quality assurance processes.

- 3.2 In this Part, we look at how well the CAA has responded to our recommendations from 2005.

Our overall findings

- 3.3 Of the 10 recommendations that we made in 2005, we consider that:
- only one has been fully addressed;
 - eight have been only partly addressed; and
 - one has not been addressed.
- 3.4 At a strategic level, there has been little improvement since 2005 in the CAA's analysis and use of safety information, such as accident and incident data, to inform how tightly it regulates different groups of operators and focuses certification and surveillance on risk areas.
- 3.5 At an operational level, the CAA has strengthened its processes for certifying and monitoring operators by introducing new policies, procedures, and tools. This has resulted in some improvements in practice, including better profiling of the risks of individual operators and adjusting the frequency of surveillance in response to risk. However, the CAA has still not addressed weaknesses that we identified in previous reports. For example:
- The depth of work completed before certifying operators is not adequately documented.
 - Surveillance is not always targeted at higher-risk areas and operators.
 - Instances found by CAA auditors of non-compliance with the Rules are not consistently reported and followed up.

¹⁴ In our 2005 report, we referred to "Finding Notices" because the CAA was issuing a hard-copy notice for each identified finding. In this report, we refer to "findings".

- 3.6 In addition, the introduction of the new policies, procedures, and tools at the operational level has been delayed or has been very recent, and they are not yet fully implemented or consistently applied, particularly in the CAA's General Aviation Group. The CAA has not made as much progress in addressing our recommendations as we expected. We discuss our observations on this slow pace of change in Part 4.

How well the Civil Aviation Authority has responded to our recommendations

- 3.7 Figure 4 sets out our assessment of whether the CAA has addressed our 2005 report recommendations (the recommendations are in the six categories set out in paragraph 3.1).

Figure 4

Our assessment of whether the Civil Aviation Authority has addressed the recommendations in our 2005 report

| Improving the analysis of safety information | |
|---|---|
| Our 2005 recommendations | Our assessment |
| <p>We recommended that the CAA continue to establish measures to better assess the effectiveness of its safety interventions.</p> <p>We recommended that the CAA improve its analysis of industry information by:</p> <ul style="list-style-type: none"> including more analysis of the information in the <i>Aviation Safety Report</i> and the <i>Aviation Safety Summary Report</i> to support further action, and to improve the timeliness of these reports; and improving analysis of accident and incident data ... from which the CAA will draft recommendations for safety intervention mechanisms.* | <p>The CAA has revised its safety targets and Safety Target Groups.</p> <p>The CAA is collecting a lot of useful safety data but, apart from a couple of initiatives, staff are yet to analyse the data to effectively identify and formulate a response to strategic risk issues.</p> <p>Although the timeliness of the <i>Aviation Safety Reports</i> and the <i>Aviation Safety Summary Reports</i> has improved, the reports are still largely descriptive and contain little interpretative analysis of the information so that it can be used as a basis for further action. We were disappointed to find that there is still not enough analysis of the accident and incident data. The proportion of air accidents for which causal factors have been assigned has reduced since our 2005 audit.</p> <p>In addition, the CAA has identified significant concerns about the reliability of the safety data and is taking steps to address these issues.</p> <p>We consider that these two recommendations have been only partly addressed. Our detailed findings are set out in Appendix 1.</p> |

* In our 2005 report, this recommendation had slightly more text than we needed to repeat in this summary.

| Developing the risk assessment tools | |
|---|--|
| Our 2005 recommendations | Our assessment |
| We recommended that the CAA further develop the tools it uses to assess the risks associated with individual operators.* | <p>The risk profiling of operators was reviewed and improved as part of the Risk Assessment and Intervention Project.</p> <p>The CAA auditors, general managers, and unit managers we spoke to are confident that the system is identifying the high-risk operators.</p> <p>Individual operators' risk profiles are monitored monthly by CAA management.</p> <p>We consider that this recommendation has been addressed.</p> |
| We recommended that the CAA use better indicators of the financial status of operators when assessing operator risk, both at certification and during surveillance. | <p>The CAA decided not to use better indicators of the financial status of operators when assessing operator risk because it could find no evidence that the financial status of an operator affects safety.</p> <p>However, it is still our view that cash-flow shortages increase the risk that costs (for example, maintenance and training) will be deferred. We therefore still consider that financial risk should be assessed as part of certification and surveillance.</p> <p>We consider that this recommendation has not been addressed by the CAA. Our detailed findings are set out in Appendix 2.</p> |

* In our 2005 report, this recommendation had slightly more text than we needed to repeat in this summary.

| Ensuring that the CAA auditors follow certification policies and procedures | |
|--|---|
| Our 2005 recommendations | Our assessment |
| We recommended that the CAA ensure that its auditors* follow the policies and procedures set down for certification. | <p>The CAA has updated its certification policy and procedures. These provide a better defined process of what auditors need to do during certification.</p> <p>However, we found differences in approach between the auditors in the Airlines and General Aviation Groups. The Airlines Group auditors are using the new procedures set out in the Entry Process Sheets (electronic checklists), which provided us with evidence that the required steps set out in the certification policy and procedures were followed. Because the General Aviation Group auditors are not using the Entry Process Sheets, we were not always able to establish that the auditors in this group had completed the certification process.</p> <p>Both groups need to better document the results of the work carried out, and the weight given to evidence provided, when assessing senior persons as "fit and proper" when the evidence requires a judgement to be made.</p> <p>We consider that this recommendation has been only partly addressed. Our detailed findings are set out in Appendix 3.</p> |

* Our 2005 report used the term "inspectors" when referring to CAA auditors. In this report, we have substituted "auditor" when referring to "inspector" in our 2005 recommendations.

| Increasing the effectiveness and efficiency of surveillance resources | |
|---|--|
| Our 2005 recommendations | Our assessment |
| <p>We recommended that the CAA continue with its review of its surveillance function. In undertaking this review and designing a new approach, the CAA should:*</p> <ul style="list-style-type: none"> • ensure that the depth and frequency of surveillance is adjusted to reflect operator and operation risk; • ensure that the audit process directs resources at the highest-risk operators; • assess where reliance can be placed on operators' own quality and risk management systems, so that audits can be targeted at higher-risk areas; • direct appropriate activities and interventions at high-risk Safety Target Groups; • give priority to the sampling project (a sampling methodology will allow auditors to make informed decisions on the work necessary to cover the assessed risk); and • develop guidelines to indicate when instances of non-compliance should be referred to the CAA's Law Enforcement Unit for further action. | <p>The CAA has continued with its review of its surveillance function, and a new electronic surveillance tool was introduced in March 2007.</p> <p>The new surveillance process has led to a better allocation of staff between audit and administration tasks, and this has made more time available for auditing. However, the full extent of the expected efficiencies has not been achieved because the tool has not been implemented as intended – checklists tailored for each operator are not generated. These checklists were to form the basis of the surveillance audits and were to be used to adjust the depth and the frequency of the surveillance based on the operators' risk profiles. The implementation of the Surveillance Review Project was late, there were software problems, and auditors felt it did not meet their needs. As a result of this, the new process and tool are used variably by different units.</p> <p>When we checked whether the auditors are complying with the surveillance policy, we found that:</p> <ul style="list-style-type: none"> • The frequency of audit activity is sometimes adjusted to reflect operator risk (increased activity for higher-risk operators and decreased for lower-risk operators). However, the depth of audits is not adjusted. • The auditors are still not assessing where they can rely on operators' quality and risk management systems, so that audits can be targeted at higher-risk aspects of operations. • The sampling project did not proceed, so there is still no guidance available to auditors to enable them to make informed decisions on the work necessary to cover the assessed risk. • The surveillance policy was updated and a new version was issued in June 2009. This new policy includes a section on how the regulatory tools (for example, imposing conditions on an aviation document, or suspending or revoking an aviation document) should be used. It therefore should assist the auditors to know when to refer instances of non-compliance to the CAA's Law Enforcement Unit for further action. However, the policy was not adopted until June 2009, so we were not able to assess its effect. <p>We consider that this recommendation has been only partly addressed. Our detailed findings are set out in Appendix 4.</p> |

* We have changed the order of the following bullet points from the order in which they appeared in our 2005 report.

| Ensuring that findings* are issued and prompt action is taken for non-compliance | |
|--|---|
| Our 2005 recommendations | Our assessment |
| We recommended that the CAA auditors issue a Finding Notice for all identified instances of non-compliance and non-conformance. | The auditors are still not always issuing findings when necessary. There is still a problem in the inconsistency of findings between auditors, both with the number issued as well as the type or severity of the finding. |
| We recommended that the CAA establish a system that ensures that operators take quick and effective corrective action when auditors tell them to do so. This system should include re-assignment of responsibility for that function when an auditor leaves the CAA. | A system has been established to ensure that findings are followed up. Administrative staff monitor whether operators send evidence of corrective action to the CAA. If operators do not send such evidence, the administrator sends reminders. The auditor who issued the finding decides whether the action taken is appropriate and properly evidenced. The timeliness of following up critical findings has improved. However, the CAA is falling well below its target for closing all findings by the due date. We consider that these two recommendations have been only partly addressed. Our detailed findings are set out in Appendix 5. |

* In our 2005 report, we referred to "Finding Notices" because the CAA at that time was issuing actual hard-copy notices. In this report, we refer to "findings" instead.

| Improving the use of resources, including investing in training and complying with quality assurance processes | |
|--|---|
| Our 2005 recommendations | Our assessment |
| We recommended that the CAA auditors ensure that they record all time spent on the surveillance function...* | The CAA managers told us that they had advised auditors to make sure that they were recording all the time they spent on surveillance. The managers are confident that the auditors are now doing this. In our view, the unexplained decreases in auditors' time spent on surveillance, and the fact that the average number of auditor hours recorded for surveillance is so low, suggest that this issue has not yet been fully resolved. We consider that this recommendation has been only partly addressed. |

| Improving the use of resources, including investing in training and complying with quality assurance processes | |
|--|---|
| Our 2005 recommendations | Our assessment |
| <p>We recommended that the CAA:</p> <ul style="list-style-type: none"> • ensure sufficient investment in training CAA staff so that they develop and maintain the appropriate skills to carry out their functions; • review its staffing levels when the current review of the surveillance function has been completed, to ensure that it has sufficient resources to undertake this function (both the review of the surveillance function and the review of staffing levels need to take account of the potential pressures or “surges” put on auditors as a result of unanticipated requests for certifications); • ensure that the operational groups comply with the CAA's generic policies and procedures (particularly relating to Quality Assurance); • promote consistent standards of quality and practices throughout the operational groups by ensuring that they address internal audit Finding Notices; and • ensure that the internal audit section is appropriately staffed to enable the CAA's operations and auditors to be audited on a more regular basis. | <p>Training has focused on maintaining auditor proficiency in aviation (that is, pilot competency or aircraft engineer skills) rather than auditing skills. Detailed training was provided to staff on how to use the new electronic surveillance tool.</p> <p>The managers have reviewed staffing levels and consider them to be adequate for carrying out certification and surveillance work, but not for also supporting the rules development programme or improving essential guidance material. To us, the hours spent on surveillance appear low, but we were not able to form a clear view on the productivity of auditors because the CAA did not have reliable information about how much time auditors spent on certification and other tasks. The CAA continues to have trouble recruiting sufficiently qualified auditors.</p> <p>Quality assurance reviews are built into the new processes and tools. However, they are only effective when the new processes and tools are used. Also the robustness of the review depends on the individual manager. The lack of supporting evidence on file leads us to question the basis on which managers are assessing whether a quality audit has been carried out. We also consider that manager reviews in the certification process need to be more robust.</p> <p>The internal audit unit was disbanded in June 2009. An Internal Audit Service Provider was appointed for a term of two years. Their term began in October 2009.</p> <p>We consider that this recommendation has been only partly addressed. Our detailed findings are set out in Appendix 6.</p> |

* In our 2005 report, this recommendation had slightly more text than we needed to repeat in this summary.

Part 4

Why the Civil Aviation Authority has been slow to improve certification and surveillance

- 4.1 The CAA accepted our 2005 recommendations and has been working on improvements to its certification and surveillance policies, processes, and tools. Since our audit in 2005, the CAA has assured us that it was addressing our recommendations and it has also reported publicly that it was making good progress in addressing our recommendations.
- 4.2 After our 2005 audit, the CAA presented us with a model of how it would integrate its certification, surveillance, and risk assessment and intervention projects using an electronic system and supporting tools. These projects were designed to improve the effectiveness and efficiency of the certification and surveillance processes.
- 4.3 We deferred the timing of our most recent audit to ensure that the CAA had enough time to fully implement those changes and complete enough audits using the new processes and tools so that we could test how well the integrated system was working in practice.
- 4.4 In our view, the progress that the CAA has made in addressing our 2005 recommendations is inadequate. There is still considerable scope for improvement in how effectively and efficiently the CAA conducts certification and surveillance. We provide the evidence to support our view in Appendices 1 to 6. Part 3 provided a summary of our evidence.
- 4.5 We consider that the CAA continues to have weaknesses that we have previously identified, and that these weaknesses affect the rigour, consistency, and transparency of regulation.
- 4.6 In our view, the CAA has failed to understand and effectively address the underlying causes of the weaknesses in its certification and surveillance work. We consider that the following factors have contributed to its inadequate response:
- Governance of, and accountability for, the CAA's certification and surveillance functions are ineffective.
 - The strength of the CAA's regulatory focus is unclear, and there is insufficient guidance to ensure that regulatory responses are appropriately and consistently applied.
 - The CAA's management practices are not focused on improving staff performance, and it has not been receptive to change.
 - The CAA's management oversight of implementing and using the new certification and surveillance processes is inadequate.
 - The CAA has not given enough attention to improving its organisational proficiency in auditing.

- 4.7 In this Part, we discuss the reasons for our observations and make recommendations to improve the CAA's governance and management, and the training of its auditors. We also include the CAA's views on how a lack of capacity and capability has constrained change.

Governance of, and accountability for, the certification and surveillance functions are ineffective

There are deficiencies in how the Board holds the Director to account for the CAA's outcomes, the measures used to assess the CAA's effectiveness in carrying out certification and surveillance work, and the efficacy of the CAA's internal audit work. Also, the Ministry of Transport's monitoring of the CAA has not been active enough.

The Director's accountability to the Board for the CAA's outcomes

- 4.8 The Director, as chief executive officer of the CAA, is accountable to the Board for the CAA's performance in achieving the Board's strategic priorities and operating intentions. These are set out in the CAA's statement of intent.
- 4.9 However, in carrying out the functions and exercising the powers given to him under the Act, the Director acts independently and is not responsible to the Minister or to the Board in relation to any particular case. For certification and surveillance, this includes controlling entry into, and operation within, the civil aviation system, including inspecting and monitoring the behaviour of the participants in the civil aviation system. The combined effect of these individual actions by the Director establishes the level of the CAA's regulatory focus.
- 4.10 The Board is responsible, through the CAA, for providing the Director with resources to carry out his functions. These resources include adequate certification and surveillance processes, appropriately qualified staff, and a robust information system.
- 4.11 We reviewed the Board minutes since our 2005 audit and found that the CAA had regularly provided the Board with positive updates on its progress with the three projects that were to make up the integrated certification and surveillance system. However, there was, in fact, inadequate progress with these projects, especially the certification and surveillance projects (see Part 3).
- 4.12 The Board consequently received inaccurate advice. However, because the measures the CAA provides to assess the effectiveness of its certification and surveillance work are not robust enough to identify the inadequate progress (see paragraphs 4.18-4.20), the Board had no reason to question this advice.

- 4.13 We consider that, if the Board had been using appropriate measures to assess the CAA's performance in carrying out certification and surveillance, the Board would have been able to see that progress was inadequate.
- 4.14 We expected that the CAA would be able to demonstrate the effect that its certification and surveillance work was having on its outcomes. The CAA's outcomes are:
- a reduced number and cost of civil aviation accidents and incidents;
 - a reduced number of civil aviation fatalities and injuries; and
 - a high level of compliance with legislation and the Rules by the civil aviation participants.
- 4.15 Although the CAA is beginning to identify initiatives aimed at particular types of operators in a Safety Target Group, there is little in the groups' annual plans to identify how the group and unit outputs will address the outcomes. To address these, the CAA will need to understand more fully the effect that its surveillance and certification work is having on its outcomes.
- 4.16 Implementing the new risk assessment tool should be useful in tracking trends in individual operator risk, and this should be able to be done by Safety Target Groups. In addition, the CAA is currently trying to establish how it can measure the effect that the various types of intervention (for example, routine audits and spot checks) have on improving operator compliance with the Rules.
- 4.17 If the Board is to hold the CAA accountable, the CAA needs appropriate measures to show the effect of its certification and surveillance work on its outcomes.
- 4.18 For the Airlines Group and the General Aviation Group, the effectiveness of their certification and surveillance work is measured by the number of certification requests that they have met and by the number of hours spent on surveillance and spot checks. The quality of certification and surveillance is measured by the results found by the CAA's internal audit unit.
- 4.19 In our view, these are not good measures of the effectiveness of certification and surveillance. The measures do not give assurance that surveillance resources have been appropriately targeted at the higher-risk operators, nor do they provide any information about the effect of the surveillance and certification on operator behaviour.
- 4.20 The CAA is currently looking at addressing this issue. It has looked to see what other countries' aviation safety regulators are doing. The CAA considers that no other regulator has developed robust measures of the effectiveness of their interventions, and that what the CAA is doing is "world-leading". The CAA is

considering measuring the effect that surveillance has in reducing operator risk profiles and other measures. We support this approach.

Recommendation 1

We recommend that the Civil Aviation Authority put in place measures to better assess the effectiveness of its certification and surveillance functions and use these measures to report and account to the Board for its performance in achieving its outcomes.

Internal audit

- 4.21 Each year, the Board's Audit and Risk Management Committee (the Committee) approved the Board's internal audit programme, and the results of the internal audits were reported to the Committee. Although the annual internal audit programme covered all the major groups within the CAA, it was focused on checking procedural compliance.
- 4.22 In our view, the internal audit focus needs to be extended to provide the Board with assurance about the CAA's assessment of how well the groups are contributing to the CAA's strategic priorities for certification and surveillance, and the extent to which certification and surveillance are helping to achieve the overall goals and objectives of the CAA.
-

Recommendation 2

We recommend that the Board extend its internal audit of the Civil Aviation Authority to include assurance over the executive management team's assessment of how well the Airlines Group's and General Aviation Group's certification and surveillance are contributing to its strategic priorities and achieving its overall goals and objectives.

- 4.23 In addition, we also noted that the CAA's internal audit unit had reviewed the Airlines Group's compliance with the new surveillance process in February 2008. The review found that, although the Airline Maintenance Unit was generally complying with the new policy, the Flight Operations Unit was not complying. Examples of non-compliance included not planning and conducting audits to reflect the operator's risk.
- 4.24 The internal audit unit also reviewed the General Aviation Group's compliance with the new surveillance process in April/May 2008. Overall, this review found that, although the rotary-wing section of the Rotary Wing and Agricultural Operations Unit was complying with the new surveillance process, the Fixed Wing Unit was "not using the surveillance process as prescribed".

- 4.25 The findings about both groups do not appear to have been rechecked by the internal audit unit during the next audit.
-

Recommendation 3

We recommend that the Board's Audit and Risk Management Committee take a more active role to ensure that the Airlines Group and the General Aviation Group actually address the internal audit findings.

Monitoring by the Ministry of Transport

- 4.26 The CAA provides quarterly reports to the Minister, copied to the Ministry of Transport, on how the CAA is performing against its performance measures. The Ministry meets regularly with the CAA management team and these meetings include discussion on performance issues. Key performance issues are also discussed as part of the Ministry's six-monthly meetings with the Chairman of the Board.
- 4.27 Ministry of Transport officials told us that it is the Board's responsibility to monitor the CAA. They see that the main accountability relationship is between the Minister and the Board, rather than between the Minister and the CAA's chief executive officer.
- 4.28 In our view, although the Board is primarily accountable to the Minister for the CAA's performance, the Ministry of Transport also has an important role in advising and supporting the Minister by monitoring the Crown entities for which the Minister is responsible. We would expect this monitoring to include scanning for emerging issues or risks that might require a response, advising the Minister of these as early as possible, and providing support for the relationship between the Minister and the Board. Our expectations of Crown entity monitoring are set out in our 2009 report, *How government departments monitor Crown entities*.¹⁵
- 4.29 In our view, monitoring progress on how well the CAA is addressing our recommendations on its certification and surveillance functions fits with the Ministry of Transport's general role of supporting the Minister.
- 4.30 We consider that the Ministry of Transport should have been more comprehensive and timely in its monitoring of the sufficiency, appropriateness, and timeliness of the action taken by the CAA in addressing the recommendations in our 2005 report. The Ministry set up an "action sheet" to monitor the CAA's progress in implementing our recommendations from 2005. This action sheet was posted on the websites of the CAA and the Ministry. The most recent status report for the action sheet was dated December 2007.

¹⁵ This report is available on our website, www.oag.govt.nz.

Recommendation 4

We recommend that the Ministry of Transport, on behalf of the Minister of Transport, more actively monitor the Civil Aviation Authority to provide assurance to the Minister of Transport that the Civil Aviation Authority is addressing our recommendations and performing certification and surveillance effectively and efficiently.

Strength of the regulatory focus is unclear and guidance is insufficient to ensure appropriate and consistent responses

The strength of the CAA's regulatory focus is not clear and, because of a lack of guidance and training, auditors do not respond consistently to safety concerns.

The strength of the CAA's regulatory focus

- 4.31 An external review of the CAA in 2006 noted that, to be an effective regulator, the CAA needed to focus on the public as its main client and adopt the position of a regulator rather than that of an industry advisor.
- 4.32 Shortly after taking office in July 2007, the new Director told both the aviation industry and CAA staff that the CAA would be adopting a stronger, compliance-driven regulatory role. The Director said that this would include a more rigorous certification process and strengthening of the surveillance process by more thorough auditing. However, this stronger regulatory focus has not always been reflected in the CAA's day-to-day certification and surveillance work.
- 4.33 In our view, the assistance provided to some operators in our sample to achieve certification placed the CAA more in the role of advisor than regulator. The assistance included issuing aviation documents for a short time to enable operators to either complete the certification process or lift the standard of their operations (see Appendix 3, paragraphs A3.40-A3.53).
- 4.34 Issuing short-term certificates can be an appropriate regulatory response and does not necessarily have safety implications, but in issuing short-term certificates the CAA needs to show that it has considered the increased risks in doing so. In the sample that we reviewed, we saw no evidence that the CAA had considered the risks involved. In our view, the CAA's regulatory role was potentially weakened because it issued short-term certificates while operators made necessary improvements.
- 4.35 For example, we noted that one operator was told before recertification that they would have to carry out a major overhaul of their company to meet the

requirements for recertification (see Figure 10 at the end of Appendix 4). The CAA had issued a “milestones” document to the operator at the same time that it issued the certificate. The document listed the actions that the airline had to take during the term of the certificate and set out the CAA’s planned oversight activities. In this instance, a higher-risk operator was allowed to operate while rectification actions were taken.

- 4.36 There was not always a clear link between the CAA’s surveillance findings, the effect that the findings had on safety, and the level of regulatory response that the auditor should make. We also noted instances in our sample of operators where there were significant increases in findings from one surveillance audit to the next, although there had been no change to the size or scope of operations, to the systems used in performing the operations, or to personnel.
- 4.37 CAA staff told us that the increase was because of the new, stronger, regulatory focus. However, we found that a significant number of the findings were not directly related to safety. For example, a finding was issued because:
- the registration marks on the tail fin of an aircraft were too small (220mm rather than 250mm); and
 - the operator’s maintenance review statement did not use the specific wording required by the Rule.
- 4.38 The Director and the Chairman of the Board were not able to tell us how strong the regulatory focus was at the time of our audit and how either of them would know if it was strong enough. In our view, there are indicators that could be used – for example, monitoring changes in the behaviour of aviation sector members, monitoring the types and frequency of complaints from aviation sector members, and monitoring the results of cases that have been taken to court.
- 4.39 The two general managers we spoke to at the CAA told us that they would recommend revoking or suspending an operator’s certificate to the Director if they felt that safety had been compromised. However, they were unclear about the level of non-compliance where this would happen. The Director told us that he would suspend or revoke an aviation document if he received such a recommendation, supported with adequate evidence, from the general managers. The CAA has suspended three operator certificates during the last five years.
- 4.40 In our view, the CAA does not have a consistent, organisational-wide, regulatory focus. Instead, the strength of the regulatory focus differed between the groups, the units, and (at times) the individual auditors.

Recommendation 5

We recommend that the Civil Aviation Authority prepare and implement better measures of the strength and effectiveness of its regulation of the civil aviation sector, including measures to assess the relative effectiveness of advisory and enforcement actions.

Guidance provided to CAA staff on applying regulatory responses

- 4.41 CAA staff have been provided with high-level guidance in the form of regulatory principles (in the surveillance policy), to use when making decisions on applying regulatory tools. Training is also given on applying the principles of natural justice and assessing senior persons as “fit and proper”.
- 4.42 In our view, the guidance and the training are not enough to ensure that auditors consistently apply regulatory responses. The surveillance policy states that the:
- ... guidelines indicate, in a general way [our emphasis], the basis upon which decisions concerning the exercise of the Director’s powers with respect to the choice and application of regulatory tools will be made.*¹⁶
- 4.43 We found examples where the regulatory response to address safety concerns differed in similar circumstances. There was not enough documentation for us to understand why the regulatory responses differed between these examples. This is contrary to two of the CAA’s principles:
- Consistency – the Rules and standards must be applied consistently and fairly across the sector and regulation should be predictable to give stability and certainty to those being regulated.
 - Accountability – regulators must be able to justify the decision and be subject to public scrutiny, and regulators should clearly explain how and why decisions have been reached.
- 4.44 Figure 5 gives details about four operators in our file review where we found that the CAA had responded differently to safety concerns. For these examples, we are not questioning the individual decisions but we are concerned about inconsistent responses for what appear to be similar circumstances.

¹⁶ Civil Aviation Authority (2009), *Civil Aviation Authority Surveillance Policy*, CAA, Wellington, page 12. This document is available on the CAA’s website, www.caa.govt.nz.

Figure 5
Examples of the Civil Aviation Authority’s variability in responding to safety concerns

Operator 1

In October 2008, the CAA found that an agricultural operator was in serious non-compliance with the Rules. For example, the chief executive officer had been operating an aircraft for six months without a valid licence to carry out aerial distribution of agricultural chemicals. The CAA suspended the operator’s certificate while the operator addressed the non-compliance. The suspension was lifted on the closure of all findings. The matter was not referred to the CAA’s Law Enforcement Unit.

Operator 2

Operator 2’s certificate was due for renewal in December 2007. The CAA noted its concern about the operator’s safety record, which included four fatal accidents since 2002. The CAA issued the operator with several short-term certificates while the operator addressed the findings and safety concerns, and also required the operator to have an action plan for improving compliance.

Operator 3

In August 2008, the CAA found that Operator 3 had operated an aircraft after its Annual Review of Airworthiness (ARA) had expired. The aircraft had been flown on seven occasions before the ARA was renewed. The CAA also found that the pilot had operated for more than two years without an agricultural competency check. The CAA referred the operator to its Law Enforcement Unit. The pilot was prosecuted and fined for being overdue with the competency checks. The operator’s certificate expired in October 2008, and the CAA issued a short-term certificate for two months to allow the operator time to resolve the findings.

Operator 4

The CAA began a section 15A investigation* of Operator 4 in July 2008 because safety concerns and audit results indicated that the operator’s performance had deteriorated during the previous two years. Although the CAA did not continue this investigation after February 2009 because the operator was to exit the regulatory system within a few weeks, it included looking at whether the chief executive officer continued to be a “fit and proper person” for the role. If the investigation had found that he was not “fit and proper”, he would have been removed from this role.

* The Director may, under section 15A of the Act, require operators to undergo any inspections and monitoring that the Director considers necessary in the interests of civil aviation safety and security.

4.45 We consider that the CAA should provide auditors with enough reference information to enable them to make consistent decisions. This guidance should at least indicate:

- what constitutes a risk to public safety and at what level of risk regulatory action should be considered;
- what information needs to be collected and considered when deciding on whether regulatory action needs to be taken;
- the process that needs to be followed when considering regulatory action; and
- the legislative authority for regulatory action and how this is applied in the courts through case law.

Recommendation 6

We recommend that the Civil Aviation Authority clarify how its regulatory focus is to be applied in practice through certification, surveillance, and other regulatory action by providing more detailed guidance to staff about what circumstances constitute a significant risk to public safety, and what action they should take when these safety risks are identified.

Informing regulatory decision-making

- 4.46 The CAA needs to improve its analysis of the safety data that it collects in its Management Information System. (This safety data is generated by the CAA as well as by the aviation industry.) The safety data needs to be used to better inform the strength of the regulatory focus for different groups of operators.
- 4.47 The CAA is currently taking action to improve the reliability of the safety data. In July 2008, it approved a policy on collecting and using safety data. Carrying out this policy is a “key” project of the Safety Information Group, and the CAA expects it to be completed before December 2011. However, this date is unlikely to be met. CAA staff told us that a lack of funding is constraining progress with this project. In our view, this project should be carried out as soon as possible.
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Recommendation 7

We recommend that the Civil Aviation Authority give priority to completing the project to improve the integrity and reliability of safety data in its Management Information System, and improve the analysis of this data so that it can be used to better inform regulatory decision-making.

Management practices are not focused on improving staff performance, and the organisation has not been receptive to change

Management practices have improved within the Airlines Group, but not within the General Aviation Group. Performance agreements in the General Aviation Group do not set clear expectations nor require auditors to properly understand the importance of consistently applying the policies and processes for certification and surveillance. Overall, we consider that the CAA's culture is resistant to change and too risk averse when it comes to introducing innovation and continuous quality improvement.

Managing and leading staff to perform

- 4.48 There has been greater focus recently on effectively managing staff in the Airlines Group, where certification and surveillance improvements had gained more traction, than in the General Aviation Group. The management of the Airlines Group was more proactive and focused on quality improvement. For example:
- The general manager of the Airlines Group led an audit of the management aspects of a large airline, in which he demonstrated to the audit team how he would like them to plan audits. This included widening the scope of an audit in response to identified risks, and preparing a plan outlining specific questions to ask each senior person at the airline and identifying the records to be sampled.
 - The unit managers' performance and development agreements focused on building capacity and capability within their units, management, and internal quality assurance.
 - The Airlines Group worked with the Safety Information Group to produce regular reports highlighting the "top five" trends in occurrences from the airline sector, and has carried out work to investigate and address the causes of these trends.
 - The Airlines Group carried out a complete review of the Entry Process Sheets (for certification) to reduce repetition and make them more user-friendly for staff within the group.
- 4.49 In the General Aviation Group, the leadership style had not changed since our last audit in 2005. The General Aviation Group managers were more focused on day-to-day operational work, rather than on process improvement or staff development. For example, the General Aviation Group had not adopted, nor required its auditors to use, the new certification process. Also the expectations in performance agreements for managers and staff were not aimed at improving the capacity and capability within the group.

- 4.50 Performance agreements for managers and staff in the Airlines Group and the General Aviation Group are linked back to the Groups' annual plans. This is designed to provide a stronger link between the strategic priorities in the statement of intent and day-to-day work.
- 4.51 We reviewed the agreed objectives in the performance agreements for staff in the Airlines Group and General Aviation Group. The performance and development agreements for the Airlines Group set clear expectations, and required staff to have a proper understanding of the importance of consistently applying the certification and surveillance policies and processes. The agreements were aimed at building on current performance and improving the capacity and capability within the group. The two Airlines Group unit managers are required to develop and maintain an accurate skills matrix for their units.
- 4.52 The performance goals for the General Aviation Group unit managers were less demanding of the managers and staff. They were more superficial and less specific, did not link staff performance to complying with the certification policy and processes, and were not clear about building on the capability and capacity within the group.

Recommendation 8

We recommend that the Civil Aviation Authority assess, and, where necessary, provide training to improve its managers' capability to effectively manage and lead staff. This includes improving the staff performance assessment process in the General Aviation Group.

The CAA's openness to change

- 4.53 During our audit and through other dealings that we have had with the CAA, we have found that the organisation has not been receptive to change. Auditors appear to be comfortable with past processes and in some instances have resisted the introduction of new processes. For example, the General Aviation Group auditors do not use the Entry Process Sheets even though new policies and procedures require them to. The very slow (13 years) and inadequate response to our recommendations, as well as a reluctance to address issues noted in other external reports, are also evidence that the CAA has not been receptive to change.
- 4.54 In our view, the pace of change within the CAA needs to be much quicker. The CAA needs to accept and promote continuous quality improvement. Most of the issues that we identified during our audit should have been identified and addressed earlier by the CAA.

- 4.55 The CAA's culture is too risk averse when it comes to introducing innovation and continuous quality improvement in the way that the CAA carries out its certification and surveillance work.
- 4.56 We found evidence that the CAA's auditors responded to high risk by increasing the frequency of surveillance but have been slower to respond to low risk through reducing the scope, or frequency, of surveillance – although this is now beginning to happen.
- 4.57 We found little evidence that auditors were adjusting the depth of the audits to reflect risk. This means that the underlying cause of the safety issue may not be addressed and the operator could become non-compliant with the Rules again.
- 4.58 In our view, the CAA needs to better match the intensity of its certification and surveillance work to its perception of risk. If an operator is low risk, then the CAA can improve its effectiveness by adopting the most appropriate audit methodology for that level of risk. In our view, the approach taken by the Aviation Security Unit of the CAA does this (see Appendix 4, paragraph A4.23). However, the Airlines Group and General Aviation Group will need to change the way that they perceive risk in the audit methodology that they use for certification and surveillance if risk-based auditing is to be consistently applied by these groups.

Management oversight of implementing and using the new certification and surveillance processes has been inadequate

Management oversight of the implementation and use of the new certification and surveillance processes has been inadequate, and so has the quality assurance of day-to-day certification and surveillance work. Auditors have not been told what information to record on file for the managers to be able to provide assurance about the quality of the auditors' decisions and recommendations.

Management oversight of implementing the new certification and surveillance processes

- 4.59 After our 2004 audit fieldwork, the CAA began to develop an integrated electronic system to improve the effectiveness and efficiency of the certification and surveillance processes. To achieve this integrated system, the CAA started three projects:
- the Certification Project;
 - the Surveillance Review Project; and
 - the Risk Assessment and Intervention Project.

- 4.60 The CAA executive team reduced the scope of the Certification Project in July 2007, putting on hold the development of electronic checklists tailored to each operator. Instead, the CAA introduced an alternative manual procedure for certification (Entry Process Sheets – see Appendix 3). Reducing the scope of this project to exclude the tailored checklists has meant that the efficiency gains intended from integrating the new certification and surveillance processes have not been achieved. The CAA unit managers are not tailoring the electronic checklists before each audit to adjust the scope and depth of the audits.
- 4.61 The auditors in the General Aviation Group were not required to use the new Entry Process Sheets even though the sheets had been formally adopted as part of the CAA's new certification policy and process.
- 4.62 As part of the Surveillance Review Project, the CAA introduced an electronic surveillance tool (including computer tablets for use by the auditors) to automate the surveillance process. However, the tool is not being used as intended by the Airlines Group and the General Aviation Group. Auditors have experienced problems with the tool, including issues with the software and a lack of training in using the new technology. The CAA has made major upgrades to the tool, and refinement is ongoing.
- 4.63 During our audit, the CAA started a project to review and improve the surveillance process and tool. If the problems that have been identified by this most recent review are addressed, it will address most of our recommendations in this report relating to the surveillance function.

Recommendation 9

We recommend that the Civil Aviation Authority give priority to completing the project to review and improve the surveillance process and tools, and ensure that all managers and auditors are using the new certification and surveillance processes.

Quality assurance by management of day-to-day certification and surveillance work

- 4.64 The new certification and surveillance processes have built-in managerial quality assurance reviews. However, they are effective only when the new processes (and relevant tools) are used. The robustness of the review also depends on the individual manager.
- 4.65 The unit managers differed in the extent of their review of auditors' certification and surveillance work, but, overall, the scope and depth of their review needed to increase.

- 4.66 There was not enough information on file for the managers to determine the scope and depth of audit work that had been done, and for the managers to be able to assess that the auditors' decisions and recommendations were based on robust evidence and analysis. This was particularly concerning in the General Aviation Group, where the differences in the numbers of findings made by auditors suggested inadequate moderation by the managers.
- 4.67 We therefore asked the two unit managers of the General Aviation Group how they obtained assurance that the auditors had carried out enough work and identified the risk areas of an operator's operation. Both managers told us that the auditors briefed them at the conclusion of each audit and that they "got a good feel" from these briefings and from the audit reports about the amount of work done. We consider that a verbal briefing is not enough.
- 4.68 In our view, the CAA needs to provide better guidance for auditors on how much information they are required to record about what was looked at during the audit (including the scope and the depth of testing), the analysis of the findings, and the effect that this has on the risk profile and future surveillance work.
- 4.69 We consider that the CAA's senior managers are responsible for providing auditors with this guidance, and for ensuring through their ongoing quality assurance activity that auditors are using the guidance and complying with policies and processes.

Recommendation 10

We recommend that the Civil Aviation Authority introduce more robust quality assurance of certification and surveillance work, including input into planning for certification and surveillance, reviewing the results, and moderating auditors' findings.

Recommendation 11

We recommend that the Civil Aviation Authority provide better guidance to its auditors on the level of documentation that needs to be retained as evidence of the certification and surveillance work that has been carried out, and reinforce the importance of clearly documenting the basis for decisions that involve serious consideration of evidence for a judgement to be made.

Recommendation 12

We recommend that the Civil Aviation Authority provide better guidance to its auditors on how to apply the "fit and proper person" criteria when carrying out assessments of senior persons.

Not enough attention has been given to improving organisational proficiency in auditing

Training has focused on the aviation technical proficiency of auditors, with not enough time given to enhancing audit skills and understanding of a risk-based audit methodology.

- 4.70 The CAA managers told us that a lot of time is spent training the auditors so that auditors are able to maintain their technical aviation proficiency. However, all training time was reduced in the CAA's 2009/10 budget in response to a projected significant reduction in revenue from fees and levies because of the economic downturn.
- 4.71 All CAA auditors are required to attend and pass a recognised "lead auditor" course. In response to the poor feedback by participants, the CAA is currently looking for alternative providers. At the time of our audit, the CAA was considering using the lead auditor course provided by the "CASA Academy" (Australia's Civil Aviation Safety Authority).
- 4.72 Recent work carried out by CAA staff has also identified significant gaps in the audit training available for auditors. This is discussed in Appendix 6.
- 4.73 In our view, the CAA needs to give priority to providing training and guidance for auditors to ensure that they have the appropriate skills and knowledge to effectively carry out certification and risk-based surveillance.

Recommendation 13

We recommend that the Civil Aviation Authority give priority to providing training in risk-based audit methodologies for its auditors, to ensure that they have the appropriate skills to carry out effective certification and risk-based surveillance.

Recommendation 14

We recommend that the Civil Aviation Authority provide detailed guidance to its auditors on risk-based auditing, including how information about risk can be used to tailor audits at the planning stage, how this information should be documented, how systems-based auditing should be applied, and how risk influences the size of samples checked during audits.

The Civil Aviation Authority's views on how a lack of capacity and capability has constrained change

- 4.74 ICAO noted during its 2006 audit that staff levels at that time did not allow for the development of regulation and guidance material and attendance at training courses in addition to ongoing work. The number of staff employed in the Airlines Group and the General Aviation Group has not increased significantly since 2006. In one unit of the Airlines Group, the number of staff has decreased. The CAA noted that, since 2006, the demand on CAA resources had increased through an increase in the number of registered aircraft and the number of certified operators, and through the increasing complexity of the operations of airline operators.
- 4.75 The CAA also noted that the Civil Aviation Safety Authority of Australia (CASA) in “very approximate terms” oversees three times the number of registered aircraft and pilots than CAA. It employs three times as many staff, but has an operating budget almost five times larger than the CAA’s budget. The CAA believes that, even allowing for higher salaries and assuming higher expenses in Australia, CASA has significantly greater financial resources to apply to its operations and to facilitating change than the CAA does.
- 4.76 During our audit, the general managers of the Airlines Group and General Aviation Group told us that they thought that the staff levels were adequate for carrying out certification and surveillance work but not for also supporting the rules development programme or improving essential guidance material.
- 4.77 We reviewed the number of reported hours that auditors spent on surveillance, and found that the hours were fewer than we expected (see Appendix 6, paragraphs A6.13-A6.15). It was not possible for us to form a clear view on the productivity of auditors because the CAA did not have reliable information about how much time auditors spent on certification and other tasks.
- 4.78 We did not examine the adequacy of the operating budget for the CAA because this was outside the scope of our audit. We note that the CAA, supported by the Ministry of Transport, is carrying out a funding review. One of the aims of the review is that the CAA achieves greater efficiencies with its current resources. This review is not expected to be completed, or its effect on the amount of resources known, until early 2011.

Appendix 1

Improving the analysis of safety information

- A1.1 In 2005, we recommended that the CAA:
- continue to establish measures to better assess the effectiveness of its safety interventions; and
 - improve its analysis of industry information by:
 - including more analysis of the information in the *Aviation Safety Report* and the *Aviation Safety Summary Report* to support further action, and to improve the timeliness of these reports; and
 - improving the analysis of accident and incident data from which the CAA will draft recommendations for safety intervention mechanisms.

A1.2 In this Appendix, we look at the CAA's response to those recommendations.

Our overall findings

- A1.3 The CAA is collecting a lot of useful safety data, but, apart from a couple of initiatives, staff are yet to effectively analyse the data so that they can identify and formulate a response to strategic risks.
- A1.4 Although the timeliness of the *Aviation Safety Reports* and the *Aviation Safety Summary Reports* has improved, the reports are still largely descriptive and contain little interpretative analysis of the information that can be used as a basis for further action. We were disappointed to find that there is still not enough analysis of the accident and incident data. The proportion of air accidents for which causal factors had been assigned has reduced since our 2005 report.
- A1.5 In addition, the CAA has identified significant concerns about the reliability of its safety data (which it holds in its Management Information System). The reliability of this data is important because it is used for some important functions of the CAA (for example, the risk profiling system, the strategic planning process, and identifying trends within the civil aviation sector).
- A1.6 The CAA is taking steps to improve the quality of accident and incident data. A policy about collecting and using safety data was approved in July 2008. The policy identifies the purposes for which the data will be used, and this should lead to better classification and analysis of the data. However, the policy will not be fully implemented until December 2011 at the earliest.
- A1.7 We consider that the recommendations in our 2005 report have been only partly addressed.

Measures to better assess the effectiveness of safety interventions

The CAA has reviewed safety targets and has increased the number of Safety Target Groups from nine to 13.

- A1.8 In our 2005 report, we noted that, in the CAA's annual reports for 2001/02, 2002/03, and 2003/04, the CAA had stated that the safety targets it was using were not a reliable measure of trends in the safety performance of the civil aviation industry.
- A1.9 In 2005, the CAA also had concerns about the reliability of the data on which the measures were based, especially for the general aviation sector, because:
- aircraft flying hours were under-reported by owners, which meant that the reported safety rates may have looked worse than they really were; and
 - accidents, incidents, and defects were also under-reported by either the pilots-in-command or the operators, which meant that the safety rates may have looked better than they really were.
- A1.10 New safety targets and Safety Target Groups were established for the July 2005 to June 2010 period. The new targets included a new measure to quantify safety performance – the social cost of accidents for each unit of activity. The measures for these safety targets are now:
- the social cost of aviation accidents;¹⁷
 - the rate of aviation accidents for every 100,000 flight hours; and
 - the number of civil aviation fatalities and injuries.
- A1.11 The Safety Target Groups were changed to better cover the civil aviation sector and make them more meaningful to the aviation community and the public. There are now 13 such Safety Target Groups, each of which falls under three main “interest areas”:
- public air transport – in business to provide public transport for passengers and freight;
 - other commercial operations – in business to provide non-public transport services (for example, training, agricultural mapping, and industrial operations); and

¹⁷ The social cost of each unit of passenger exposure is defined as an economic measure of the cost of accidents to the nation. It assigns a value of statistical life (VOSL) to any deaths, rehabilitation costs from injuries, cost of property damaged or lost in the accident, and other specific external costs. The gross social cost calculated from accidents is pro-rated over the volume of aviation activity in any specified sector of the aviation community. The volume of aviation activity (the unit of passenger exposure) is measured by flying hours for each seat. For targets that are predominantly about carrying passengers, a surrogate of 500kg of aircraft weight is assessed as being the equivalent of an occupied seat.

- non-commercial operations – all non-commercial operations, such as private flying and club flying.
- A1.12 The CAA anticipates that, once the risk assessment system becomes established, increases or decreases in the overall risk profiles of aviation industry groups will be more meaningful indicators for reporting the effectiveness of the safety interventions.
- A1.13 The CAA is also carrying out a research project to assess the safety benefit provided by the full range of higher-level interventions – including training and education, inspection and monitoring, and enforcement.

Analysis of industry information

The timeliness of the reports about aviation safety has improved, but they contain little interpretative analysis to inform action. The analysis of accident data to identify causal factors has deteriorated since our 2005 report.

- A1.14 Although the timeliness of the *Aviation Safety Report* and the *Aviation Safety Summary Report* has improved, they are still largely descriptive. They contain little interpretative analysis of the information so that it can be used as a basis for further action. The CAA has only partly addressed our 2005 recommendation.
- A1.15 In June 2008, the Board asked the CAA to include, in all future safety analysis reports, a comprehensive analysis of trends in safety performance and the actions it was taking in response to trends in safety performance. However, the *Aviation Safety Summary Report* for the second and for the third quarters of 2008 still did not specifically state what the CAA was doing to address the issues. In our view, the CAA does not appear to be able to take the high-level information and identify lower-level interventions to address the issues identified.
- A1.16 The *Aviation Safety Report* also includes an analysis of causal factors for accidents. The purpose of doing this is to identify the appropriate remedial action to prevent future accidents. In our June 2005 report, we noted that, in the 18 months from 1 July 2002 to 31 December 2003, causal factors were assigned to only 37% of the recorded accidents. The proportion of air accidents for which causal factors had been assigned has now reduced. In the two-and-a-half years from 1 January 2006 to 30 June 2008, causal factors were assigned to only 56 of the 226 accidents reported (24%).

New initiatives identified

- A1.17 During our audit, we noted two initiatives where the safety data in the Management Information System was used to identify strategic risk. The first initiative, the *Agricultural Aircraft Safety Review*,¹⁸ was a once-only study that began in March 2007 and was completed in December 2008. The CAA carried out the review in response to concerns expressed by aviation industry members and CAA staff about the increased number of fatal accidents involving agricultural aircraft between 2001 and 2004, as well as an increase in the number of defects in agricultural aircraft reported to the CAA.
- A1.18 The review included an analysis of the occurrences (incidents, accidents, and defects) reported for agricultural aircraft and found there were significant increases in the accident and incident rates after the relevant Rule was changed to allow agricultural aircraft to carry heavier loads. It concluded that the CAA should rewrite the Rule to recognise both the economic advantages and the safety implications of agricultural aircraft being able to carry heavier weights. The CAA has included rewriting the Rule in its business plan for 2009/10.
- A1.19 The second initiative is ongoing. The Airlines Group is obtaining regular reports highlighting the “top five” trends in occurrences reported to the CAA in the airline sector. Where applicable, the issue is investigated further to identify and address the causes of the trends. For example, a significant increase in Traffic Collision and Avoidance System alerts (an alert given to the pilot that they are too close to another aircraft) was noted, with the highest incidence at Christchurch. The issue was discussed with the Christchurch-based airlines; they changed the way they operated and this reduced the number of Traffic Collision and Avoidance System alerts reported there.

Problems identified with the quality of the safety information

The CAA has identified significant concerns about the reliability of the safety data and is taking steps to address these concerns.

- A1.20 Bearing in mind the importance of the safety data in assessing risk, we were concerned to note that the CAA has identified problems with the reliability of the data that it holds in its Management Information System. A December 2008 paper from the CAA to the Board noted that there is “scepticism within the CAA about the reliability of the data and information that ought to predominantly inform regulatory decision making”.

18 Civil Aviation Authority (2008), *Agricultural Aircraft Safety Review*. Unpublished report, Wellington.

- A1.21 The *Agricultural Aircraft Safety Review* also found that the CAA's management of recorded occurrence information could be significantly improved to provide more useful safety management information. This was because of the difficulties experienced in searching for the relevant information in the Management Information System. This CAA database stores the occurrences on the basis of the type of occurrence (there are 14 types) and the aircraft model, but not by the type of operation. This meant that the reviewers had to decide which aircraft models could be classified as "agricultural aircraft".
- A1.22 The CAA is currently taking action to improve the reliability of the safety data. This includes the approval of a policy, in July 2008, on collecting and using safety information. Implementing this policy is a "key" project of the Safety Information Group and is expected to be completed before December 2011. However, this date is unlikely to be met. CAA staff told us that a lack of funding is constraining progress with this project. In our view, this project should be implemented as soon as possible.

Appendix 2

Developing the risk assessment tools

- A2.1 In 2005, we recommended that the CAA further develop the following three tools it used to assess the risks associated with individual operators:
- the Non-Compliance Index;
 - the Quality Index; and
 - the Client Risk Assessments.
- A2.2 We also recommended that the CAA use better indicators of the financial status of operators when assessing operator risk, both for certification and during surveillance.
- A2.3 In this Appendix, we look at:
- the Risk Assessment and Intervention Project; and
 - better indicators of financial status.

Our overall findings

- A2.4 The CAA has reviewed and improved the risk profiling of operators as part of the Risk Assessment and Intervention Project.
- A2.5 The CAA auditors, general managers, and unit managers we spoke to were confident that the system is identifying the high-risk operators.
- A2.6 The unit managers within the Airlines Group and General Aviation Group are told immediately of any changes to the risk profiles of individual operators. In addition, senior managers monitor individual operators' risk profiles each month.
- A2.7 We consider that our 2005 report recommendation, described in paragraph A2.1, has been addressed.
- A2.8 The CAA decided not to use better indicators of the financial status of operators when assessing operator risk because it could find no evidence that the financial status of the operator affects safety. However, it is still our view that cash-flow shortages increase the risk that some costs (for example, maintenance and training) will be deferred. We still consider that financial risk should be assessed as part of certification and surveillance, and that the CAA has not addressed our 2005 recommendation (described in paragraph A2.2).

The Risk Assessment and Intervention Project

The CAA's auditors and managers are confident that the new risk assessment tool is appropriately identifying risk. The tool is used to monitor operator risk and in some cases is leading to more frequent surveillance when high risks are identified.

- A2.9 The Risk Assessment and Intervention Project began in 2005 and focused on improving the way that the CAA assessed the safety risk posed by individual operators. The project was originally intended to be completed by February 2006, but the resulting new risk assessment tool was not in use until February 2007. The project cost \$109,000.
- A2.10 The new risk assessment tool results in one risk profile for each type of aviation document held by an operator. A risk profile includes up to 34 parameters (which include the main criteria used in the previous three risk assessment tools). Auditors assess about two-thirds of the parameters based on their interaction with the operator (for example, after a surveillance audit or spot check). The CAA has developed rating scores and criteria for meeting the requirements of each score for each risk parameter. These help auditors to assess operators and help achieve consistency between auditors in doing this. The other parameters are calculated electronically as new data about an operator (for example, changes in senior staff, changes in the size or scope of an operation, and safety trends) is entered into the CAA database.
- A2.11 The risk profile tool can be tailored (in terms of weighting individual parameters, rating scores and criteria for meeting the requirements of each score, and the type of parameter assessed) to meet the different profiles of the operational groups within the CAA. There was an expectation that this would happen. However, neither the Airlines Group nor the General Aviation Group has asked for the tool to be tailored for their group.
- A2.12 The concept and the model for the risk assessment tool were validated by Aerosafe Risk Management Limited of Australia.

The effectiveness of the new risk assessment tool

- A2.13 The auditors, unit managers, and general managers we spoke to had confidence in the risk profiles generated by the risk assessment tool. They thought the tool was identifying the high-risk operators.
- A2.14 We saw evidence that monthly lists of the risk profiles for each operator were given to, and were monitored by, the managers. The managers were also assessing why the operators with high-risk profile scores had such high scores.

- A2.15 Each unit manager receives an email alert when an operator's risk profile changes. These managers review the emails and make comments on the changes. Most alerts about a change in risk profile are then filed with no action needed. Some require a response and are passed to an auditor to follow up or are referred to the operator to see what they are doing to manage the risk.
- A2.16 The unit managers also review an auditor's assessment of the operator's risk at the end of each surveillance audit or spot check. We saw evidence that the frequency of the surveillance is adjusted in response to the assessed risk in some cases.

Better indicators of financial status

The CAA decided not to implement our recommendation about using better indicators of financial status because it can find no evidence that the financial status of the operator affects safety.

- A2.17 We consider that the risk assessment system should better reflect the operator's financial condition. Currently, financial risk is based on whether the operator has paid the CAA's fees (including any surveillance and certification fees). However, in our view, cash-flow shortages increase the risk that some costs (for example, maintenance, training, and replacing or upgrading aircraft) will be deferred. Cash-flow shortages could also increase the pressure for operators and pilots to fly in marginal weather conditions or at the limit of, or beyond, their capability.
- A2.18 Therefore, we considered that the CAA should assess financial risk as part of the certification and surveillance functions.
- A2.19 The CAA told us that it decided not to implement this recommendation because it can find no evidence that the financial status of the operator affects safety.
- A2.20 The CAA also believes that the auditors' certification and surveillance checks would pick up where operators are "cutting corners" because of financial difficulties. Because our audit has identified that the CAA auditors are not necessarily identifying the underlying cause of non-compliance (see paragraph A5.5), we do not agree that "cutting corners" would always be identified.
- A2.21 A number of the operators we spoke to during our audit consider that there is a link between operators under-charging for services and a likelihood that those operators would be involved in an accident.
- A2.22 We still consider that the CAA should assess financial risk as part of the certification and surveillance functions.

Appendix 3

Ensuring that auditors follow certification policy and procedures

- A3.1 In 2005, we recommended that the CAA ensure that its auditors follow the policy and procedures set down for certification.
- A3.2 In this Appendix, we look at:
- the Certification Project;
 - updates to the certification policy and procedures; and
 - issuing short-term certificates.

Our overall findings

- A3.3 The CAA has updated its certification policy and procedures. These provide a better defined process of what auditors need to do during certification.
- A3.4 However, we found differences in approach between the auditors in the Airlines Group and the General Aviation Group. The Airlines Group auditors are using the new procedures set out in the Entry Process Sheets, which provided us with evidence that auditors had followed the required steps set out in the certification policy and procedures. Because the General Aviation Group auditors are not using the Entry Process Sheets, we were not always able to establish that auditors had completed the certification process. The CAA told us that the General Aviation Group started using the Entry Process Sheets after our audit visit.
- A3.5 The unit managers in the Airlines Group and the General Aviation Group are not tailoring the Rule checklists to reflect the size and risk of the operator's organisation, as was originally intended. This means that efficiencies intended from the new certification and surveillance processes are not being achieved.
- A3.6 Both groups need to better document the results of the work carried out and the weight given to evidence provided for assessing senior persons as "fit and proper" when the evidence requires serious consideration for a judgement to be made.
- A3.7 The Act and the certification policy require the Director to be satisfied that all requirements have been met before issuing a certificate. However, we noted several examples where certificates had been issued before resolving issues that had potential safety implications.
- A3.8 We found nine examples in our sample where the CAA had issued short-term certificates (for example, for three- and six-month periods) while operators addressed the concerns that auditors had identified during the certification process. This was either to give the operator time to prepare documentation or because the CAA staff did not appear confident in the operator's capacity and resources to continue to comply with the Rules. Although issuing short-term certificates does not necessarily have safety implications, we were concerned that in some instances the CAA's regulatory role was potentially weakened when short-term certificates were issued while operators addressed identified concerns.

- A3.9 We consider that our 2005 report recommendation has been partly addressed.

The Certification Project

The scope of the Certification Project was scaled down – from a fully automated process producing a tailored checklist for each operator to “Entry Process Sheets”.

- A3.10 The CAA began the Certification Project in 2005. It was one of three projects that the CAA intended integrating to produce a fully automated process. This process would produce a tailored checklist identifying all the Rule Parts applicable to each operator. The results of the certification process were then to feed into the initial risk profile and surveillance plan for the operator to create a fully integrated system. It was originally intended that the electronic process would contain adequate checks to ensure that auditors were following the certification policy.
- A3.11 However, the scope of the Certification Project was reduced in July 2007, and the tailored electronic checklists were put on hold. The CAA considered that the manual system provided the benefits sought without having to invest in the technology necessary to fully automate the certification process. Instead, in April 2008, the CAA issued detailed procedures and Entry Process Sheets (electronic checklists covering each step in the certification process) to ensure that auditors follow the certification procedures and policy.

Updates to certification policy and procedures

The Certification Project included an update of the certification policy and procedures. The procedures are not always followed, and the adequacy of documentation needs to improve. We found examples where the CAA was issuing certificates even though compliance issues had not been resolved, contravening the Act and the CAA’s certification policy.

- A3.12 As part of the Certification Project, the CAA has updated its certification policy. The policy was issued in June 2009 and sets out the purpose and scope of certification, the phases of the certification process, and (briefly) what each phase entails. The policy also briefly addresses natural justice considerations, procedural fairness, and what needs to be done when an adverse decision is recommended.
- A3.13 The CAA also issued procedures in April 2008 that have to be followed in certification. The procedures are a “how to” guide and are tailored according to the requirements of each type of certificate. The procedures document is electronically linked to the Entry Process Sheets.
- A3.14 If completed, the Entry Process Sheets are designed to ensure that auditors follow the certification policy and procedures.

Auditor compliance with the certification policy and procedures

- A3.15 To assess whether the auditors were complying with the CAA's certification policy and procedures, we reviewed the most recent recertifications of five operators (two airline operators and three airline maintenance organisations) by the Airlines Group. We also reviewed the most recent certification of 13 fixed-wing and 13 rotary-wing operators by the General Aviation Group.
- A3.16 Specifically, we looked at whether:
- certification was planned sufficiently;
 - the operator's exposition (where applicable) was reviewed;
 - senior persons were assessed as "fit and proper" for the role;
 - an inspection of the operator's facilities, equipment, documentation, and processes had been done to test the operator's resources and capability to comply with the Rules; and
 - whether all requirements had been met before the certificate was issued.
- A3.17 We also asked a number of operators what they felt about the time that it takes to complete the certification process and what was looked at during the process.
- A3.18 Most of the operators we spoke to thought that the timeliness of the certification process was good and that the review was very thorough. Some of the operators we spoke to were concerned about the length of time that it took CAA staff to process amendments to their aviation documents. Most had been told that this was because of a shortage of resources.

Planning for certification

- A3.19 The Airlines Group was completing Entry Process Sheets, which provided us with a record that:
- planning had been carried out (this included reviewing past audit reports, reported occurrences, and other safety information about the organisation);
 - the exposition had been reviewed;
 - senior persons' qualifications and experience had been checked and a "fit and proper" assessment had been done; and
 - an inspection had been done.
- A3.20 In contrast, we were not able to establish what planning had occurred during certification for 20 of the 26 general aviation operators in our sample because the General Aviation Group auditors were not using the Entry Process Sheets or an alternative certification plan.

A3.21 We were told that the General Aviation Group has started using the Entry Process Sheets since our audit visit. We were told that workload pressures discouraged the General Aviation Group from adopting the Entry Process Sheets earlier. We do not consider this to be an appropriate reason for not adopting them. In our view, compliance with the certification policy and procedures should be required and included in staff performance agreements.

Exposition review

A3.22 The Entry Process Sheets provided us with evidence that the expositions had been reviewed in the Airlines Group.

A3.23 In the General Aviation Group, there were checklists on file to show the exposition had been reviewed for 10 operators. However, for nine operators there was no evidence of this on file. For two of these nine operators, the manager had indicated on the certification plan that the exposition did not need to be reviewed. No explanation was provided for this.

A3.24 For the remaining seven operators in our sample, the certification report indicated that the exposition had been reviewed for three rotary-wing operators but there was no documentation supporting this on file. The other four operators had agricultural aircraft operator certificates, which do not require an exposition.

Assessing senior persons for their role

A3.25 Overall, in both the Airlines Group and the General Aviation Group, the information recording the work that had been carried out to assess a senior person as “fit and proper” was inadequate. For example:

- inadequate notes from senior person interviews about what was discussed and the interviewer’s opinion of how well the applicant had performed during the interview;
- inadequate evidence of what was looked at during the inspection; and
- inadequate information recording whether the auditor considered that the applicant had the resources and capability to comply with the Rules.

A3.26 We were not able to establish whether the “fit and proper person” checks of senior persons had been completed for three operators.

A3.27 Documenting the reasons for decisions is particularly important when the files contain adverse information (for example, a Ministry of Justice report that recorded a history of serious traffic offences), or recent surveillance reports that note serious concerns with the operator’s resources and capability to comply with the Rules. These situations require the exercise of judgement and make the assessment less straightforward.

- A3.28 The Act requires the Director to be satisfied that a senior person:
- has the relevant qualifications and experience;
 - is a “fit and proper person” to hold the aviation document and have its privileges; and
 - meets all other relevant prescribed requirements.
- A3.29 When assessing whether a senior person is “fit and proper”, the Director is required to consider a number of factors, including the person’s knowledge of the applicable regulatory requirements and any convictions for any transport safety offences. In making an assessment, the circumstances of each particular applicant, including the degree and nature of the person’s involvement in the civil aviation system (their “privileges”, level of responsibility, and degree of control), needs to be considered and the appropriate weight given to the available information (its credibility, relevance, and relative importance).
- A3.30 Figure 6 outlines one example in the General Aviation Group where we had concerns about the lack of documentation on file to record how the assessment and decision was made to approve a senior person as “fit and proper” to be the chief executive of the organisation.

Figure 6

Example of a lack of documentation to support a “fit and proper person” decision

An operator was certified to carry fare-paying passengers and freight for the first time in January 2009.

The person nominated for the chief executive’s position had been convicted of driving with excess blood alcohol in August 2008, and at the time of the “fit and proper” person assessment was still disqualified from driving. He also had a previous three-month driver licence suspension in June 2006 for accumulated traffic offences.

The CAA auditor was concerned enough about the conviction history to elevate the final decision assessment to his unit manager. The unit manager and the general manager of the General Aviation Group interviewed the nominated person to determine his suitability for the role and to express their concerns about his behaviour.

The only record of this interview that we could find was a short summary in the Management Information System about the meeting with the operator.

CAA staff considered that the chief executive had accepted the message that his behaviour would not be tolerated, and “the impression was gained that he would make a serious effort to not repeat any of the things that led to the bad reports”.

In our view, there was inadequate information on file about the decision to approve the nominated person to the chief executive role. This included a lack of documentation about the weighting given to the conviction history and the effect that this had on the person’s ability to hold the certificate and their role as the chief executive, especially given there was a pattern of offences. There was no explanation on file about what the chief executive had agreed to do to give the CAA assurance that his behaviour would improve.

- A3.31 The case study at the end of Appendix 4 (see Figure 10) sets out another example from the Airlines Group where we had concerns about the lack of documentation on file supporting the assessment and decision for the chief executive role.
- A3.32 In our view, a lack of documentation about how these decisions were made could be problematic if the validity of the decision was later challenged. CAA staff told us that, where an adverse decision is made (that is, an applicant is assessed as not “fit and proper”), the assessment and reasons why the decision is made are documented in detail. We were provided with one example where this had occurred. We consider that this process of fully documenting the assessment and reasons for the decision should be extended to include situations where the evidence requires serious consideration for a judgement to be made.
- A3.33 We also noted, where a senior person who had previously been assessed as “fit and proper” was being re-assessed, a section 15A¹⁹ investigation was carried out. This investigation provided detailed analysis and support for the decisions made.

Carrying out inspections

- A3.34 We noted that there was no record on file that an inspection had been completed for five operators in our general aviation sample (two fixed-wing and three rotary-wing operators). In one instance, a desk-top review rather than an inspection had been carried out and there was no record explaining why this had been done (see Figure 7). In our view, the surveillance history with the operator suggested that an inspection was warranted.

Figure 7

Example where recertification of a general aviation operator was carried out as a desk-top review

After a routine audit of a general aviation operator carried out in November 2007 (which identified 10 findings, including an outdated exposition), the frequency of surveillance was changed to six monthly.

When the operating certificate expired in January 2008, a new certificate was issued after a desk-top review. We would have expected an inspection, given the number of findings in November 2007 and the CAA manager’s decision to increase the frequency of surveillance.

At the next routine audit (carried out in October 2008, not after six months as the CAA manager had indicated), 17 findings were identified. Some of these findings were for issues that had not been resolved since the previous audit, and were, in our view, issues that should have been corrected before the certificate was re-issued (for example, the internal quality assurance system needed improving).

¹⁹ In the interests of civil aviation safety and security, the Director may, under section 15A of the Act, require operators to undergo an investigation.

A3.35 In our sample, we found five examples (three airline operators and two general aviation operators) where we had concerns about the quality of the inspection that had been carried out. Issues were later identified that we consider should have been picked up during the certification inspection. Figure 8 outlines two of the five examples we found (one each in the Airlines Group and the General Aviation Group) where we had concerns about the quality of the work done for certification.

Figure 8

Examples where we had concerns about how thorough the Civil Aviation Authority's certification work had been

Example 1

An airline maintenance organisation had been recertified for five years from January 2007. However, the following serious concerns were identified with the organisation during surveillance in March and July 2007:

- a lack of resources, with too few staff to support the flight operations side and maintenance side of the organisation; and
- aircraft defects were incorrectly identified as “observations” and not recorded in the aircraft records or fixed by the maintenance organisation – some were for serious issues that needed to be fixed before the aircraft flew again.

We would have expected these concerns, which were ongoing, to have been identified and corrected as part of the recertification process.

Example 2

A general aviation operator was certified in June 2005. The first surveillance audit in August 2006 identified that the operations manual did not fully comply with the Rules. In 2007, the auditors found that the exposition was providing little guidance to staff in their day-to-day activities. There have been ongoing issues since then with getting the exposition up to date. In September 2008, a finding was issued to track progress.

In our view, if certification had been done properly, issues such as the exposition not complying with the Rules, and the fact that the exposition provided little guidance to the staff in their day-to-day activities, would have been resolved before the operator was certified.

A3.36 The case study at the end of Appendix 4 (see Figure 10) describes another example in the Airlines Group where we had concerns about the quality of the work carried out as part of recertification.

Meeting requirements to issue a certificate

A3.37 The Director has delegated his authority to issue operator certificates to the general managers and unit managers. We expected that a manager using the delegated authority would ensure that all issues identified during the certification process were resolved before issuing a certificate.

- A3.38 For three airline operators in our sample, the CAA manager had issued a certificate before resolving the issues:
- In one example, the certificate was issued before the exposition was completed (CAA staff had considered the safety implications of this) and there had been continuing issues with the operator’s compliance with the Rules since the certificate was issued. The CAA was concerned enough at one stage to halt the operator’s international operations until the issues were addressed.
 - In another example, the operator was certified for a six-month period without the “fit and proper person” checks being completed for the chief executive and the security manager.
- A3.39 In the General Aviation Group, the two units had various issues unresolved before issuing certificates. Overall, the Fixed Wing Unit was better at ensuring that there were no unresolved issues before issuing the certificates:
- For five rotary-wing operators, it was not clear from the documentation on file whether matters that had been identified during the certification process were addressed before issuing the certificate. Also, for one of these five rotary-wing operators, the “fit and proper person” checks were not completed until after the certificate had been issued.
 - We noted just one fixed-wing operator who had a minor finding still unresolved when the certificate was issued, and one operator for whom the “fit and proper person” checks were not completed until after the certificate was issued.

Issuing short-term certificates

The CAA was issuing short-term certificates as a risk management measure, and we are concerned that in some instances this may be done when operators have not reached the required standard.

- A3.40 The Rules provide for a certificate to be issued or renewed for up to five years. The Director may issue a certificate for a shorter period.
- A3.41 The CAA’s certification policy requires that successful new entrants to the civil aviation system are issued with a six-month certificate. This allows the CAA to carry out a compliance inspection to establish that the applicant has the resources and the capability to comply with the Rules before a longer-term certificate is issued (for up to four-and-a-half years).
- A3.42 In our view, although issuing short-term certificates is good practice for new entrants, we do not expect to see this happen for operators and organisations that have been in the civil aviation system for more than five years unless they are

undergoing a significant change to their operation or organisation (for example, a new type of operator certificate that changes the scope of their current operation).

- A3.43 However, we found nine examples in our sample where the CAA had issued short-term certificates (for example, for three- and six-month periods) so that operators could address concerns that auditors had identified during the certification process. This was either to enable the operator time to prepare documentation or because the CAA staff did not appear confident in the operator's capacity and resources to continue ongoing compliance with the Rules to issue the certificate for a longer period.
- A3.44 The CAA general managers told us that the term of the certificate is used as a risk management tool because it gives the CAA a chance to do a further thorough review of the organisation and it also puts the operator on notice that they have to lift their standards.
- A3.45 However, in a couple of instances, the operator had an action plan in place to improve their performance before the next recertification. In these cases, we were concerned that a short-term certificate had been issued when the operator did not appear to have met the required standards.
- A3.46 We were also concerned about the amount of ongoing assistance the CAA had given some operators to help them achieve compliance.
- A3.47 Figure 9 sets out two examples we found in the General Aviation Group where the CAA had issued short-term certificates so that the operators could improve their compliance.
- A3.48 The case study at the end of Appendix 4 (see Figure 10) sets out another example, from the Airlines Group, where we had concerns about the issuing of a short-term certificate and the amount of assistance the CAA had given to help the operator achieve compliance.
- A3.49 Although issuing short-term certificates does not necessarily have safety implications, we were concerned that in some instances the CAA's regulatory role was potentially weakened because it issued short-term certificates while operators made necessary improvements.

Figure 9 Examples where short-term certificates had been issued to general aviation operators

Example 1

The operator's certificate was due for renewal on 31 December 2007.

A certification inspection was carried out in October 2007. In December 2007, the manager of the CAA's Safety Investigations Unit sent a memo to the Rotary Wing and Agricultural Operations Unit manager setting out his concerns about the safety record of the operator. The operator's risk profile had increased from 16% to 31% in three months, and since 2002 there had been four fatal accidents resulting in five employee deaths.

The general manager of the General Aviation Group met with the operator's chief executive in December 2007 to discuss concerns about the company's organisation, geographical location, and operational supervision. A recent incident where an undercarriage wheel had fallen off the aircraft in flight was also discussed because it raised airworthiness and maintenance issues.

As a result of the interview, the CAA issued a certificate for a six-month period to June 2008 to give the chief executive time to address the issues. The chief executive was also required to provide an "action plan" detailing how four key issues that had been identified would be addressed.

In June 2008, the CAA issued another short-term certificate (to expire in August 2008) because the chief executive had addressed only three of the four major issues. Operational oversight of the operator's line stations still needed to be improved and a chief pilot appointed.

In August 2008, the CAA issued a five-year certificate after it had provisionally accepted the appointment of an acting chief pilot. (The acceptance of the chief pilot by the Director was still subject to the CAA interviewing the chief pilot.)

Example 2

Concerns were noted about the completeness and accuracy of an operator's records (particularly for the agricultural side of the business) during a routine audit in June 2008. When the agricultural aircraft operator certificate expired in August 2008, the certificate was renewed for only one year.

The next routine audit of this operator, in August 2009, identified 13 instances of non-compliance with the Rules, mainly in maintenance control. The CAA manager noted that there was no evidence that the concerns noted in the August 2008 audit had been addressed. The operator was put on a six-monthly audit regime with spot checks of both the air operator certificate and the agricultural aircraft operator certificate. However, an agricultural aircraft operator certificate was issued for four years.

The audit report did not explain why a four-year certificate was issued. Twelve months earlier, lesser concerns had resulted in a one-year certificate. The risk profile for the agricultural certificate was relatively high at 26%.

- A3.50 In our view, this process is contrary to the strong regulatory message that the Director is trying to send to both the industry and staff because it places the CAA in a position of educator and advisor rather than regulator. It also increases the risk that the CAA will certify operators who do not have the capability and resources to comply with the Rules, and increases the amount of future surveillance that the CAA will have to carry out to address the risk of these operators.

- A3.51 We have discussed this with the CAA. Although the CAA agrees with us in principle, it notes that many of the Rules require an operator to have a procedure or programme. If the operator is being recertified, the requirement for compliance with the Rules was met at the time that the certificate was originally issued and the Director then has to assess the adequacy of the procedure or programme. The CAA considers that there is a very high probability that the courts would not uphold a refusal to renew a certificate unless there was a significant safety risk and, because it would be seen as taking an operator's livelihood away, it would require a higher burden of proof. The CAA believes that the courts would support the issuing of short-term certificates as a means of dealing with these matters. The CAA has not tested the matter in court.
- A3.52 Although we agree with the CAA's views on this for minor non-compliance, we are concerned that the CAA has not established what constitutes a "significant safety risk". This deficiency means that the treatment of serious non-compliance by operators in our sample was not consistent. For example, the certificate of an agricultural aircraft operator was suspended because of inadequate procedures, while a larger passenger-carrying operator's certificate was issued for shorter periods for similar non-compliance. We consider that, when the "livelihood test" is applied, the "consequences of the risk" should also be given at least equal weight.
- A3.53 We also note that the CAA's certification policy states that, for re-entry or recertification, "it is important for the CAA to confirm that there is 100 percent compliance with all applicable rule requirements". It goes on to say that "it is still necessary to ensure that all certification requirements are satisfied".

Appendix 4

Increasing the effectiveness and efficiency of surveillance resources

- A4.1 In 2005, we recommended that the CAA continue with its review of its surveillance function and that, in designing a new approach, it should:
- ensure that the audit process directs resources at the highest-risk operators;
 - direct appropriate activities and interventions at high-risk Safety Target Groups;
 - give priority to the sampling project;
 - assess where it can rely on operators' own quality and risk management systems, so that audits can be targeted at higher-risk areas;
 - ensure that the depth and frequency of surveillance is adjusted to reflect operator and operation risk; and
 - develop guidelines to indicate when instances of non-compliance should be referred to the CAA's Law Enforcement Unit for further action.

- A4.2 In this Appendix, we look at:
- the Surveillance Review Project;
 - the updated surveillance policy;
 - auditor compliance with the surveillance policy;
 - how risk influenced the method, depth, and frequency of surveillance;
 - operator views on surveillance; and
 - the Surveillance Process Improvement Project.

Our overall findings

- A4.3 The CAA continued with its review of its surveillance function. This resulted in changes to its surveillance process and the introduction of an electronic surveillance tool in March 2007.
- A4.4 The new surveillance process has led to a better allocation of staff between audit and administration tasks, and this has made more time available for audit tasks. However, the full extent of the expected efficiencies has not been achieved. The electronic surveillance tool was not implemented as intended, because the checklists tailored for each operator are not generated. These checklists were to form the basis of the surveillance audits and were to be used to adjust the depth and the frequency of the surveillance based on the operators' risk profiles.
- A4.5 Although the Airlines Group and the General Aviation Group are sometimes adjusting the frequency and methods of surveillance in response to risk (especially high risk), neither group is using the new tool to adjust the depth or scope of routine audits and inspections.

- A4.6 The implementation of the Surveillance Review Project was late, there were software problems, and auditors felt it did not meet their needs. As a result of this, the units use the new electronic surveillance tool variably.
- A4.7 The Airlines Group continues to use customised audit programmes. These are made up of audit modules that are designed to cover all applicable parts of the Rules and to annually test the operator's compliance with its exposition. The modules are completed in a series of visits during the year. We saw evidence that the customised audit programmes for routine audits were repeated from year to year. We found little evidence that the Airlines Group reviews and adjusts the depth of the programmes to reflect the results of the audits.
- A4.8 The General Aviation Group continues to use paper-based checklists.
- A4.9 Not adjusting the depth of the audit means that the cause of the safety issues may not be identified and addressed, and increases the risk that surveillance may not be effective in checking that operators continue to operate safely. Not adjusting the scope means that the operator's whole operation is subjected to the same level of audit irrespective of the operator's overall level of risk or higher risk in parts of their operation. This approach is not only inefficient but it also means that surveillance may not be targeted at safety risks and may not identify safety issues and their "root cause" (see paragraph A4.35). The underlying cause of the safety issue will not be addressed and the operator will become non-compliant with the Rules again.
- A4.10 We found that one unit (the Aviation Security Unit) had tailored the system to work well, with the depth and frequency of audits adjusted in response to risk information.
- A4.11 When we checked whether the auditors were complying with the surveillance policy, we found that:
- The frequency of audit work is sometimes adjusted to reflect operator risk (increased audit work for higher-risk operators and, in some instances, decreased work for lower-risk operators). However, the depth of audits is not adjusted.
 - The auditors are still not assessing where they can rely on operators' own quality and risk management systems, so that audits can be targeted at higher-risk areas.
 - The CAA did not proceed with the sampling project so there is still no guidance available to auditors to enable them to make informed decisions on the work necessary to cover the assessed risk.
 - The surveillance policy was updated and a new version was issued in June

2009. This new policy includes a section on how the regulatory tools should be used. It should assist the auditors to know when to refer instances of non-compliance to the CAA's Law Enforcement Unit for further action. However, the policy was not adopted until June 2009 so we were not able to assess its effect.

- A4.12 We were pleased to note that the CAA has started a project (the Surveillance Process Improvement Project) to improve procedures for surveillance, including auditor competencies and training. The work done has identified that the electronic surveillance tool is effective if the Rule checklists (possibly supported by other checklists) are tailored to the type and risk of the organisation audited. Managers need to do this as part of the audit planning process. The project has identified that the managers needed training to enable them to do this.
- A4.13 The Surveillance Process Improvement Project has also identified further gaps in training and guidance for auditors and managers. Resolving the problems identified by this project will address most of our recommendations about the surveillance function. However, in our view, there is nothing that this project has highlighted that should not have been identified and dealt with earlier if there had been appropriate management oversight of the process.
- A4.14 We consider that our 2005 recommendation has been only partly addressed.

Surveillance Review Project

Auditors have experienced problems with the new electronic surveillance tool, and after major upgrades it continues to be refined. The new surveillance process has resulted in a better allocation of staff between audit tasks and administration tasks. However, the full extent of the expected efficiencies is not being achieved because the electronic surveillance tool is not being used as intended.

- A4.15 The Surveillance Review Project began in late 2004 and has cost \$1.2 million (the budget was \$1.112 million). The review focused on improving the effectiveness and efficiency of the surveillance function through:
- identifying and assigning administrative, management, and auditing tasks to the appropriate staff (the new "surveillance process"); and
 - using technology to automate the surveillance process where possible, including the use of computer tablets and computer systems that could generate checklists and record information (which feeds into the Management Information System). This technology is referred to as the "electronic surveillance tool".

Implementation of the new electronic surveillance tool

- A4.16 The new surveillance tool and updated surveillance process were launched in May 2007. Auditors immediately experienced problems with the tool, which included issues with the software, lack of training in the use of the tool, and a general lack of preparation for the change.
- A4.17 In August 2007, a second phase of the Surveillance Review Project was started to fix the issues with the software, and nine major upgrades were made to the tool. Further development of the tool was put on hold in March 2008 to give the tool some stability. The CAA considers the project to be complete. However, refinement of the tool is ongoing, and since March 2008 three further upgrades have been done.

Use of the new tool

- A4.18 The Airlines Group and the General Aviation Group are not using the electronic surveillance tool as intended:
- Most auditors are not using the computer tablets and electronic checklists during the audit. Auditors told us that the Rule checklists are not ordered to reflect the audit process, the computer tablets created a barrier when interviewing operators, and the computer tablets were not practical to use when inspecting aircraft and hangars. The auditors also noted occasions when information had been lost from the Management Information System.
 - The electronic checklists are not tailored to adjust the scope and the depth of the surveillance audit. Not adjusting the depth means that the cause of the safety issues may not be identified and addressed, and increases the risk that surveillance may not be effective in checking that operators continue to operate safely.
- A4.19 The new surveillance process has improved the allocation of work between administration staff, managers, and auditors. We also found that this new process ensures that managers review the audit work. In most cases, managers commented on how the results of the audit affected an operator's risk profile.
- A4.20 After the audit, the auditors complete the electronic Rule checklists, which are reviewed by the unit manager. Therefore, the electronic checklists are used to generate the audit report and audit findings.
- A4.21 Our findings are supported by the findings of a post-implementation review of the Surveillance Review Project, carried out by an external reviewer in April 2008.

The external review found that the expected outputs of the project had been substantially delivered, but that:

- the expected outcomes of improved surveillance efficiency and consistency had not been achieved because of incomplete customised checklists, workflow constraints, and use of alternative processes; and
- consistency of surveillance across the Groups remained an issue because some auditors were not reviewing the exposition against Rule checklists, or were not using the surveillance process and tool correctly.

A4.22 CAA staff told us that part of the reason why the new surveillance process and tool have not been as successful as intended is because the CAA underestimated, and was not prepared for, the amount of change the new process and tool would require. It required not only a change in technology but also a change to the culture of the organisation and the mind-set of managers. As noted elsewhere in this report, in our view, the CAA culture is not receptive to change. Auditors appear comfortable with past processes and, in some instances, have resisted introducing new processes.

A4.23 One unit within the CAA, the Aviation Security Unit,²⁰ was effectively using the process and tool as intended. The Aviation Security Unit focuses on using safety information to inform risk analysis and to respond to emerging risks or threats. The Aviation Security Unit manager uses this information to decide priorities for scheduling audits and surveillance. To prepare for audits of individual organisations, the manager builds an audit checklist based on the relevant Rule. Safety information and risk determine the scope and depth of the audits.

Updated surveillance policy

The surveillance policy was updated in June 2009 to more clearly state that surveillance priorities and methods should reflect identified strategic risks.

A4.24 The CAA's surveillance policy was reviewed and an updated policy document was issued in June 2009. The updated CAA surveillance policy more clearly states that surveillance priorities and methods should reflect identified strategic risks.

A4.25 The surveillance policy requires the CAA's operational groups to adjust surveillance priorities and methods – for example, to reflect the different risks associated with the type of operation or to reflect the strategies in the CAA business plan. The risk of an individual operator determines the frequency and depth of surveillance, including the level of sampling or surveillance method. A change in depth is made by changing the level of sampling done during the audit or inspection, or

²⁰ The Aviation Security Unit is responsible for certification and surveillance of airline security programmes, regulating air cargo agents, and security aspects of aerodromes, airports, and Airways New Zealand Limited.

by carrying out a different method of surveillance (for example, a special purpose audit or inspection, a spot check, or unobserved surveillance).

- A4.26 In 2005, we recommended that the CAA develop guidelines to indicate when instances of non-compliance should be referred to the CAA's Law Enforcement Unit for further action.
- A4.27 The CAA has responded by updating its surveillance policy to include guidance to CAA staff making (or recommending) decisions about the choice and application of regulatory tools. This should help auditors decide when to refer instances of non-compliance to the CAA's Law Enforcement Unit for further action. However, the policy was not adopted until June 2009, so we were not able to assess its effect.
- A4.28 The guidance is also intended to provide information to participants in the civil aviation system and other interested parties on what is taken into consideration in deciding which regulatory tool (for example, providing education, issuing a finding, or suspending an aviation document) is applied, and when it is applied.

Auditor compliance with the surveillance policy

In the Airlines Group, the Maintenance Unit was more consistent than the Flight Operations Unit in its quality of planning for audits. Both units could better document what work would be carried out, taking account of the operator's risk. Planning for audits in the General Aviation Group was poorly documented.

Planning for audits

- A4.29 When reviewing our sample of files, we assessed the quality of planning that took place. We did this to establish the extent to which the audits were tailored to address the issues and risks associated with each operator. This included how the audit would check the operator's compliance with its exposition (if applicable), the selection of the appropriate audit method, what areas the audit would cover, and the level of sampling that would be done. We consider this amount of planning necessary to ensure that the audit not only addresses the risk issues but is also effective and efficient.
- A4.30 In our view, preparing audit plans should not be a long and arduous process. For example, we noted one instance where the CAA carried out a joint audit with an operator. The audit had a plan setting out concisely (in one page) what would be audited and how it would be done.
- A4.31 The amount and quality of planning varied between the units. In the Airlines Group, the Maintenance Unit was more consistent than the Flight Operations

Unit in recording what planning had been done before the audit. There was evidence that the last audit report, findings, and occurrences had been reviewed before the audit in some cases. However, we consider that there needed to be more information about how the identified Rule aspects would be audited. For example, “maintenance specification control” was being audited, but there were no details of how the operator’s exposition ensured that the organisation was compliant and what work would be carried out to assess whether the operator’s procedures were effective.

- A4.32 Planning in the Flight Operations Unit was variable. We noted only one example in our sample of 14 Flight Operation audit reports where an audit of an airline operator had been well planned. The preparation and planning for that audit focused on identifying the matters that needed to be examined during the audit as well as identifying a number of recent issues that needed to be investigated. There were comprehensive planning documents on file, including questions to ask each senior person and a detailed list of what records would need to be sampled (and how many of each) during the audit. In other examples, we were not able to find any evidence that the audit had been planned.
- A4.33 In the General Aviation Group, it was difficult to establish how much planning and preparation had been done because of the lack of documentation on file.

How risk influenced the method, depth, and frequency of surveillance

The Airlines Group was changing the frequency and method of surveillance in response to high-risk operators. However, it was slow to identify the appropriate method and depth to establish the extent of the issues. In the General Aviation Group, the frequency of the audit had been increased for only half of the high-risk operators that we reviewed. The depth of the audits was not adjusted in response to risk.

- A4.34 To assess the extent to which individual operator risk influences the method (routine audits, spot checks, and special purpose audits), depth, and frequency of surveillance, we selected two high-risk operators from the Airlines Group and five high-risk operators from each of the Rotary Wing and Agricultural Operations Unit and Fixed Wing Unit of the General Aviation Group. We expected to see evidence that both the depth and frequency of the audits were altered to reflect the operator’s risk.
- A4.35 In the Airlines Group, for both operators, we looked at whether the CAA had increased the frequency and changed the method of audits – both had been subject to an increased number of spot checks as well as a special purpose audit. However, the surveillance carried out by the CAA was not deep or thorough

enough to get to the “root cause”, identify the extent of the risk, and take appropriate action. The case study in Figure 10 at the end of this Appendix outlines an example in the Airlines Group where we had concerns about how robust and thorough the surveillance work had been.

- A4.36 In the General Aviation Group, the CAA had increased the frequency of the audits in response to the operator’s higher risk profile for only half of the highest-risk operators that we reviewed. Some operators remained on an annual audit cycle despite their high risk profiles.
- A4.37 We found three examples in our sample of 10 high-risk operators where the surveillance was not as frequent as we expected, given the risk profile or other issues within the organisation. For example, for one operator, the CAA carried out a routine audit in 2008 that identified some serious concerns, including a lack of ownership of the organisation’s new exposition (which had been adopted in 2007), not complying with its exposition, and management systems not keeping up with the rapid growth of the organisation. However, there was no evidence that surveillance was increased in response to these concerns. The operator remained on an annual audit cycle.
- A4.38 We also found some cases where the frequency of surveillance had been reduced in response to the operator’s low risk profile (for example, to every 18 months).

Guidance provided to auditors about the level of sampling that is needed

- A4.39 The level of sampling depends on the judgement of each auditor. At the time of our 2005 report, there was no sampling methodology to guide auditors in exercising their judgement about sampling. The review of the surveillance process was to include a sampling methodology project, but this project has been deferred indefinitely. The adequacy of auditor sampling techniques is within the scope of the current Surveillance Process Improvement Project.
- A4.40 Most of the general aviation operators we spoke to noted variations between what the auditors looked at during the audit. The operators thought that the Maintenance Unit auditors were more thorough or “picky” than the Flight Operations Unit auditors, and that the Rotary Wing and Agricultural Operations Unit auditors were more thorough or “picky” than the Fixed Wing Unit auditors.

Operator views on surveillance

Operators told us the surveillance process could be further improved.

- A4.41 When we asked the operators what they thought about the annual surveillance audit, all supported the concept and appreciated the assurance the audits gave

them. However, a number thought that the audits could be more robust. A couple of operators said that their own internal quality assurance systems or audits by other quality assurance organisations identified more safety issues than the CAA audits.

- A4.42 A number of operators thought that the CAA auditors spent too much time looking at paper and not enough time checking what was actually happening. Most of the operators we spoke to thought the spot check was the most effective form of surveillance because it better portrayed their normal operations. Most commented that the announced audits gave operators time to prepare and get their records in order for the visit. Several operators went as far as supporting a “secret shopper” concept, where unidentified CAA auditors would take a flight with the operator.
- A4.43 Overall, the operators we spoke to had not noticed a change in how the audits were carried out in the last couple of years. There were some complaints about the auditors using the computer tablets. The operators thought that these were less efficient and made the audit take longer.

Surveillance Process Improvement Project

The CAA has started another project to review and improve the surveillance process. Resolving the problems that have been identified through this review will address most of our recommendations in this report about surveillance.

- A4.44 During fieldwork for our latest audit (in September 2009), the CAA started a project to review and improve the surveillance process, and also to improve auditor competencies and training. The CAA’s executive team (which includes the chief executive officer and the group general managers) has identified this project as a high priority.
- A4.45 The work that was completed in scoping the project established that the electronic surveillance tool was effective if the Rule checklists (supported by other checklists, where appropriate) were tailored to the type and risk of the organisation being audited. The managers needed to do this tailoring as part of the audit planning process, which will require training. Further gaps in training and guidance for auditors and managers were also identified. They needed training in the use of risk and safety information so that they could alter the depth, scope, and frequency of audits. They also needed training and guidance in how to set up audit modules and checklists.
- A4.46 Resolving the problems that have so far been identified from the initial stages of the Surveillance Process Improvement Project will address most of our

recommendations in this report about the surveillance function. In our view, if there had been appropriate oversight by senior managers of the surveillance function, these issues would have been addressed earlier without needing a further project.

- A4.47 The following case study (see Figure 10) highlights various certification and surveillance issues that we found in our audit. It also shows that not carrying out certification work thoroughly can lead to increasing risk for the operator and more surveillance work than would otherwise have been necessary.

Figure 10

Case study, from our sample, of the Civil Aviation Authority's certification and surveillance work with an airline operator

We looked at the certification and surveillance work that the CAA had carried out for both the flight operations (airline operating certificate) and the maintenance organisation for an airline. We were concerned about the amount of ongoing assistance that the CAA gave this airline to help it achieve compliance for recertification, and the frequency and depth of surveillance activity.

Special purpose audit

The CAA carried out a special purpose audit of the airline in May 2008 in response to issues identified with pilot competency as part of a routine surveillance audit. The special purpose audit, which focused on the training and supervision of pilots, identified that the flight operations manager was unaware of the requirements of the Rules and pilot competency checks had not been kept up to date.

In our view, these findings should have raised concerns about the level of oversight by the chief executive and the effectiveness of the operator's quality assurance function. The scope of the special purpose audit should have been extended to cover the whole operation. The wider implications, however, did not appear to have been considered. The CAA unit manager noted on the audit report:

... the Special Purpose Audit will prove very valuable to [operator] as it has been conducted just before the recertification which means that the non compliance items have been detected and will be closed before the recertification can take place.

Recertification

It was not until two months after the special purpose audit that the extent of the problems were identified by another auditor while interviewing the senior persons as part of the recertification process (the air operator certificate expired in July 2008). The interviews identified some serious issues, including a lack of day-to-day management and an inadequate quality assurance function.

A section 15A* investigation followed, which found that senior staff (including the chief executive) were not competent to hold their positions. The chief executive had been assessed as competent when the maintenance organisation was recertified in May 2007. The operator was told it did not meet the requirements for recertification, and, to qualify for recertification, a major overhaul of the company was needed.

The operator was required to prepare a plan to address the issues, which included replacing the chief executive and improving the quality assurance system. A certificate was issued for a 6½-month period a week later in July 2008.

We were not able to find evidence that the safety implications of these findings were considered, and we were not able to find any analysis on file of the CAA's reasoning and judgement that the operator had the resources and capability to comply with the Rules at the time the certificate was issued. In our view, there had not been enough time for the operator to overhaul its organisation, and it is doubtful that the operator would have met the requirements for recertification.

The "fit and proper person" check of senior staff was not completed until January 2009 (when the certificate expired). The Ministry of Justice report for the chief executive was not received by CAA staff until the day before the certificate expired, which was the same day that the CAA advised the operator that the certificate would be renewed. The Ministry of Justice report showed a history of driving convictions dating back to 1971, which included a conviction for driving with excess blood alcohol causing injury and careless or inconsiderate driving causing death or injury. The most recent conviction (for exceeding the speed limit) was in August 2007.

There was a memo on file from an Airlines Group auditor to the acting manager of the CAA's Flight Operations Unit, indicating he was not sure whether this information had been considered in the assessment of this person's suitability to be the chief executive. We were not able to locate a response to this question on file, nor was there any record of the factors that had been taken into account and the weight given to the person's driving record in deciding that they were "fit and proper" to be chief executive of the airline. The general manager of the Airlines Group told us that he was aware of the conviction record and he did not consider that it had safety implications.

A nine-month certificate was issued to the operator on 30 January 2009. At the same time, the CAA issued a "milestones" document to the operator, setting out "key" action items that the airline had to achieve during the nine-month period. These action items included a comprehensive review of the exposition and submitting a quality assurance programme. Because both of these requirements are normally expected to be met before recertification, we were concerned that a short-term certificate had been issued to allow the airline time to raise its competence to the required standards.

Surveillance programme

At this time, the CAA finally revised its audit programme for this airline and a programme of planned oversight was put in place to address the increased risk of the airline. We reviewed the training component of the audit programme and the CAA's two checks of pilot proficiency that were done in April 2009. We noted the following concerns about the depth of these audits:

- The airline's training manual was not reviewed as part of the training audit because it was being redrafted as part of the exposition review. This meant that several Rule Parts were noted as "not observed", including some that appeared to be fundamental to assessing the adequacy of training. For example:
 - Rule 135.91(d) – Each holder of an air operator certificate shall establish a flight crew training programme; and*
 - Rule 135.561 – Each holder of an air operator certificate shall ensure that each of its crew members are adequately trained, current and proficient for each aircraft, crew member position, and type of operation, in which the crew member serves.*
- There was no record of the number of training records sampled or the time frame covered.

One finding was noted as a result of the training audit. The chief executive had conducted a flight test from a crew member position even though his medical certificate had been revoked.

The manager of the CAA's Flight Operations Unit noted:

Compliance with these audit findings will ensure [operator] training standards are maintained. Generally operational standards are satisfactory.

From the audit work that has been recorded as having been carried out, we are not sure how the manager could have reached this conclusion.

A check of pilot proficiency completed at the same time (within a different audit module) identified two findings, one of which was assessed as critical and the other major. The critical finding was because the pilot descended below the lowest safe altitude.

* In the interests of civil aviation safety and security, the Director may, under section 15A of the Act, require operators to undergo an investigation.

Appendix 5

Findings and prompt action for non-compliance

- A5.1 In 2005, we recommended that:
- CAA auditors issue a finding for all identified instances of non-compliance and non-conformance; and
 - the CAA establish a system that ensures that operators take quick and effective corrective action when auditors tell them to do so. This system should include re-assignment of responsibility for that function when an auditor leaves the CAA.

- A5.2 In this Appendix, we look at:
- issuing findings;
 - timeliness of issuing findings;
 - consistency in issuing findings;
 - identifying the cause of the non-compliance; and
 - timeliness of following up findings.

Our overall findings

- A5.3 The CAA has implemented a system to ensure that operators appropriately address findings.
- A5.4 There is significant variation in the number of findings issued by auditors from within the same units. We expected the unit managers to have investigated the reason for these differences and to have taken action to moderate the number of findings issued by the auditors they are responsible for. In our view, not doing so raises questions about the quality of the surveillance audits carried out, and also, from an operator's point of view, raises questions about the consistency and predictability of the regulatory focus.
- A5.5 Corrective actions that CAA auditors had identified to resolve the findings were not always addressing the "root cause" of the findings. This means that the reason for the non-compliance will not necessarily be addressed and there is an increased risk that the operator will revert to being non-compliant.
- A5.6 The number of major and minor findings not being closed by their due dates has been increasing since our 2005 audit, and the CAA is falling well short of its target. In our view, the CAA needs to address the timely closing of findings, because while the findings remain unaddressed the operator is non-compliant with the Rules and could potentially pose a higher safety risk.
- A5.7 We consider that our 2005 report recommendations have been only partly addressed.

Issuing findings

We found instances where auditors had not issued findings as required, and instances where it was not clear why there were no findings in response to problems found during inspections.

- A5.8 Recording all instances of non-compliance in the electronic surveillance tool and issuing findings is important because:
- the number and severity of findings recorded affects an operator's risk profile, so not recording findings reduces the risk profile of the operator; and
 - the CAA intends to start analysing the type and frequency of findings, so not recording them may hide an issue that needs to be dealt with (for example, through education or changing a Rule to clarify its intent).
- A5.9 The new surveillance process is designed so that, if non-compliance with the Rules is identified and entered in the tool by the auditor, a finding is generated. Administrative staff now monitor the closure of findings and follow up on overdue findings by sending reminders to the operators. The auditor who issued the finding is responsible for checking that appropriate evidence is provided to the CAA that the operator has fixed the non-compliance. We saw evidence that this was happening.
- A5.10 However, auditors were still not always noting instances of non-compliance in the system and issuing findings. During our audit, we found instances in the Airlines Group and the General Aviation Group where findings had not been issued for identified non-compliance. For example, for one general aviation operator, an auditor found that the main rotor blade of a helicopter had been in use for more than 20 hours beyond its airworthiness limit. No finding was issued for this non-compliance. In another example, for an airline operator, the auditors noted some problems with the adequacy of procedures for co-ordinating crew during an en-route audit. The manager noted that the operator needed to review these procedures, but it was not clear why no finding was issued.
- A5.11 The operators we spoke to during our audit were dissatisfied that they were not receiving the findings at the end of the audit, but rather that findings were emailed or sent several days – or in one case up to two weeks – after the audit was completed. Several operators also told us that some of the findings were not expected and had not been discussed with them at the time of the audit. This is contrary to the CAA's internal policies.

Timeliness of issuing findings

We found examples of findings where the issues identified dated back several years but were not identified in earlier audits or certifications.

- A5.12 For six of the operators in our sample, we found examples where the operator had been non-compliant for several years before a finding was issued. These instances of non-compliance should have been identified at earlier audits or as part of certification. For example, findings were issued:
- during a spot check in December 2008, because it was noted that airworthiness directives had been inappropriately recorded and certified in the aircraft logbooks since December 2006;
 - in March 2007, because there was no evidence of an assessment and record of the manufacturer's service information since April 1998; and
 - because an aircraft was operated from the left-hand seat and the flight manual required operation from the right-hand seat. For 15 years, the aircraft had been certified and had been operated from the left-hand seat.

Consistency in issuing findings

We found bigger variations in the numbers of findings issued by auditors from within the same units than we had expected.

- A5.13 Auditors are required to apply judgement when deciding what the Rules mean and whether the procedures followed by the operators meet the Rule requirements. This means that there will not be complete consistency between auditors.
- A5.14 Several of the operators we spoke to disagreed with the auditor's interpretation of some Rules and were concerned about the confrontational attitude some CAA auditors adopt when the operators challenge them about Rule interpretation. We were told that there was a general concern within the industry that challenging the auditor would result in the CAA being more critical of the operator.
- A5.15 The operators also expressed concern about some auditors finding what the operators considered to be "obscure" Rules that did not necessarily have a safety focus – for example, the necessity for the maintenance controller to check the wording in the documentation provided to the operator from the maintenance provider, and to ensure that it was the original documentation rather than a photocopy.

- A5.16 We consider that, to retain credibility as a regulator, the CAA needs to ensure that its auditors' interpretation and application of the Rules is consistent enough to ensure that:
- the operators know what is expected of them and how the Rules will be interpreted;
 - the minimum requirements for compliance with the Rules are distinguished from what the CAA considers to be best practice; and
 - the number and type of findings (instances of non-compliance identified) do not depend on which particular auditor is doing the surveillance.
- A5.17 These expectations are in line with the CAA's surveillance policy, which requires both consistency and predictability in the way the Rules are applied.
- A5.18 During our audit, we noted evidence from our file reviews, from interviews with a sample of operators, and from the information provided to us by the CAA that, allowing for differences in judgement, there was more than the expected variation in the number of findings issued by auditors from within the same units and also between the units.
- A5.19 For example, our analysis of the data provided by the CAA on the number of findings issued from 1 July 2005 to 30 June 2009 showed that:
- in the Flight Operations Unit in the Airlines Group, the most findings issued by an auditor was 158 and the next highest number in the same period was 40; and
 - in the Rotary Wing and Agricultural Operations Unit in the General Aviation Group, the most findings issued by an auditor was 338 and the lowest number of findings issued in the same period was 128.
- A5.20 We also noted examples in our sample of operators where the number of findings for the same operator increased significantly when certain auditors were carrying out the surveillance. For example, an operator was issued with four findings in 2005, one finding in 2006, and 24 findings in 2007. The audit in 2007 was carried out by different auditors and 19 of the findings related to one aircraft.
- A5.21 We noted a difference in approach between the auditors of rotary-wing and fixed-wing aircraft. At times, the auditors of fixed-wing aircraft found minor matters of non-compliance but did not issue a finding, but the auditors of rotary-wing aircraft issued findings for similar minor non-compliance. For example, the auditors of fixed-wing aircraft identified, but did not issue a finding for, a failure to have a placard showing the location of a fire extinguisher in the aircraft, and for incorrect completion of training records. We found several examples where auditors of rotary-wing aircraft had issued findings for similar minor matters,

such as for a failure to have placards showing the location of the first aid kit, and documents incorrectly filled out or not signed.

- A5.22 In our view, the level of inconsistency we found in the number of findings issued by auditors suggests that auditors are taking different approaches to surveillance. That is:
- some auditors may not be carrying out audits to a sufficient depth to identify non-compliance;
 - some auditors may not be issuing findings when they identify non-compliance; and
 - some auditors may be issuing a series of findings for individual instances of non-compliance when one finding that addresses the “root cause” may suffice.
- A5.23 We expected the CAA’s unit managers to have investigated the reason for these differences and to take action to moderate the number of findings issued by the auditors they are responsible for. In our view, not doing so raises questions about the quality of the surveillance audits carried out and also, from an operator’s point of view, raises questions about the consistency and predictability of the regulatory focus.

Identifying the cause of the non-compliance

We found many examples where the cause of the non-compliance had not been clearly identified, and therefore the action needed to rectify the non-compliance was not obvious.

- A5.24 Under the surveillance policy, auditors are required to direct operators to the cause of the finding, as well as to any system deficiency or error that contributed to the non-compliance.
- A5.25 We noted many examples of findings within the General Aviation Group where the cause of the non-compliance was not clear and the corrective action required to address the non-compliance was ongoing. For example, for one operator, the auditor found that the pilots were not using the company procedure for determining payload, and some aircraft did not have a copy of the relevant chart for tracking this. The auditor identified the cause as being inadequate control and monitoring. The corrective action required by the auditor was to survey company aircraft and ensure that payload charts were available. The corrective action may have solved the availability of the chart but not necessarily why the procedure for determining payload was not being used nor ensured that it was used in the future.

- A5.26 We also noted examples where there were a large number of findings for one single aircraft. A corrective action had been identified for each instance of non-compliance, but the cause for so many findings on a single aircraft was not addressed. For example, an audit resulted in 23 findings, 12 of which related to maintenance issues on one aircraft. The auditors noted that, while most maintenance-related findings were relatively “minor”, they showed that the company needed to pay more attention to compliance with the Rules. However, the auditors did not appear to consider possible system deficiencies that could have caused the individual issues on the aircraft.
- A5.27 In our view, it is important that corrective actions for findings address the underlying cause of the findings. Otherwise, the reason for the non-compliance may not be addressed and there is a risk the operator will revert to being non-compliant.

Timeliness of following up findings

The CAA is falling well below its target for closing all findings by the due date, but those not closed on time tend to be minor and most are closed within one month of the due date.

- A5.28 We saw evidence on the files that findings were monitored to ensure that the appropriate corrective action was carried out. However, the CAA is falling well short of its target for closing all findings by the due date. The CAA annual report for 2007/08 reported that, for both the Airlines Group and the General Aviation Group, “[i]n 2007/08 and 2006/07, the rate of on-time implementation of corrective action was almost static at 57% and 56% respectively”.²¹ The rate reduced to 46% in 2008/09. The target is 100%.
- A5.29 Since 2006/07, fewer of the major or critical findings – and more of the minor findings – are not closed by their due date. Most overdue findings are addressed within one month after their due date. However, since 1 July 2005, there have been 33 findings that were not addressed for more than six months after their due date.
- A5.30 We were also concerned to note the deterioration in addressing critical findings for 2008/09. Of the critical findings identified during that year, only one was closed by the agreed date, two were closed within a month of the due date, six within two months, and five within three months.²² These delays in addressing critical findings are particularly concerning given that a critical finding is defined by the CAA (in its surveillance policy) to be “an occurrence or deficiency that caused, or on its own had the potential to cause, loss of life or limb”.

21 Civil Aviation Authority of New Zealand (2008), *Annual Report 2007/08*, Wellington, page 23.

22 Civil Aviation Authority of New Zealand (2009), *Annual Report 2008/09*, Wellington, page 29.

Appendix 6

Improving the use of resources

- A6.1 In 2005, we recommended that the CAA's auditors ensure that they recorded all the time that they spent on the surveillance function.
- A6.2 We also recommended that the CAA:
- ensure enough investment in training CAA staff so that they develop and maintain the appropriate skills to carry out their functions;
 - review its staffing levels when the current review of the surveillance function has been completed, to ensure that it has adequate resources to carry out this function;
 - ensure that the operational groups comply with the CAA's generic policies and procedures (particularly for quality assurance);
 - promote consistent standards of quality and practices throughout the operational groups by ensuring that they address internal audit findings; and
 - ensure that the internal audit section is appropriately staffed to enable the CAA's operations and auditors to be audited more regularly.
- A6.3 In this Appendix, we look at:
- training for CAA staff;
 - staffing and resource levels for certification and surveillance;
 - planning for auditors' time and measuring the effectiveness of certification and surveillance;
 - quality assurance; and
 - internal audit.

Our overall findings

- A6.4 CAA managers had advised auditors to make sure that they were recording all the time that they spent on surveillance. The managers were confident that the auditors are now doing this. In our view, although the managers consider that auditors record all the time that they spend on the surveillance function, there is evidence to suggest this issue has not been fully resolved. We therefore consider that our recommendation, detailed in paragraph A6.1, has been only partly addressed.
- A6.5 We also found that:
- Training has focused on maintaining auditor proficiency in aviation (that is, pilot competency or aircraft engineer skills) rather than auditing skills. Detailed training was provided to staff on how to use the new electronic surveillance tool.

- The Airlines Group needs to improve its planning for resources spent on certification and surveillance. This group also needs to analyse the variations between targets and actual hours spent on certification and surveillance.
- The CAA has had trouble recruiting sufficiently qualified auditors.
- The general managers of the Airlines Group and General Aviation Group considered that the staff levels were adequate for carrying out certification and surveillance work but not for also supporting the rules development programme or improving essential guidance material.
- The number of reported hours that auditors spent on surveillance were fewer than we expected. It was not possible for us to form a clear view on the productivity of auditors because the CAA did not have reliable information about how much time auditors spent on certification and other tasks.
- Quality assurance reviews are built into the new certification and surveillance processes. However, they are only effective when the new processes (and relevant tools) are used. Also, the robustness of the review depends on the individual manager. The lack of supporting evidence on file makes us question the basis on which managers are making their assessments. We also consider that reviews by managers in the certification process need to be more robust.
- The internal audit unit was disbanded in June 2009. An Internal Audit Service Provider was appointed for a term of two years. Its engagement began in October 2009.

A6.6 We consider that our recommendation, detailed in paragraph A6.2, has been only partly addressed.

Training for Civil Aviation Authority staff

Training has focused on the aviation technical proficiency of auditors, with not enough time given to developing audit skills and to understanding a risk-based audit methodology.

- A6.7 We were told by the managers that a lot of time is spent training the auditors so that they are able to maintain their technical proficiency. However, this time has been reduced in the 2009/10 budget in response to a projected significant reduction in revenue from fees and levies because of the economic downturn.
- A6.8 All CAA auditors are required to attend and pass a recognised “lead auditor” course. In response to the poor feedback by participants, the CAA is currently looking for alternative providers. At the time of our audit, the CAA was considering using the lead auditor course provided by the “CASA Academy” (Australia’s Civil Aviation Safety Authority).

- A6.9 The Director is also providing training on the role of the regulator. We observed the first session of this series of training. In our view, the Director needed to more forcefully convey his expectations of auditors for the certification and surveillance functions, rather than what the auditors considered was appropriate.
- A6.10 All the auditors have been trained to use the new electronic surveillance tool.
- A6.11 Work carried out for the Surveillance Process Improvement Project has identified that the existing audit training available for auditors does not cover:
- training on Rules applicable to the auditor's particular role;
 - communication skills;
 - audit report writing;
 - analysis of findings, causes, and actions;
 - conducting an audit;
 - sampling;
 - interpreting the rating scores and associated criteria for assessing operator risk to ensure consistency in applying the risk scores;
 - use of risk information (by managers); and
 - setting and changing audit module scope, depth, and frequency.
- A6.12 In our view, the CAA needs to give priority to providing training for auditors to ensure that they have the appropriate skills, including risk-based auditing skills, to effectively carry out certification and surveillance.

Staffing and resource levels for certification and surveillance

The managers have reviewed staffing levels and consider them to be adequate for certification and surveillance work, but not for necessary additional tasks. The information provided to us indicates that the time spent on surveillance was much lower than we expected.

- A6.13 Additional auditors have been employed since our last audit, especially in the General Aviation Group. The general managers of the Airlines Group and the General Aviation Group thought that the levels were adequate for carrying out certification and surveillance work but not for also supporting the rules development programme or improving essential guidance material.
- A6.14 The CAA told us that it is difficult to recruit appropriately qualified auditors.
- A6.15 Based on the hours spent on surveillance reported in Figure 12 and the staffing levels in Figure 1, in the year ended 30 June 2009, the Airlines Group auditors

spent, on average, 359 hours on surveillance audits. The General Aviation Group auditors spent, on average, 169 hours on surveillance audits. We have discussed this apparently low workload with the CAA. It told us that the average hours for the General Aviation Group auditors do not include travel time. This means that the hours would double for the General Aviation Group auditors. However, even doubling the hours still means that, in total, fewer hours were spent on surveillance than we expected. It was not possible for us to form a clear view on the productivity of auditors because we were not able to establish with any certainty how much time auditors spent on certification and other tasks.

Planning for auditors' time and measuring the effectiveness of certification and surveillance

The Airlines Group needs to improve its planning for resources spent on certification and surveillance, and analyse the difference between its target and actual hours. The current measures of the effectiveness of certification and surveillance work do not give assurance that auditors' time has been appropriately targeted, nor do they provide any information about the effect of surveillance and certification on operators' behaviour.

- A6.16 The Airlines Group and the General Aviation Group assess the:
- number of certification requests that each group will receive during the year (this includes new certifications, recertifications of operator aviation documents, and approving changes to the conditions in the aviation documents); and
 - number of hours that the auditors will spend on surveillance.
- A6.17 The number of recertifications can be predicted by analysing certificate expiry dates, but the number of changes to aviation documents is driven by demand and is less predictable. Figure 11 shows the actual number of certifications, recertifications, and changes to aviation documents completed for the last five years and the "target" or estimated number of certifications and recertifications to be completed in that time.
- 6.18 We note that the Airlines Group's certification targets have not been increased in the last five years, despite the fact that the numbers of requests for certification have been consistently increasing and are significantly above the target figures. For 2008/09, the actual number of requests was almost double the 2008/09 target. In our view, if the Airlines Group's planning for resources is to be meaningful, then estimates need to be more realistic. The General Aviation Group is estimating its projected certification workload better than the Airlines Group.

Figure 11
Annual numbers of certification requests received by the Airlines Group and the General Aviation Group, and targets for this work

| Airlines Group | | | General Aviation Group | | |
|----------------|--------------------|---------|------------------------|--------------------|-----------|
| Year | Number of requests | Target | Year | Number of requests | Target |
| 2008/09 | 922 | 200-500 | 2008/09 | 912 | 1000-1400 |
| 2007/08 | 743 | 200-500 | 2007/08 | 1285 | 1000-1400 |
| 2006/07 | 904 | 200-500 | 2006/07 | 1518 | 1000-1100 |
| 2005/06 | 663 | 200-500 | 2005/06 | 1141 | 800-900 |
| 2004/05 | 612 | 200-500 | 2004/05 | 940 | 1000-1300 |

Note: The figures include recertification and changes to aviation documents.

- A6.19 Figure 12 shows the number of actual hours that the Airlines and General Aviation Groups have spent on the surveillance function in the last five years and their “target” or estimated hours that they planned to spend on surveillance.

Figure 12
Annual reported hours for surveillance work by the Airlines Group and the General Aviation Group and targets for this work

| Airlines Group | | | General Aviation Group | | |
|-----------------------|--------------|--------------|------------------------|--------------|--------------|
| Year | Actual hours | Target hours | Year | Actual hours | Target hours |
| Routine audits | | | | | |
| 2008/09 | 5025 | 4000-5000 | 2008/09 | 3384 | 3500-4500 |
| 2007/08 | 4348 | 4000 | 2007/08 | 3138 | 3500-4500 |
| 2006/07 | 5139 | 4000 | 2006/07 | 2821 | 5450* |
| 2005/06 | 5054 | 4000 | 2005/06 | 3291* | 3066 |
| 2004/05 | 6823 | 4000 | 2004/05 | 2847 | 3000 |
| Spot checks | | | | | |
| 2008/09 | 333 | 200 | 2008/09 | 811 | 1500-1900 |
| 2007/08 | 208 | 200 | 2007/08 | 473 | 1500-1900 |
| 2006/07 | 155 | 200 | 2006/07 | 1058 | 2320* |
| 2005/06 | 35 | 200 | 2005/06 | 1483* | 2320 |
| 2004/05 | 68 | 200 | 2004/05 | 1703 | 1000 |

* These hours are not directly comparable to other targets and actual hours in this figure because the General Aviation Group's 2006/07 target and 2005/06 data included travel time to and from an audit or inspection.

- A6.20 The data in Figure 12 shows that, for the last five years, the Airlines Group's targets for spot checks have not changed. This Group's targets for routine audits have also been the same each year except for 2008/09. In our view, the failure to adjust targets again raises questions about how robustly the Airlines Group plans its work. There was also no explanation about why the hours spent on routine surveillance in 2007/08 was 21% less than the average of the other four years.
- A6.21 The General Aviation Group's targets for surveillance work were usually adjusted to reflect the projected changes in workload each year. However, we note that, although there are fluctuations because travel time was included for 2005/06 and the 2006/07 targets, total surveillance time (hours estimated for routine audits and spot checks) was projected to increase from 4000 to 5000-6400 hours. These targets have not been met. The actual hours decreased from 4550 hours in 2004/05 to 3611 hours in 2007/08, but increased again to 4195 hours in 2008/09. We also note that the overall decrease in hours is actually larger than shown in Figure 12 because auditors' time recording has improved in the last five years (previously auditors were not recording all time they spent on surveillance). We were not able to find any reason why the hours have reduced.
- A6.22 The managers we spoke to were confident that auditors were recording all the time that they spent on certification and surveillance work.
- A6.23 In our view, there is evidence that suggests this is not the case. The unexplained reduction in hours, discussed in paragraph A6.21, together with the apparently low number of hours recorded by auditors (see paragraph A6.15), suggests that auditors are still not recording all their time spent on surveillance.
- A6.24 We also noted that, for the Airlines Group and General Aviation Group, the effectiveness of their certification and surveillance work is measured by the number of certification requests that have been done and by the number of hours spent on surveillance and spot checks. The quality of both certification and surveillance is measured by the results found by the CAA's internal audit unit.
- A6.25 In our view, these are not good measures of the effectiveness of certification and surveillance. The measures do not give assurance that surveillance resources have been appropriately targeted at the higher-risk operators, nor do they provide any information about the effect of the surveillance and certification on operator behaviour.
- A6.26 The CAA is currently looking at addressing this issue, and in future it intends to measure the effect that surveillance has in reducing operator risk profiles. In our view, the risk profiles could also be used to better target the amount of resource assigned to surveillance and certification work.

Quality assurance

Quality assurance activities are not rigorous enough to ensure that auditors use the CAA's policies and procedures, that the scope and depth of the audits is robust enough to identify significant safety issues, and that auditors are consistent in their approach.

- A6.27 Because of the lack of documentation, we were not sure how the unit managers in the General Aviation Group were ensuring that their auditors were following the CAA's policies and procedures for both certification and surveillance.
- A6.28 There was not enough information to determine the scope and depth of audit work done. We asked the General Aviation Group unit managers how they obtained assurance that a quality audit had been done. They told us that the auditors briefed them at the end of each audit and they "got a good feel for" the amount of work done from these briefings and from the audit reports. We consider that a verbal briefing is not enough and that a record should be maintained of the amount of audit work done, an analysis of what the work found, and how it linked to the overall recommendations and findings.
- A6.29 The Maintenance Unit of the Airlines Group was better than the Airline Flight Operations Unit at recording this information as part of the audit report. However, the amount of information the auditors in the Airlines Flight Operations Unit recorded varied significantly. Again, there needs to be better guidance on the amount of information that needs to be recorded about what was looked at during the audit (including both the scope and the depth of testing), the analysis of the findings, and the effect that this has on the risk profile and future surveillance work. Overall, the information that is recorded is inadequate for the manager to be able to assess that the recommendation is based on robust evidence and analysis.
- A6.30 We also noted a significant difference in the number of findings that auditors were issuing. The difference is significant enough to suggest that the auditors are taking a different approach (see paragraphs A5.13-A5.23).

Internal audit

The internal audit function was disbanded in June 2009 and an Internal Audit Service Provider began work in October 2009. The internal audit programme does not include giving the Board assurance that the overall goals and objectives of the CAA are being achieved.

- A6.31 Internal audit provides the Board with assurance that the CAA is complying with policies and processes. In the past, this internal audit function was largely carried

out by the Professional Standards Unit of the CAA, although there was a period from August 2006 to July 2007 when the CAA seconded services from Ernst & Young. During this time, the internal audit activities were supervised by CAA staff and Ernst & Young used the CAA's internal audit practices.

- A6.32 The internal audit programme was approved by the Board's Audit and Risk Management Committee, and the results of the internal audits were reported to this Committee. The annual audit programme covered all the units within the CAA. However, we note that the internal audit did not detect the underlying problems with the quality of the data recorded in the Management Information System.
- A6.33 In April 2009, the Director recommended that the Board outsource the internal audit function for two years. The decision was endorsed by the Board's Audit and Risk Management Committee. The internal audit unit was disbanded in June 2009.
- A6.34 An Internal Audit Service Provider was appointed and began its engagement in October 2009. A member of the Professional Standards Unit has been retained to provide continuity and to act as the planner, co-ordinator, and liaison between the Board's Audit and Risk Management Committee and the Internal Audit Service Provider.
- A6.35 In our view, the annual internal audit programme is focused on checking procedural compliance and needs to be extended to assess how well the Groups are contributing to the CAA's strategic priorities and the extent to which the overall goals and objectives of the CAA are being achieved.

Appendix 7

Actions the Civil Aviation Authority will take

The Civil Aviation Authority provided us with the following list of actions it will take in response to the recommendations we have made in this report.

| | |
|-------------------------|---|
| Recommendation 1 | <i>The CAA accepts this recommendation and will introduce improved measures of the quality and effectiveness of its certification and surveillance outputs in 2010/11. These measures are detailed in the 2010/13 SOI and will be introduced with effect from 1 July 2010 as performance standards for the relevant output class 2 activities in the 2010/11 year. Performance against the measures will be reported to the Audit and Risk Management Committee and will be subject to internal audit. The CAA also intends to conduct additional work on the development of measures to better assess the effectiveness of surveillance and certification in achieving its outcomes. Capability for this work will be sought as part of the current review of CAA funding.</i> |
| Recommendation 2 | <i>The CAA accepts this recommendation. The charter of the Board Audit and Risk Management Committee will be amended (by 3 August 2010) to make the oversight of such outputs a more explicit role of the Committee. Reporting requirements for the SOI output measures for certification and surveillance will be developed and the new reports submitted to the A&RM Committee for the first time at its meeting scheduled for 10 Dec 2010. Note that there is no A&RM committee meeting in November 2010 so the first meeting that the results of the first three month's monitoring can be reported to is in December. See also the response to recommendation 1.</i> |
| Recommendation 3 | <i>The CAA accepts and has implemented this recommendation. Following its own review of how effective the internal audit function was, the Board outsourced the role in July 2009. The Board has demanded, and is receiving, more rigorous performance of the role from an independent contractor. The quarterly meetings of the A&RM Committee are closely monitoring the effectiveness of the corrective action taken in response to internal audit findings by the operational groups.</i> |
| Recommendation 5 | <i>The CAA accepts this recommendation and work will be undertaken in the 2010/11 FY to design and implement appropriate indicators of the effectiveness of its regulatory focus on the civil aviation sector.</i> <i>In addition to that work it is noted that the consistency with which the CAA's regulatory focus is applied will be enhanced both by the recent creation of a Chief Operating Officer role which will drive more consistency across the operations of the CAA and the planned quarterly review process of Output Class 2 activities (see the response to recommendation 1 above).</i> |
| Recommendation 6 | <i>The CAA accepts this recommendation and current work on the development of a Regulatory Tools Policy will satisfy the intent of the recommendation. The policy is scheduled for completion on 1 September 2010.</i> |

| | |
|--------------------------|---|
| Recommendation 7 | <i>The CAA accepts this recommendation and work is already underway to address aspects of it. Subject to approval of the 2010/11 budget it is intended to appoint a data standards manager early in the FY. In addition, projects are currently underway to improve the data provided from safety investigations (due for completion 17 Dec 2010) and 'Aviation Related Concerns' (ARCs) (due for completion 1 July 2010). It is also intended to seek the necessary resource to improve the CAA's data analysis capability as part of the current review of CAA funding.</i> |
| Recommendation 8 | <i>The CAA accepts this recommendation and a project is currently underway to improve the existing Performance Review and Development (PRD) process. The intent is to provide a more robust link to SOI objectives and ensure more consistency in the application of the system across the CAA. The new process will be implemented in time to set objectives for the 2010/11 year (end of July 2010). Required manager training and supervision will be provided within that timeframe. Leadership development will be provided for Executive Team members by the middle of August 2010. Objectives will be set and monitored as part of the PRD process to ensure required performance is delivered.</i> |
| Recommendation 9 | <i>The CAA accepts this recommendation. A project is currently underway to improve the Certification process and standardise its application. This work is scheduled for completion by 31 October 2010. Similar work will commence on the Surveillance process once the certification project is complete. The work on the surveillance process will commence in November 2010. Precursor work on the establishment of the project and programme management and training capability is currently underway. Similarly, the CAA Surveillance Policy is currently being reviewed. <i>It is also noteworthy that the creation of a Chief Operating Officer role is intended, in part, to drive more consistency in the way in which certification and surveillance is performed across the organisation.</i></i> |
| Recommendation 10 | <i>The CAA accepts this recommendation. The Quarterly Review of Output Class 2 activities referred to in the comments against recommendation 1 above will play a significant part in ensuring required process is followed and objectives met. The output from the project currently improving the Performance Development Review system will more explicitly establish required competency and performance requirements for both managers and staff. The current Certification Improvement Project and subsequent Surveillance Improvement project will establish Quality Assurance and management review steps in the relevant processes. The creation of a Chief Operating Officer role will also drive more consistency of process and implementation across the CAA.</i> |
| Recommendation 11 | <i>The CAA accepts this recommendation. This requirement is an explicit element of the current Certification Improvement Project which is due for completion on 31 October 2010. The requirement will also be addressed in the subsequent Surveillance Improvement project.</i> |

| | |
|--------------------------|--|
| Recommendation 12 | <i>The CAA accepts this recommendation. This requirement is an explicit element of the current Certification Improvement Project due for completion on 31 October 2010.</i> |
| Recommendation 13 | <i>The CAA accepts this recommendation and the requirement to strengthen current training in this area will be an explicit element of the Surveillance Improvement Project which will start in November 2010. In addition, the introduction of a training and development capability which will facilitate such work is scheduled for 11 October 2010.</i> |
| Recommendation 14 | <i>The CAA accepts this recommendation and the requirement to strengthen current guidance in this area will be an explicit element of the Surveillance Improvement Project which will start in November 2010. In addition, the introduction of a training and development capability which will facilitate such work is scheduled for 11 October 2010.</i> |

Appendix 8

Time frames for the Civil Aviation Authority's actions

The Civil Aviation Authority provided us with the following milestone plan for the actions it will take.

| | Start date | Planned completion |
|--|------------|--------------------|
| Establish 'as is' performance baseline | | |
| CAA Surveillance Process Review | 21 Sep 09 | 22 Jan 10 |
| CAA project & programme Management review | 1 Apr 10 | 30 Apr 10 |
| CAA Review design of audit approach & methodology | 15 Dec 09 | 29 Jan 10 |
| CAA Review of Quality Management System | 1 Feb 10 | 26 Feb 10 |
| Performance Improvement Initiatives | | |
| People | | |
| Appointment of Assistant Director | 30 Oct 09 | 1 Nov 10 |
| Appointment of Chief Operating Officer | 10 May 10 | 30 Nov 11 |
| Improve/refocus Performance Management | 4 May 10 | 30 Jul 10 |
| Leadership team development | 21 Jun 10 | 13 Aug 10 |
| Policies | | |
| Review/revise Certification Policy | 3 May 10 | 30 Jun 10 |
| Amend A&RM Committee Charter | 19 Jul 10 | 21 Jul 10 |
| Development of Regulatory Tools Policy | 14 May 10 | 1 Sep 10 |
| Review/Revise Surveillance Policy | 10 May 10 | 23 Jul 10 |
| Introduce Improved Output Class 2 performance measures | 1 Mar 10 | 30 Sep 10 |
| Establish new safety performance targets for the sector | 14 Jun 10 | 30 Jun 11 |
| Processes | | |
| Certification Improvement Project | 3 May 10 | 29 Oct 10 |
| Safety Investigation Findings Review | 17 May 10 | 17 Dec 10 |
| Aviation Related Concern process review | 3 May 10 | 30 Jun 10 |
| Design & Implement Internal Audit monitoring of improvement plan | 28 Jul 10 | 30 Jul 10 |
| 1st Internal Audit Review | 15 Sep 10 | 30 Sep 10 |
| Surveillance Improvement Project | 15 Nov 10 | 30 Sep 11 |
| Avsec/CAA Support Services Review | 23 Feb 10 | 3 Aug 10 |
| Refocus Quality Management System | 1 Feb 10 | 19 Jul 10 |
| • Completion of Business Case | | 19 Jul 10 |
| Capability | | |
| Specify project & programme Mgmt Capability | 10 May 10 | 18 Jun 10 |
| Introduce project & programme mgmt capability | 12 Jul 10 | 12 Jul 10 |

| | Start date | Planned completion |
|---|------------|--------------------|
| Specify training development & delivery capability | 19 Jul 10 | 6 Sep 10 |
| Introduce training development & delivery capability | 11 Oct 10 | 11 Oct 10 |
| CAA Funding Review | 1 Oct 09 | 2 May 11 |
| • Publish consultation documents | | 13 Sep 10 |
| • Recommendations submitted to Cabinet | | 13 Dec 10 |
| • Amended Regulations take effect | | 18 Apr 11 |
| Value for money study | 1 Oct 09 | |
| • Detailed scoping completed | | 13 Dec 10 |
| • Commence implementation | | 18 Apr 11 |
| Enhance safety data analysis capability | 1 Jul 11 | 10 Feb 12 |
| Develop measures of the effectiveness of certification and surveillance | 1 Jul 11 | 23 Dec 11 |

Appendix 9

Monitoring and reporting on the Civil Aviation Authority's action plan

The Chairman of the Board has made the following arrangements for monitoring of, and reporting on, the CAA's implementation of the action plan to address our recommendations in this report and those in recent internal CAA reviews.

1. *The [Board] is accountable to the Minister for the satisfactory completion of the actions to address the OAG audit findings, and the wider issues addressed in the CAA's action plan;*
2. *the [Board] provides quarterly reports to the Minister recording the CAA's progress on implementing the actions, and the status of each;*
3. *CAA performance is monitored through the [Board's] Audit and Risk Management Committee and reports are provided by that committee;*
4. *Audit New Zealand provides separate and independent assurance of the CAA's progress against the action plan, via quarterly reports to the [Board's] Audit and Risk Management Committee; and*
5. *Audit New Zealand also reports on CAA's performance as part of its annual audit of the CAA.*

The Audit and Risk Management Committee will utilise the CAA's contracted internal audit provider to assist in monitoring implementation of the plan which will simplify the monitoring role of [Audit New Zealand] at step 4 above. I anticipate that the quarterly Audit New Zealand reports will be made public on the CAA website.

*Rick Bettle
Chairman
Civil Aviation Authority*

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