

Report 09-002: ZK-DGZ, Airborne XT-912, 9 February 2009,  
and commercial microlight aircraft operations

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# Final Report

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Aviation Inquiry 09-002  
ZK-DGZ, Airborne XT-912, 9 February 2009,  
and commercial microlight aircraft operations

Approved for publication: December 2010

# Transport Accident Investigation Commission

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The Transport Accident Investigation Commission (Commission) is an independent Crown entity responsible for inquiring into maritime, aviation and rail accidents and incidents for New Zealand, and co-ordinating and co-operating with other accident investigation organisations overseas. The principal purpose of its inquiries is to determine the circumstances and causes of occurrences with a view to avoiding similar occurrences in the future. Its purpose is not to ascribe blame to any person or agency or to pursue (or to assist an agency to pursue) criminal, civil or regulatory action against a person or agency. The Commission carries out its purpose by informing members of the transport sector, both domestically and internationally, of the lessons that can be learnt from transport accidents and incidents.

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This final report may not be used to pursue criminal, civil or regulatory action against any person or agency. The Transport Accident Investigation Commission Act 1990 makes this final report inadmissible as evidence in any proceedings with the exception of a Coroner's inquest.

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### Citations and referencing

Information derived from interviews during the Commission's inquiry into the occurrence is not cited in this final report. Documents that would normally be accessible to industry participants only and not discoverable under the Official Information Act 1980 have been referenced as footnotes only. Other documents referred to during the Commission's inquiry that are publicly available are cited.

### Photographs, diagrams, pictures

Unless otherwise specified, photographs, diagrams and pictures included in this final report are provided by, and owned by, the Commission.



Figure 1  
Airborne XT-912 microlight



Figure 2  
TL2000 Sting microlight  
(photograph used with permission)

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## Abbreviations

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CAA Civil Aviation Authority

DGZ Airborne XT-912 microlight aircraft, registered ZK-DGZ

NPRM Notice of Proposed Rule Making

Rules Civil Aviation Rules

UTC coordinated universal time



## Data summary

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<b>Aircraft registration:</b>	ZK-DGZ
<b>Type and serial number:</b>	Airborne Windsports XT-912, XT-912-0243
<b>Number and type of engines:</b>	one Rotax Bombardier 912-UL
<b>Year of manufacture:</b>	2008
<b>Operator:</b>	Blue Sky Microlight 2006 Limited
<b>Date and time:</b>	9 February 2009, 1358 <sup>1</sup>
<b>Location:</b>	Gibbs Hill, Abel Tasman National Park
	latitude: 40° 48.7' south
	longitude: 172° 58.9' east
<b>Type of flight:</b>	commercial scenic flight
<b>Persons on board:</b>	crew: one
	passengers: one
<b>Injuries:</b>	crew: one fatal
	passengers: one fatal
<b>Nature of damage:</b>	aircraft destroyed
<b>Pilot's licence:</b>	commercial pilot licence (aeroplane)
<b>Pilot's age:</b>	44
<b>Pilot's total flying experience:</b>	855 hours, (460 hours on type)

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<sup>1</sup> Times in this report are New Zealand Daylight Time (UTC + 13 hours) expressed in the 24-hour format.



## 1. Executive summary

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- 1.1. On 9 February 2009, the passenger and pilot of an Airborne XT-912 microlight aircraft (microlight), registered ZK-DGZ (DGZ), were fatally injured as a result of an accident while on a scenic flight over the Abel Tasman National Park, at the top of the South Island. The Civil Aviation Authority (CAA) conducted a technical investigation into the accident and the Commission opened an inquiry into the regulatory context of commercial microlight 'adventure aviation' flights.
- 1.2. 'Adventure aviation' included, among other activities, gliding, tandem parachuting, ballooning and microlight flying. The Civil Aviation Rules (Rules) structure that had been progressively introduced since 1990 catered for pilot certification and operating rules for these activities, which were predominantly of a recreational nature. The Rules required a pilot to hold a valid commercial licence in order to conduct a flight for hire or reward. In most cases, pilots were required to operate under the auspices of certificated aviation recreation organisations. However, the operators themselves were not certificated, a regulatory void that had been recognised.
- 1.3. Commercial microlight flights had not been considered an issue until after 1998, when the number of registered 2-seat aircraft increased greatly and surpassed the number of single-seat aircraft. Since 1997, the number of registered 2-seat microlights had more than doubled to exceed 700 aircraft.
- 1.4. Between September 2009 and June 2010, the Department of Labour conducted a review of 'the risk management and safety of the adventure and outdoor commercial sectors', which included adventure aviation. One of the Department's findings was that the proposed Rules Part 115, *Adventure aviation*, was 'appropriate to the level of risk associated with adventure aviation activities and will adequately address the current deficiencies in the safety regulatory framework applicable to the sector'. The Commission supports that finding and has therefore made no safety recommendation.

## 2. Conduct of the inquiry

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- 2.1 The CAA notified the Commission of the accident involving DGZ on 10 February 2009, in accordance with section 27 of the Civil Aviation Act 1990. After reviewing the notification, the Commission decided not to open an inquiry as the information then available did not cause it to believe that the circumstances of the accident would have significant implications for transport safety or that the accident would give rise to findings or recommendations that might increase transport safety. The CAA then commenced its investigation.
- 2.2 On 1 April 2009, after receiving information that the flight had been a commercial sightseeing flight by an allegedly unlicensed pilot, the Commission decided to open an inquiry under section 13(1) of the Transport Accident Investigation Commission Act, 1990, into the regulatory aspects of microlight adventure aviation flights. A Commission air accident investigator was assigned as the investigator-in-charge of this inquiry and an independent assessor appointed to provide technical advice to Commissioners.
- 2.3 The investigation of the specific circumstances and causes of the DGZ accident remained with the CAA. When published,<sup>2</sup> the CAA report number 09/323 will provide useful background information to readers.
- 2.4 From April 2009 to September 2010, the gathering of information by the Commission included the following processes:
- interviewing or meeting representatives of the operator and microlight aviation recreation organisations in New Zealand and Australia, the Aviation Industry Association and a commercial aeroplane operator
  - reviewing the operating practices of an aviation recreation organisation
  - interviewing staff of the CAA and liaising with them regarding their investigation into the accident
  - reviewing microlight Rules and advice published by the CAA and specific relevant regulations of the Australian, Canadian and United Kingdom regulators
  - researching the development of the proposed Rules Part 115
  - reviewing the 2010 report of the Department of Labour into risk management and safety in the adventure and outdoor commercial sectors in New Zealand, which included adventure aviation.
- 2.5 The Commission's draft final report was approved for circulation to interested persons on 20 October 2010.
- 2.6 Submissions were received from the regulator and interested persons, whose comments have been considered and included in the final report where appropriate.

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<sup>2</sup> The CAA report had not been published when the draft final report of the Commission's inquiry was circulated.

### 3. Factual information

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#### 3.1 Accident involving ZK-DGZ

- 3.1.1 At about 1358 on 9 February 2009, the occupants of DGZ were fatally injured when the aircraft crashed during a commercial scenic flight over the Abel Tasman National Park.
- 3.1.2 The CAA investigated this accident under its Act. The site investigation found that the left rear leading edge spar of DGZ had failed in overload prior to impact. The weather conditions during the flight and the structural strength of the microlight were 2 aspects known to have been considered by the CAA investigation.
- 3.1.3 The Airborne XT-912 was a 'weight-shift' microlight with a fabric wing (see Figure 1). The wing position, and hence the direction of flight, was controlled by the pilot moving a triangular control bar; hence, 'weight-shift' control. Two-seat microlights were called class 2 microlights.
- 3.1.4 DGZ had been manufactured in Australia in January 2008 and issued with a flight permit by the CAA on 18 March 2008. The aircraft was powered by a 4-stroke Rotax 912UL engine driving a pusher propeller and could cruise at up to 65 knots.
- 3.1.5 The pilot had about 855 total flying hours experience, of which about 460 hours had been on microlights. He held a valid commercial pilot licence (aeroplane) issued by the CAA and he was a certificated instructor pilot member of the Recreational Aircraft Association of New Zealand, an aviation recreation organisation certificated by the CAA and catering to microlight operators and pilots. He was a co-owner of the operator's business, which had been established at Motueka Aerodrome in 2006.

#### 3.2 Regulation of commercial microlight operations

- 3.2.1 The microlight aircraft category was defined in Rules Part 1 as:

a basic low performance aircraft designed to carry not more than 2 persons which meets low momentum parameters that are acceptable to the Director [of Civil Aviation].

The CAA Advisory Circular 103-1, *Microlight aircraft operating rules*, stated that 'Acceptable' low momentum parameters were likely if an aircraft met the airworthiness standards promulgated by specified overseas authorities or, in the absence of such standards, had a stall speed in the landing configuration at maximum gross weight not exceeding 45 knots and a maximum gross weight of 544 kilograms (CAA, 2000, p.3). The different overseas standards resulted in some variability in the maxima of relevant parameters.

- 3.2.2 While DGZ fitted a common misconception that microlights were 'motorised hang gliders', many modern microlights were sleek aeroplanes with performances that exceeded those of some light aeroplanes. For example, the TL2000 Sting (see Figure 2) had a maximum speed of 145 knots.
- 3.2.3 There was no International Civil Aviation Organization definition of adventure aviation and hence no related standards or recommended practices. The requirements for pilot licensing, airworthiness and general operating rules were those already prescribed in the Rules.

##### The advent of commercial microlight flights

- 3.2.4 The Rules Part 1 defined an *air operation* as a flight carrying goods or passengers for hire or reward, and excluded a sightseeing flight or joyride under visual flight rules by day in a microlight, hot air balloon, glider or hang glider or paraglider, and parachute descents.
- 3.2.5 The operating rules specific to microlights were contained in Rules Part 103, *Microlight aircraft – operating rules*, which included rules that were additional to, or exceptions to, Rules Part 91, the general operating rules applicable to all aircraft. Similarly, the operation of hot air balloons, gliders, hang gliders and paragliders, and parachute operations was regulated by

specific Rules Parts. Rules Part 149, *Aviation recreation organisations – certification*, permitted delegated organisations, 2 of which catered to microlights, to issue personnel certificates such as pilot certificates and ratings.<sup>3</sup>

- 3.2.6 There was no requirement in the Civil Aviation Act or in the Rules for a microlight operator to be certificated. The impetus for commercial operations came with the increase in the number of registered class 2 microlights, which, according to CAA data, had reached 700 by 2008. A senior person in an aviation recreation organisation for microlights suggested the increase in popularity was due, in part, to the rising costs of traditional light aircraft ownership.
- 3.2.7 In July 2009, only 6 adventure aviation companies offered commercial flights via the Internet, and only one, the operator of DGZ, used microlights. Scenic flights in microlights appeared to have limited appeal, but their use for flight training and hang-glider towing was permitted by the existing Rules. A further 10 microlight operators appeared to be clubs or training organisations.

#### Airworthiness and maintenance requirements

- 3.2.8 A class 2 microlight was required by Rule 103.203(b) to have a current flight permit. A flight permit was often issued by the CAA on the basis of a flight permit or equivalent document having been issued by the competent authority in another State, or because the aircraft conformed with an acceptable type design standard (Rule 103.207(a)). A flight permit remained in force until it expired or was suspended or revoked by the Director (Rule 103.207(e)).
- 3.2.9 The flight permit for DGZ was issued by the CAA on the basis of the type's prior compliance with the Australian Civil Aviation Orders 95.32 and 101.55, as amended. The Australian Civil Aviation Orders did not preclude the commercial operation of a microlight, but more strict operational regulations applied in such a case.
- 3.2.10 The equivalent British standard (the *British Civil Airworthiness Requirements*) noted in the foreword (United Kingdom CAA, 2008):

The level of airworthiness implied by these requirements is not appropriate to the use of microlight aeroplanes for the purpose of public transport or aerial work (other than aerial work consisting solely of the giving of instruction in flying), nor is it appropriate to the issue of UK Certificates of Airworthiness.

- 3.2.11 The equivalent Canadian standard noted (Transport Canada, 2007):

In addition to private recreational use a Basic Ultra-light Aeroplane may be used for hire and reward for the purpose of pilot flight training in accordance with section 406 of Part IV of the *Canadian Aviation Regulations*.

**A basic ultra-light aeroplane MAY NOT be used for any other commercial aviation operation or aerial work** [emphasis in original].

- 3.2.12 Rule 103.217 prescribed the maintenance and inspection requirements (CAA, 2007). In particular, the operator of a microlight was required to ensure that the aircraft was maintained in an airworthy condition and a person could not operate a microlight unless the aircraft had a current annual condition inspection. Most maintenance requirements could be performed by a competent person who was authorised by a microlight organisation. That person did not need to be an aircraft maintenance engineer, and was often an owner-pilot.

#### Pilot requirements

- 3.2.13 The general requirements for pilot licences were given in Rules Part 61, *Pilot licences and ratings*, which stated in part:

##### **61.5 Requirement for pilot licence and ratings**

##### **(a) Pilot licence – New Zealand aircraft operating in New Zealand:**

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<sup>3</sup> Pilot certificates are not the same as pilot licences. See the following section on *Pilot requirements*.

Except as provided in paragraphs ... (n), a pilot of a New Zealand registered aircraft operating in New Zealand must hold an appropriate current pilot licence—

(1) issued in accordance with this Part; or ...

n) A pilot of a balloon, a glider, a hang glider, a microlight, a paraglider, or a powered glider, is not required to hold a pilot licence or rating issued in accordance with this Part if—

(1) the pilot is not flying the aircraft for hire or reward; and

(2) the pilot meets the appropriate pilot and operating requirements under [Part] 103 ...

3.2.14 Rule 61.205 limited the exercise of the privileges of a commercial licence to the aircraft category in which the pilot had gained the licence:

**61.205 Privileges and limitations**

(a) Subject to paragraph (b), a current commercial or senior commercial pilot licence authorises the holder to exercise the following privileges in aircraft of the same category for which the pilot licence is granted and for which the pilot holds an aircraft type rating:

(1) any of the appropriate privileges of a private pilot licence:

(2) act as pilot-in-command of an aircraft that is certificated for single pilot operation and engaged on an operation for hire or reward.

The Rules defined aeroplanes and microlights as different aircraft categories.<sup>4</sup>

3.2.15 Rules Part 103 required, in part:

**103.5 Pilot requirements**

(a) Each person acting as the pilot of a microlight aircraft shall—

(1) hold an appropriate current microlight pilot certificate with an appropriate type rating; or

(2) hold a current pilot licence issued under Part 61 with an appropriate type rating; or

(3) operate under the direct supervision of the holder of a microlight pilot instructor certificate meeting the requirements of 103.7.

(b) Each pilot shall comply with the privileges and limitations of the licence or certificate, and any applicable ratings.

3.2.16 Flight instruction was excluded from the definition of an operation for hire or reward, because the student pilot was not a 'passenger'. The Rules permitted a pilot with a private pilot licence (aeroplane) to conduct appropriately supervised glider towing or parachute operations, but otherwise Rules Part 61.205 required a pilot-in-command of an aircraft, including a microlight, that was operated for hire or reward to hold the appropriate commercial pilot licence.

[Safety of microlight flying](#)

3.2.17 The CAA provided the Commission with data on accidents in sport aviation (which included microlights) for the period from 1990 to 2008. The data showed an increasing trend in the total number of accidents and injuries in sport aviation. As annual flight hours was the only statistic that sport aviation operators had to report to the CAA, the causes for the trend, apart from apparent sector growth, could not be positively identified. Since 1998, the number of registered class 2 microlights had exceeded the number of class 1 microlights. The number of class 1 microlights had declined steadily, while class 2 numbers had more than doubled.

3.2.18 In 2008, there were 13 accidents involving class 2 microlights and 2 accidents involving class 1 microlights, but total microlight accidents as a proportion of all sport aviation accidents had remained fairly steady since 1992 at about 60%. Class 2 microlights accounted for 70% of reported microlight accidents, but 90% of those that involved fatalities. None of the microlight accidents during this period was known to be a commercial flight.

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<sup>4</sup> Rules Part 1.

## Development of Rules Part 115 - Adventure aviation

- 3.2.19 *Adventure aviation* encompassed aerial activities where passengers were carried simply for the enjoyment of the flight or activity itself. By their nature, these activities were riskier than regular air transport. Since 1990, when the Rules structure began to replace the previous Regulations, adventure aviation had been regulated on the basis that such flights were for recreation and sport, and not conducted for hire or reward when carrying passengers.
- 3.2.20 The CAA advised that it had accepted that some commercial adventure aviation took place and that such operators would not be regulated until the mooted Rules Part 115, *Adventure aviation* had been written. In the intervening years, the CAA had been generally satisfied that the level of commercial activity was low and that those involved had conformed with the practices recommended by their governing Rules Part 149 organisations.
- 3.2.21 With no compelling need to regulate adventure aviation operators, and because of changing CAA priorities, the development of Rules Part 115 progressed intermittently. Meanwhile, the adventure aviation context changed considerably, with activities not previously envisaged, such as tandem paragliding and parachuting, becoming very popular. However, few operators had offered commercial microlight flights.
- 3.2.22 The changing nature of adventure aviation was summarised in the Notice of Proposed Rule Making (NPRM) to amend Rules Part 21, *Certification of products and parts*, concerning the certification of aircraft, which the CAA considered to be a prerequisite for Rules Part 115.<sup>5</sup> The NPRM read in part (CAA, 2006a, p.9):

The driver for this NPRM originated over ten years ago when industry approached CAA to enable ex-military aircraft to operate for hire or reward under the special category and to have their own specific airworthiness, maintenance, and operational rules ...

With the development of adventure tourism in New Zealand, industry again requested the privilege of carrying out operations for hire or reward operating aircraft under the special category.

Due to the development of other sporting activities having tourist interest, notably in the gliding, microlight, parachuting, hang gliding, paragliding, and ballooning areas, the concept of adventure aviation developed. Aircraft and equipment were needed to enable adventure aviation to progress resulting in industry needing airworthiness, maintenance, and operational rules to facilitate this.

The existing special airworthiness category does not allow operations for hire or reward, a situation which effectively excludes ex-military and other aircraft not being certificated to a formal airworthiness standard, from these operations.

- 3.2.23 In a policy paper on the proposed Rules Part 115, the CAA described the state of the sector as follows (CAA, 2006b, p.4):

Generally, problems with the regulatory system for adventure aviation activities are because the applicable rules were designed for amateur sporting operations, not commercial “hire or reward” activities. In particular:

- There is no mechanism for the Director to certificate individual operators.
- The standards for entry control, monitoring and exit control are inadequate for a hire or reward activity, with none of the usual controls such as requirements for safety management systems and proper management structures.
- The rules for some of the activities did not contemplate that there would be fare-paying passengers. There are no requirements, for instance, to undergo risk assessments and to put in place mitigation procedures.
- There are inconsistent requirements for different sectors of the aviation community, resulting in different levels of competence and safety performance.

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<sup>5</sup> The amendment to Rules Part 21 came into force on 3 December 2009.



- Some adventure aviation activities, where hire or reward activities are prohibited, are unable to be developed, and this is having negative consequences; and
- Where the Part 149 organisation provides a form of operator certification, there is the potential for anti-competitive behaviour and restriction of access to natural justice.

3.2.24 The same paper listed some considerations that had guided development of the new Rules Part, including the following (CAA, 2006b, p.6):

- In a purely sport and recreation environment it can be expected that the participants make their own informed assessment of the risks involved and act accordingly. In a commercial environment however, fare-paying passengers who are not otherwise involved in the “sport” are likely to look to the safety regulatory authority to provide a framework for the achievement of a reasonable level of safety assurance.
- The Act envisages that aviation documents issued by the Director to individual operators are the best mechanism for controlling entry to, operation within, and exit from the aviation system.
- The Act envisages that “service providers” within the aviation system will be required to demonstrate to the Director their ability to effectively manage the safety of the operation, train their people and adequately resource the operation.
- The risks to safety inherent in adventure aviation activities, if left unchecked, are sufficient to justify regulation of the sector.
- The risks inherent in adventure aviation are many and varied and they are best managed through effective operator safety management systems rather than prescriptive rulemaking.
- Most of the experience and expertise within the adventure aviation industry rests with a few specialists, mainly within the Part 149 Aviation Recreation Organisations, who are a key resource in the industry; and
- Adventure aviation should not become a “back door” to air transport operations that require a Part 119/135 air operator certificate.

3.2.25 The CAA aimed for Rules Part 115 to have the following outcomes for adventure aviation operations (CAA, 2009, p.1):

- a mechanism for the Director to certificate individual operators;
- safety standards for entry control, monitoring and exit appropriate to a hire or reward aircraft operation carrying passengers, including requirements for management systems and internal quality assurance;
- all activities will have outcome based requirements appropriate to the carriage of fare paying passengers. For instance there will be requirements to undergo safety risk assessments and to put in place mitigation procedures;
- the requirements for personnel competence and safety performance will be consistent across all sectors of the adventure aviation industry;
- some adventure aviation activities where hire or reward activities are currently prohibited, will be certificated in appropriate circumstances; and
- adventure aviation operator certification will be administered fairly across the sector, and operators will be entitled to be administered within the principles of natural justice.

3.2.26 The NPRM for Rules Part 115 was eventually published on 23 September 2010, with a closing date for submissions of 5 November 2010 (CAA, 2010). Rules Part 115 will require adventure aviation operators to be certificated in much the same way as air transport operators who use helicopters and small aeroplanes and who are required to be certificated under Rules Parts 119 and 135. In particular, operators will need to satisfy the Director of Civil Aviation that:

- they have appropriate management systems, structures, and operating procedures in place to ensure compliance with the relevant safety standards;
- employees are appropriately qualified, and trained;
- equipment is appropriate to the task and properly maintained; and
- key people are fit and proper to undertake their responsibilities.

### 3.2.27 Rules Part 115 will not apply to:

- Air Transport Operations or Commercial Transport Operations that are required to be certificated under Part 119
- bona fide flight instructional activities carried out by an appropriately qualified flight instructor
- bona fide cost-sharing operations (i.e. not for hire or reward) conducted for private purposes; or
- bona fide trial flights.

3.2.28 In respect of microlights, the proposed Rules Part would introduce requirements for operator certification, for pilots of microlights operated for hire or reward to hold commercial pilot licences (aeroplane) or commercial pilot licence (microlight)<sup>6</sup>, and for microlights to be manufactured to design standards acceptable to the Director and maintained to the standards of the manufacturers' maintenance programmes or approved programmes.

3.2.29 The CAA proposed in the NPRM a staged transition to the new Rules Part for operators who were conducting adventure aviation operations at the time. The proposed transition would require existing microlight operators to be certificated within 12 months of the effective date of the Rules Part, which the CAA did not expect to be law before mid-2011.

### Australian practice

3.2.30 In Australia, the administration and control of many sport and recreational flying activities had been delegated to sport aviation organisations in the same way as the CAA had done. In the case of microlights, sometimes called *ultralights* in Australia, the relevant organisation was 'responsible for all aspects of ultralight aeroplane operations and maintenance including pilot and instructor certification' (Civil Aviation Safety Authority, 2007, p.10-5). Microlights that were controlled by weight shift, like the Airborne XTS-912, were administered by a hang-gliding organisation that issued pilot and maintenance certificates.

3.2.31 Australia exempted some aircraft classes, such as microlights, from specific regulations if the aircraft were operated in accordance with special provisions of Civil Aviation Orders (Civil Aviation Safety Regulations, 1998). The Orders might stipulate, for example, that an aircraft was not to be operated for hire or reward (except for the purpose of training for a pilot certificate) and that the pilot-in-command had to hold the appropriate certification.

## 3.3 Review of risk management and safety in adventure tourism

3.3.1 In September 2009, in response to concerns raised by the Prime Minister regarding incidents in the adventure and outdoor commercial sectors, the Department of Labour formed a cross-departmental group to review risk management and safety in the adventure and outdoor commercial sectors in New Zealand. The review defined 'adventure and outdoor commercial sectors' as 'all recreational-type activities offered on a fee-for-service basis that carry heightened inherent risks that must be managed'. The final report of the review team was published in August 2010 (Department of Labour, 2010).

3.3.2 The purposes of the review were to determine whether, and in what way, changes should be made to the safety and risk management framework of the adventure and outdoor commercial sectors in order to reduce accidents, injuries and fatalities, and to ensure that New Zealand continued to be recognised as a quality destination for visitors.

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<sup>6</sup> The proposed commercial pilot licence (microlight) would be introduced by amendment to Rules Part 61.

- 3.3.3 The review team identified 44 adventure activities, including 5 from aviation: microlight passenger flights, tandem parachuting, tandem paragliding, hot-air ballooning and parasailing. The best available data on adventure tourism operators was from a 2005 survey by the industry training organisation, Skills Active, which identified 11 balloon operators, 4 hang-gliding operators, 16 in paragliding and 18 in skydiving/parachuting, but no commercial microlight operators.
- 3.3.4 The review team found that all of the above 5 aviation activities had mandatory qualification requirements for key staff members, primarily CAA licences or certificates of competence from the sport bodies, or that they were conducted according to their sector's best practice.
- 3.3.5 During the 5-year period from 1 July 2004 to 30 June 2009, 29 fatalities were reported in the adventure and outdoor commercial sectors, including 4 in aviation accidents, 2 being the occupants of DGZ. The CAA was notified of another 42 serious harm accidents in the tandem hang-gliding and paragliding and tandem parachuting sectors.<sup>7</sup> Although tandem hang-gliding and paragliding were noted as being likely to have the highest rate of injuries resulting in serious harm and fatalities, no comparison could be made with balloon, microlight and parasailing activities because of a lack of reliable data on participation and activity levels.
- 3.3.6 No specific legislation covered the health and safety of participants in adventure tourism activities, but businesses had to comply with the Health and Safety in Employment Act 1992. For air operators, the Civil Aviation Act 1990 applied. The CAA employed 2 inspectors to meet the workplace safety functions delegated to the CAA by the Department of Labour.
- 3.3.7 The review noted that the CAA safety regulatory framework was a hierarchy of safety risk management, with larger aircraft more regulated than smaller aircraft and commercial operations more closely controlled than private ones, and that this structure had left adventure aviation largely unregulated. However, the delegation of the oversight of some categories and aspects of recreational and adventure aviation to Rules Part 149 organisations, and the advanced status of Rules Part 115's development, were recognised.
- 3.3.8 The review also examined 'consumer education', such as verbal discussions during the booking process, warnings and pre-activity presentations and mandatory safety briefings. Operators had acknowledged the need for clients to understand the risks of the intended activities, although there was a suggestion that some passengers found briefings a nuisance. The final report observed that 'people should not expect that all accidents in these sectors can be eliminated ... [but] it should be expected that all practicable efforts are made to effectively manage the risk and minimise accidents'. The team noted that most operators were indeed managing the risks of their activities well.
- 3.3.9 The review team's main conclusions were (Department of Labour, 2010, part I):
- There does not appear to be a fundamental problem in the [adventure tourism] sector's ability to develop appropriate safety systems
  - However, there are gaps in the safety management framework which allow businesses to operate at different standards than those generally accepted
  - While these gaps remain there is insufficient assurance that preventable accidents will not occur
  - This situation could result in harm to individuals and their families and damage to New Zealand's reputation as an international visitor destination.
- 3.3.10 Of significance to the Commission's inquiry, the review team noted (part IV, section r):
- The review team supports and endorses the Ministry of Transport's current work on the development of Civil Aviation Rule Part 115, which is due for implementation in early to mid-2011. Subject to the results of the regulatory impact assessment and cost-benefit analysis, the review team considers the proposed regulatory intervention appropriate to the level of risk associated with adventure aviation

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<sup>7</sup> According to the review, the reported injury rate in the tandem parachuting sector was more than 12 times lower than that in Australia and 14 times lower than that in the United States.

activities and that the new rule will adequately address the current deficiencies in the safety regulatory framework applicable to the sector.

The review team does not make recommendations with respect to the adventure aviation sector.

- 3.3.11 The final report recommended a package of regulatory requirements, industry initiatives and system improvements to address the safety issues that had been identified in the other sectors of the adventure tourism industry.

## 4. Analysis

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- 4.1 Microlight operators were not certificated under the Rules and regulation of the adventure aviation sector was minimal, but the CAA was developing a draft Rules Part 115 to address the regulatory gap, a gap that had become more obvious as the scope of adventure aviation expanded. However, the development of Rules Part 115 had become protracted with no clear target date, which is why the Commission decided to inquire into the current status of commercial microlight operations and the risks posed by continued unregulated operations.
- 4.2 During the Commission's inquiry, the Department of Labour initiated its review of risk management and safety in adventure tourism. The Department's review provided a wider perspective on the philosophy and management of risk in adventure aviation, within the broader context of adventurous tourist activities. Although tandem parachuting was the only adventure aviation group represented on the review team, alongside representatives of the Ministry of Transport and the CAA, the team's conclusion that the proposed Rules Part 115 would adequately address the current deficiencies in the safety regulatory framework was reasonable.
- 4.3 The history of the development of Rules Part 115, as recorded in the policy paper (CAA, 2006b) and the introduction to the NPRM (CAA, 2010), reflected reasonable decisions by the CAA regarding the employment of its resources during an intense and prolonged period of rule making and refinement that has continued from 1990 until the present day. The Rule design document (CAA, 2009) shows that the CAA had the public interest to the fore, while being responsive to industry concerns regarding the adventure aviation sector.
- 4.4 Even in recent years, the level of commercial microlight activity has been very low, and the accident involving DGZ was thought to be the first involving a commercial flight. Therefore, at least in respect of microlights, the CAA was justified in not taking earlier regulatory action.
- 4.5 The NPRM for Rules Part 115 fully describes the intention of the CAA for adventure aviation operators to be brought into a regulatory regime equivalent to that required of other commercial operators who carry fare-paying passengers, while still recognising that adventure aviation passengers desire an 'aerial recreation experience'.
- 4.6 The proposed Rules Part 115 could be a leading example of aviation regulation in the way it addresses an aviation sector that, in New Zealand at least, is growing and has major economic importance. The Rules Part balances the general expectation of the public for safe air transport, while recognising that many people also enjoy an aerial experience that can be exhilarating yet carry an element of (acceptable) risk.
- 4.7 One apparent anomaly should the proposed Rules Part become law is that the CAA could issue a permit to fly for a microlight type on the basis of its British or Canadian approval, and allow the type to be used for commercial operations under Rules Part 115, yet the British and Canadian regulations do not permit the same type to be used for commercial operation (other than for flight instruction). The CAA considered that the anomaly would be offset by the organisational requirements proposed in Rules Part 115, such as an approved maintenance programme, and pilot training, qualification and competency.
- 4.8 NPRM 10-02, Part 115 *Adventure aviation – certification and operations*, as currently proposed, and the review conducted by the Department of Labour into the management of risks in the adventure tourism sector have given the Commission confidence that the adventure aviation sector is about to enter a phase of appropriately regulated operations with improved flight safety. Accordingly, the Commission has not made any recommendations.

## 5. Findings

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5.1 The following findings are not listed in any order of priority:

- (a) Although the development of Rules Part 115 had been protracted and intermittent, the CAA had continued to monitor the risks of unregulated adventure aviation activities, including commercial microlight operations, through its surveillance of, and contact with, the sector.
- (b) The proposed Rules Part 115 balances the expectations of the public for safe transport with the desire of some for an exhilarating aerial recreation experience that might involve a reasonable and acceptable level of risk.

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