

Aviation Safety Summary

1 October to 31 December 2016



Spring 2016

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Introduction to the Quarterly Safety Summary Report

Welcome to the quarterly safety summary report for the spring of 2016 (Oct/Nov/Dec).

The purpose of this document is to summarise the accidents and serious incidents that occurred during the spring quarter of 2016. As accidents occur as essentially isolated events, it can be difficult to gain a picture of overall safety performance. In this document the accidents are listed together with the significant safety events from the same period, to provide a brief summary of safety in the NZ aviation system.

The Spring of 2016 was marred by 3 fatal accidents with 5 fatalities. Of the three, two of the accidents were from relatively well recognized hazards, low level wire strikes and the reliability of uncertified engines. The third was a Robinson R44 helicopter accident for which the TAIC investigation is ongoing. Significantly for this accident TAIC have released an interim report indicating the cause is not likely to be related to mast bumping.

Away from the obvious and necessary scrutiny surrounding fatal accidents there are valuable free lessons coming to light through the reporting of incidents by responsible operators. Have a quick read through the major incidents on page 11 and note how many times even large professional aviation organisations have reported problems in two areas:

- a) configuring large transport aircraft for take-off and landing; and
- b) the reported problems with cargo loading/securing or dangerous goods.

Two important things to note, these incidents only came to light because they were reported by the operators in the interests of safety. They are only repeated here so that all operators can be aware of problems beyond their own, and learn from them.

These brief summaries are by necessity and design only brief snapshots of events, without background, context or the corrective actions undertaken. The only judgement that should be applied to them is an honest assessment of the degree to which your own operation (private or commercial) is immune to the slips and lapses detailed herein. In most cases full details will be available when the investigations are complete.

By simply presenting the basic details of events, this report seeks to fulfil the first and most important role of safety event reporting; the wider reporting of safety events.

The next six monthly Aviation Safety Update will be published before the 30th of June 2017.

Safe flying,

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Executive Summary - Aviation Safety to 31 December 2016

- There were 24 accidents in the spring of 2016. This is the lowest number of accidents in a spring quarter since 2012, (which also had 24 accidents).
- There were three fatal accidents in this quarter:
 - one agricultural aeroplane accident with two fatalities;
 - one agricultural helicopter accident with two fatalities;
 - one amateur built aeroplane (private sport aircraft) accident with one fatality; see page 6.
- There were nine serious injuries in accidents, including:
 - four passengers of tandem parachute flights (adventure aviation operations) suffering broken bones (three broken ankles and one broken femur);
 - two private paraglider pilots and one private hang glider pilot;
 - one commercial aeroplane pilot and one commercial helicopter pilot; see page 7.
- There were three minor injuries in accidents, including:
 - Two minor injuries on a tandem paragliding flight (adventure aviation operation);
 - One student parachutist on a private flight; see page 7.
- And without injury there were:
 - three commercial small aeroplane accidents (one passenger transport, one agricultural and one dual training);
 - one agricultural helicopter accident;
 - three private small aeroplane accidents;
 - three private sport accidents (two class 2 microlights and one glider); for details see page 8.

Section 1 - Accidents

Accidents by Safety Target Group Quarterly Comparison

Safety Target Group	1 Oct to 31 Dec 2016	1 Oct to 31 Dec 2015	Average Of Same Quarter In Previous 3 Years
Airline Operations - Large Aeroplanes	0	0	1.0
Airline Operations - Medium Aeroplanes	0	0	0.0
Airline Operations - Small Aeroplanes	1	0	0.0
Airline Operations - Helicopters	0	2	1.0
Sport Transport	5	6	1.7
Other Commercial Operations - Aeroplanes	2	3	1.3
Other Commercial Operations - Helicopters	1	0	1.3
Agricultural Operations - Aeroplanes	2	0	2.7
Agricultural Operations - Helicopters	2	2	1.3
Agricultural Operations - Sport Aircraft	0	0	0.0
Private Operations - Aeroplanes	3	4	3.0
Private Operations - Helicopters	0	0	1.0
Private Operations - Sport	8	15	15.3
Other	0	0	0.3
Total	24	32	30.0

Comment

Overall accident numbers in the 2016 spring quarter have decreased by 8 (25%) in comparison to the 2015 spring quarter. The biggest decrease is within the Private Operations - Sport group.

Summary of Accidents

This section describes all accidents that occurred during the period 1 October to 31 December 2016. These accidents are classified according to the highest level of injury sustained and the safety target group. Not all of these accidents were investigated by the CAA, and some of the CAA investigations have not been completed, so the text may be condensed from the original accident notification.

Fatal Accidents

Agricultural Operations - Aeroplanes

- Pacific Aerospace 750XL, North of Wairoa: Aircraft collided with power lines, crashed and caught fire, killing both occupants. The aeroplane was destroyed. CAA safety investigation in progress. No mechanical failures or adverse weather conditions evident. Aircraft was en-route to an agricultural operation when it hit main transmission wires at approximately 120 ft agl. Wires are marked on VNC. (16/6701)

Agricultural Operations - Helicopters

- Robinson R44 II, Glenbervie Forest: The helicopter crashed during forest spray operations killing both occupants. The helicopter was destroyed. TAIC and CAA investigations in progress. From TAIC Interim report: The confined nature of the wreckage field and the type of damage found on the main rotor blades and the tail boom, suggested that it was very unlikely that the helicopter had broken up in-flight or that the accident had been caused by mast bumping. Current lines of inquiry include; the conduct of the operation, the condition of the engine, the pre-impact integrity of the main rotor control system, weather conditions at the time of the accident and the maintenance history of the helicopter and its engine. (16/5811)

Private Operations - Sport

- Titan T51 Mustang (amateur built aeroplane), Matamata: RCCNZ received a beacon alert from the aircraft. Fire and ambulance in attendance. The pilot was killed. CAA safety investigation in progress. Information gained so far would indicate that the aircraft was down on engine performance during the initial part of the take-off which then evolved into a total loss of power at approximately 250 ft. (16/5545)

Injury Accidents

Sport Transport

- Parachute: A tandem passenger failed to lift her legs as instructed, and compounded by a heavier landing than intended the passenger received a broken ankle (serious injury) on touch down. (16/5622, CAA not investigating)
- Parachute, Parakai: Just prior to the landing the tandem passenger lowered their legs and feet, resulting in an awkward landing fracturing their ankle (serious injury). (16/6110, CAA not investigating)
- Parachute, Kerikeri: The tandem passenger dropped her right leg immediately prior to landing. Consequently, the leg caught the ground and went underneath the tandem pair resulting in the passenger suffering a broken femur (serious injury) on landing. (16/6510, CAA not investigating)
- Paraglider, Queenstown: On launch, the para-glider veered sharply to the right as it got airborne and came to rest on a small tree. The passenger and pilot sustained some scratches and bruises (minor injuries). (16/6687, CAA not investigating)
- Parachute, Whangarei: During a tandem flight, the passenger tried to run on landing and caught his foot on the grass. The passenger put all his weight on one foot as he had a bad ankle on the other foot that was not disclosed on the passenger waiver. The passenger sustained a broken ankle (serious injury). (16/6809, CAA not investigating)

Other Commercial Operations - Aeroplanes

- Cessna U206G Stationair 6 (small aeroplane), Waitata Bay: The aeroplane was observed to crash into the sea while on approach on a ferry flight. The pilot was seriously injured. CAA safety investigation in progress. (16/5331)

Other Commercial Operations - Helicopters

- Guimbal Cabri G2, near Cromwell: An accident occurred on approach/landing during a frost protection operation. The pilot received chest injuries (serious injury). CAA safety investigation in progress. (16/5787)

Private Operations - Sport

- Paraglider, Wanaka: RCCNZ responded to an accident where the pilot received serious injuries. (16/6073, CAA not investigating)
- Hang Glider, Port Hills: On landing a wind change caused an asymmetric collapse of the canopy. The pilot received a broken leg (serious injury). (16/6698, CAA not investigating)
- Parachute, Parakai: The student parachutist had a hard landing after failing to flare, and received ligament damage on right ankle (minor injury). (16/6807, CAA not investigating)
- Paraglider, Queenstown: The paraglider made a sharp left turn on approach and the left side of the wing started to turn negative. The wing did not recover before the paraglider hit the ground. The pilot received serious injuries. (16/7097, CAA not investigating)

Non-Injury Accidents

Airline Operations - Small Aeroplanes

- Cessna 185B Skywagon, near Queen Charlotte Sound: The aeroplane had a minor landing accident on a beach airstrip. Full rudder and brake were insufficient to recover from a low speed ground loop (the ground loop was due to a loss of directional control following a sudden wind gust). The left hand undercarriage leg collapsed under the fuselage, and the left wing struck the ground. (16/5691, CAA not investigating)

Other Commercial Operations - Aeroplanes

- Cessna 152, Feilding: During a touch and go on a dual training flight the aeroplane was caught by a gust of wind causing loss of control. The aeroplane crashed beside the runway and was substantially damaged. CAA safety investigation in progress. (16/6319)

Agricultural Operations - Aeroplanes

- Air Tractor AT-402B, Base Airstrip: On landing on a strip with a slippery surface the aircraft moved to the left by 7.6 m. The left hand wingtip impacted a building on the edge of the strip which spun the aircraft around into a ditch and trees. Damage occurred to both wings, one landing gear leg was bent and one tube in the aft fuselage was damaged. Likely cause energy mismanagement when landing the aircraft on a wet surface. (16/7068, CAA not investigating)

Agricultural Operations - Helicopters

- Robinson R66, Southland: The helicopter with one person on board crashed during a spraying operation. The helicopter was destroyed, but the pilot was not injured. TAIC investigation in progress. (16/6145, CAA not investigating)

Private Operations - Aeroplanes

- Cessna 185D, near Wanganui: On landing after a flight with one person on board, the wheel of the aeroplane dug into the wet ground resulting in the aircraft overturning. The aeroplane was substantially damaged. (16/6228, CAA not investigating)
- Socata, Ardmore: The undercarriage of the aeroplane failed to extend after a flight with two people on board. Emergency procedures were used but only managed to extend the two main wheels and not the nose wheel. An emergency landing was made at the aerodrome and the aeroplane received minor damage. This was the aeroplane's second flight after its recent annual maintenance. (16/6317, CAA not investigating)
- Piper PA-28R-200, North Shore: During solo circuits for currency, a poor landing was made in crosswind conditions resulting in major right hand landing gear damage. (16/6754, CAA not investigating)

Private Operations - Sport

- Class 2 microlight, Waimate: The microlight with one person on board had a minor landing accident resulting in main landing gear collapse and prop strike. (16/5675, CAA not investigating)
- Class 2 microlight, Whangarei: The microlight stalled on approach to a private airstrip. The right hand undercarriage was destroyed, and the right hand wingtip and propeller were damaged. (16/6553, CAA not investigating)
- Glider, Lake Station: A ground loop during the winch launch caused substantial damage to the glider. (16/6855, CAA not investigating)

Section 2 - Incidents

This section describes selected incidents¹ from the period which had a high potential risk. For brevity the text may be condensed from the original occurrence notification.

Selected Critical Incidents

Other Commercial Operations - Aeroplanes

Airspace Incident

- Near Drury, Cessna 172R: Cessna on a solo training flight entered D235 without radio calls at 2,300 ft, a near collision occurred with a glider with each aircraft taking evasive action. The glider pilot estimated that the separation was 40 m lateral, 10 m vertical. No radio calls were heard from the C172 after the incident. CAA safety investigation completed. Student pilot had failed to monitor flight progress and due to prevailing wind had drifted into the danger zone. (16/6591)
- Hamilton, Cessna 172S: Avoiding action was taken by a Robin, following a C172S on a solo training flight, as number 2 joining the circuit. ATC had instructed the number 1 traffic, a C172S, to make a left hand orbit and then later cancelled it. However, the C172S continued in the orbit creating a head on conflict with the following traffic. The Robin took avoiding action turning to the right when the pilot realised that the C172S was continuing in the orbit. He believes the distance between the two aircraft was less than 1 NM, at the same altitude. No CAA investigation. (16/6637)

Other Commercial Operations - Helicopters

Aircraft Incident

- Eurocopter AS 350 B2, Birkenhead: During a helicopter lifting exercise, there was an uncontrolled release of the lifting rope. The helicopter was at 50 m with 100 ft length of rope (with a hook on the end). The rope fell outside of the exclusion zone, but no one was injured. (16/6522)

Airspace Incident

- Waikeria, Hughes 369E: A helicopter passed within 50 m of the submitter's helicopter while he was carrying out a pre-spray survey at approximately 300 ft AGL. The intruder then passed over a nearby prison farm at low level. CAA safety investigation in progress. Spyder Track information indicates that proximity of occurrence may not have been as close as reported. Pilots are reminded flying over settlements should be limited in regards to the associated risks. (16/6872)

¹ In the period 1 October to 31 December 2016 there were a total of 1,531 incidents reported to the CAA, the ones presented here have been selected on the basis of potential risk of injury.

Agricultural Operations - Helicopters

Aircraft Incident

- Robinson R44, Haumanga: The helicopter struck a wire immediately after taking off from the load site. The wire had been removed during operations, but re-erected by the farmer before final departure, without telling the pilot. CAA safety investigation has been completed. (16/6873)

Private Operations - Helicopters

Airspace Incident

- Paraparaumu, Schweizer 269C: Report of a near collision incident in the circuit. A Schweizer 269C helicopter was joining from 5 NM south while a Cessna 152 aeroplane was established in the circuit. Runway, conditions and traffic information passed, the helicopter continued tracking toward right-hand down-wind to runway 16. Both aircraft were passed updated mutual traffic information on one another. Airways ATC replay shows the aircraft were 0.029 NM (176.2 ft) apart, the helicopter was at 900 ft and the aeroplane was at 1,000 ft. CAA safety investigation in progress. (16/5881)

Selected Major Incidents

Airline Operations - Large Aeroplanes

Aircraft Incident

- ATR 72-212A, Invercargill: Unstable descent. A go-around was carried out. (16/5262)
- Bombardier DHC-8-311, en-route: A flight attendant was incapacitated in turbulence. (16/5609)
- Airbus A320-232, Wellington: Aircraft arrived ex Sydney, noted the lock was not raised so the ULD was moving during the flight. (16/5818)
- Airbus A320-232, Auckland: ULD moved in flight. On arrival Auckland ULD which should have been in position 32 was in 41, locks incorrectly set. (16/6039)
- ATR 72-212A, Christchurch: Started, and shortly after that shut down due to a haze/smoke in the flight deck. PAN declared, passengers evacuated. (16/6051)
- ATR 72-212A, Christchurch: Landing Gear caution warning on short final. Carried out a go-around. (16/6121)
- Airbus A320-232, Melbourne: ULD's not secured. One ULD was loaded the wrong way inside the aircraft, and as a result two ULD's were unsecured during flight. Two staff members had to manually lift the unit over the rails in the door to get it out. (16/6170)
- DHC-8-311, Nelson: Aircraft left Nelson with 150 kg of baggage not accounted for. The aircraft had only just taken off when the mistake was discovered. Aircraft contacted with a trim change. (16/6274)
- ATR 72-212A, Wellington: Go-around due to the landing gear not being selected down by short final. (16/6281)
- Boeing 787-9, Auckland: Wrong pallet loaded onto aircraft. Weight difference +776 kg (526 kg over LMC tolerance). Pallet was discovered on arrival Melbourne. (16/6587)
- Bombardier DHC-8-311, Woodbourne: After take-off at gear up call the flap was retracted instead of the gear. (16/6621)
- ATR-GIE ATR 72-212A, Queenstown: On final with Flap 15 and gear up, on profile, the captain called for Flap 30 (Not Gear Down). The F/O challenged if gear was wanted not flap. Captain confirmed gear. (16/6786)
- ATR-GIE ATR 72-212A, Palmerston North: Go-around due to checklist not completed by stable gate in VMC. (16/6805)
- Airbus A320-232, Queenstown: A passenger fell while boarding via airstairs, breaking his leg (serious injury). (16/6959)
- Boeing 737-476, Sydney: Flight operated sector with the FWD belly cargo hold containing cargo that was not off-loaded from the previous sector. Pilot noted speed and attitude on final appeared inaccurate for phase of flight. CAA safety investigation in progress. (16/7007)
- Boeing 787-9, Auckland: Incorrect weight recorded for Pallet on Load Plan. Aircraft departed 1,000 kg heavier than recorded. (16/6908)

Airspace Incident

- Christchurch, ATR 72: The ATR was cleared to line up on runway 02 as a Cessna Caravan was in the flare. The pilot of the Caravan initiated a go-around. Prior to the incident, the Caravan crew had not reported on downwind or was issued with a landing clearance. CAA safety investigation in progress. Operator report indicates crew slips from SOP. ATC report not complete but indications of workload distractions. (16/6631)

Airline Operations - Medium Aeroplanes

Airspace Incident

- Queenstown, Cessna 208B Grand Caravan: Several aircraft flew through an active Restricted Area, which had been closed for blasting. A NOTAM was in place but the Queenstown controller overlooked putting the ACTIVE strip on the board and also passing the advice to flight crews. CAA safety investigation completed. Pilot's underlying failure to check NOTAMS revealed by ATC error. (16/7092)
- Wellington, Cessna Caravan: Aircraft, which was being radar monitored, VFR Eastbound across Cook Strait, had an air proximity with traffic flying from the South East. ATC was intending to pass traffic information once free from other controlling duties but when this was done, the controller noticed a radar symbol converging on the Cessna Caravan from the South East. Traffic information was issued to the Cessna Caravan crew and aircraft descended. When the radar position symbols converged, the targets were 400 ft apart. Concern has been raised by Airways regarding the expectations of pilots receiving radar monitoring service. (16/7160)

Airline Operations - Small Aeroplanes

Aircraft Incident

- Piper PA-32R-301, Takaka: Forced landing with six people on board. MAYDAY. Severe engine trouble, 5 NM west of NZTK inbound to Takaka Airport. Further to the report from the operator the pilot advised that he inadvertently selected the wrong tank. CAA safety investigation and extensive investigation carried out by operator identified a failure to monitor fuel consumption and observe subsequent requirement to change tanks. (16/6565)
- Piper PA-23-250, Great Barrier: During the climb out from Great Barrier, with three people on board, the left-hand engine failed due to fuel starvation. The pilot attempted to restart the engine after selecting an alternate fuel tank however this was unsuccessful. CAA safety investigation completed. Fuel mismanagement and distribution within the airframe are likely contributing factors. (16/6948)

Sport Transport

Aircraft Incident

- Pacific Aerospace 750XL (small aeroplane), Taupo: Prior to parachute drop (with 17 people on board) the aircraft inadvertently entered IMC. During the attempted avoidance of cloud, and exit from IMC, aircraft momentarily exceeded maximum positive g-force limitation and has been referred to engineering for inspection. CAA safety investigation in progress. (16/6419)
- Parachute, Masterton: Parachute malfunction before exiting aircraft - reserve shut exited aircraft but did not deploy. Drogue deployed and had to be retrieved back into the aircraft. (16/6691)

Airspace Incident

- Queenstown, Cessna 208B Grand Caravan (medium aeroplane): A parachute aeroplane was observed to the North East and outside the Cecil Sector as cleared. A Skyline conflict alert was activated between the Cessna Caravan and a departing A320. CAA safety investigation progress, awaiting full Airways report. (16/7074)

Other Commercial Operations - Aeroplanes

Aerodrome Incident

- Cessna 172S, Hamilton: The aeroplane on a solo training flight was cleared to land on a runway which was occupied by a vehicle conducting an inspection. The vehicle driver reported vacating the runway when he realised the error. (16/6750)

Airspace Incident

- Hamilton, Diamond DA 40: An aeroplane on a solo training flight was instructed to follow a C172 on final but was observed converging with the traffic on final. Traffic avoidance instructions were issued. (16/6748)

Other Commercial Operations - Helicopters

Aircraft Incident

- AS350, Hollyfield River: During a lifting operation, a load containing plywood, ladders and a stainless steel benchtop fell into the river after the welds holding the lifting bar failed. At the time of filing report, load was still in the river. Report received from DOC. CAA safety investigation progress, awaiting operators report. (16/6798)

Defect Incident

- McDonnell Douglas 500N, Wanaka: Uncommanded engine shutdown following mechanical failure, occurred on ground run following airframe component maintenance. CAA safety investigation in progress. (16/5412)
- McDonnell Douglas 500N, Invercargill: Found main rotor grips indicating bond separation. (16/6349)
- Bell 206B, Napier: During 100 hour inspection noted tail rotor blades cracked around the attachment bearing on both blades, also a bulge in the middle of one blade. (16/7157)

Agricultural Operations - Helicopters

Defect Incident

- Robinson R66, Dannevirke: Oil pressure light came on, and oil pressure and torque both fell away after lift-off. Pilot landed back on trolley. Inspection found oil tank internal baffle had broken loose and was blocking oil tank outlet port. (16/6870)

Private Operations - Aeroplanes

Aircraft Incident

- Auster J1B, Paraparaumu: Aircraft's transmissions were received as carrier wave only but aircraft continued to the aerodrome joining base for seal runway 34. Another aircraft was lined up on seal runway 16 and vacated the runway as the Auster continued approach. Auster attempted to land twice, each time bouncing and having to conduct a go-around. On the third attempt, aircraft managed to land but pilot shut the engine down while on the runway and then proceeded to push the aircraft off the runway. CAA safety investigation completed. (16/6715)

Airspace Incident

- Lake Station, Cirrus Design SR22 (small aeroplane): Aircraft climbed into controlled airspace without a clearance and conflicted with a Jetstream J32 cruising southbound. Initially the J32 was instructed to climb to 11,000 ft, but as the intruding aircraft continued climbing separation was lost. The J32 could not climb higher due to patient requirements. Essential traffic information passed. (16/5878)
- Matamata, Robin DR400/180: An aircraft cut in front of the Robin during approach on a solo training flight, making no calls and causing go-around. CAA safety investigation completed. Both aircraft involved were attempting to land ahead of skydivers. All parties were advised to be cognisant of sky dive operations resulting in nil approaches when sky divers are about to be deployed. (16/6857)

Private Operations - Sport

Airspace Incident

- Tauranga, class 2 microlight: Aircraft was issued with a Racecourse One Departure and pilot failed to give correct read back. When queried, it became clear that pilot was not familiar with the departure procedure. Pilot was advised to taxi back to the maintenance facility the aircraft had been visiting to get a briefing. A while later, aircraft contacted the tower with pilot advising that he was now familiar with the procedure. Aircraft was cleared for the same route and this was read back correctly. After take-off, aircraft failed to track via the Racecourse. Aircraft had apparently flown into Tauranga earlier on without a working radio or transponder. (16/5829)
- Wanaka Basin, paragliders: Helicopter encountered several paragliders operating in the Wanaka Basin CFZ. Only one paraglider had a radio as Nordo operations are permissible in a CFZ. (16/6954)

Other

Facility Malfunction Incident

- Christchurch: After a scheduled mains failure by Orion, the Standby Generator failed to start. Site ran on UPS for 1 hr 7 min before batteries ran out and all Cass Peak services failed. Mains power returned at 2104 UTC (23 minutes after UPS failed) returning VHF services, but with staff now on site. CPSSR was safety checked first before returning to service at 2128 UTC. Services affected were Cass Peak SSR resulting in move from 3 NM to 5 NM separation and cancelling of training flights, VHF - 118.4M (CHTWR ADC), 120.9M. CAA safety investigation in progress. (16/5764)
- Palmerston North: During routine maintenance on the Balance SSR, the radio frequencies at the site, 126.2 - Ohakea Area, 123.7- Taranaki Area and 123.2 - Ohakea Terminal all failed. The transmitters to the radios were blocked for approximately 30 seconds and could not be used until the transmissions stopped on own accord. (16/6482)

Not Recorded

Dangerous Goods Incident

- ATR 72-212A (large aeroplane), Dunedin: Undeclared radioactive material found in hold 4 during unloading. Flight crew had not been notified of this and no NOTOC had been provided to them. (16/6278)

Defect Incidents by Aircraft Statistics Category

Quarterly Comparison

Number of Reported Defect Incidents

Aircraft Statistics Category	1 Oct to 31 Dec 2016	1 Oct to 31 Dec 2015	Average Of Same Quarter In Previous 3 Years
◆ Large Aeroplanes	168	150	233.0
■ Medium Aeroplanes	6	23	24.3
◆ Small Aeroplanes	54	53	62.0
▲ Agricultural Aeroplanes	4	8	6.7
■ Helicopters	44	43	44.3
Sport Aircraft	6	4	5.7
Unknown Aircraft	17	13	12.3
Total	299	294	388.3

Severity of Reported Defect Incidents

Severity	1 Oct to 31 Dec 2016	1 Oct to 31 Dec 2015	Average Of Same Quarter In Previous 3 Years
Critical	0	0	0.7
Major	17	15	49.0
Minor	282	279	338.7

No critical defect incidents were reported in the 1 October to 31 December 2016 quarter.

Aircraft Incidents by Aircraft Statistics Category

Quarterly Comparison

Number of Reported Aircraft Incidents

Aircraft Statistics Category	1 Oct to 31 Dec 2016	1 Oct to 31 Dec 2015	Average Of Same Quarter In Previous 3 Years
◆ Large Aeroplanes	242	114	85.0
■ Medium Aeroplanes	2	17	20.3
◆ Small Aeroplanes	24	22	23.3
▲ Agricultural Aeroplanes	0	3	1.7
■ Helicopters	9	12	12.7
Sport Aircraft	5	9	6.3
Unknown Aircraft	72	53	43.3
Total	354	230	192.7

Severity of Reported Aircraft Incidents

Severity	1 Oct to 31 Dec 2016	1 Oct to 31 Dec 2015	Average Of Same Quarter In Previous 3 Years
Critical	2	0	3.7
Major	27	22	20.7
Minor	325	208	168.3

The 2 critical aircraft incidents reported in the 1 October to 31 December 2016 quarter were in the 'Helicopters' statistics category (Occurrence Numbers 16/6522 and 16/6873, see pages 9 and 10 for details).

Airspace Incidents by Aircraft Statistics Category

Quarterly Comparison

Number of Reported Airspace Incidents

Aircraft Statistics Category	1 Oct to 31 Dec 2016	1 Oct to 31 Dec 2015	Average Of Same Quarter In Previous 3 Years
◆ Large Aeroplanes	61	31	34.3
■ Medium Aeroplanes	14	15	23.7
◆ Small Aeroplanes	111	116	124.7
▲ Agricultural Aeroplanes	2	1	1.3
■ Helicopters	24	23	23.3
Sport Aircraft	19	28	19.7
Unknown Aircraft	184	175	131.0
Total	415	389	358.0

Severity of Reported Airspace Incidents

Severity	1 Oct to 31 Dec 2016	1 Oct to 31 Dec 2015	Average Of Same Quarter In Previous 3 Years
Critical	4	3	2.3
Major	16	37	34.7
Minor	395	349	321.0

Of the 4 critical airspace incidents reported in the 1 October to 31 December 2016 quarter:

- 2 were in the ‘Small Aeroplanes’ statistics category (Occurrence Numbers 16/6591 and 16/6637, see page 9 for details); and
- 2 were in the ‘Helicopters’ statistics category (16/5881 and 16/6872, see pages 9 and 10 for details).

Attributability

Of the 415 reported airspace incidents in the 1 October to 31 December 2016 quarter, 14% are Air Traffic Service (ATS) attributable, 75% are pilot attributable, 2% are ATS and pilot attributable, and 9% are unknown attributable.

(Note that the percentages may not sum exactly to 100% due to rounding.)

Since January 2014 the long-term trend of the ATS attributable airspace occurrence rate is upward and the long-term trend of the pilot attributable rate is upward.

Bird Incident Rates

Bird hazard monitoring has been carried out for the period ended 31 December 2016.

There were 2 aerodromes with strike rates in the high risk category of the CAA standard (10.0 and above bird strikes per 10,000 aircraft movements), both having long-term upward trends.

There were 2 aerodromes with strike rates in the medium risk category (5.0 to 10.0 per 10,000 movements), 1 having a long-term upward trend and 1 having a long-term constant trend.

24 aerodromes had strike rates in the low risk category (below 5.0 per 10,000 aircraft movements), 2 having long-term upward trends, 8 having long-term constant trends and 14 having long-term downward trends.

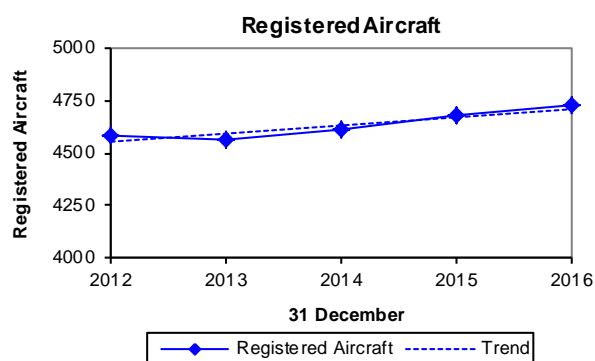
For more information visit the 'Bird Hazard Reports' section of the CAA web site <http://www.caa.govt.nz/safety-info/safety-reports.htm> (or look up Aviation Info, Safety Info, Safety reports)

Section 3 - Activity

Registered Aircraft by Aircraft Statistics Category

Trends

The following graph shows the number of registered aircraft at 31 December for each of the five-years 2012 to 2016.



Note that the scale on this graph does not start at zero.

Quarterly Comparison

Aircraft Statistics Category	31 December 2016	31 December 2015	Average Of 31 December In Previous 3 Years
Large Aeroplanes	136	125	127
Medium Aeroplanes	69	77	79
Small Aeroplanes	1,508	1,506	1,513
Agricultural Aeroplanes	94	93	102
Helicopters	845	840	804
Sport Aircraft	2,071	2,038	1,960
Total	4,723	4,679	4,586

Note that these figures include the sport aircraft statistics category but exclude hang gliders, paragliders and parachutes.

Licences and Organisations

The number of 'Part 129 Foreign Air Operators' increased from 33 at 31 December 2015 to 40 at 31 December 2016, an increase of 7 (21%). Over the same period the number of 'Part 148 Aircraft Manufacturing Organisations' decreased from 20 to 16, a decrease of 4 (20%); and the number of 'Part 19 Supply Organisation Certificate of Approvals' decreased from 58 to 50, a decrease of 8 (14%).

At 31 December 2016 there were 76 'Part 102 Unmanned Aircraft Operators', this certificate was introduced on 1 August 2015.

At 31 December 2016 there were 5 'Australian AOC Operating with ANZA Privileges'.

Section 4 - Quarterly Statistics

Quarter	2014/1	2014/2	2014/3	2014/4	2015/1	2015/2
Social Cost \$ million¹	37.63	11.07	16.91	15.28	43.00	3.32
Number of Fatal Accidents²	5	1	2	2	4	0
Number of Fatal Injuries²	6	2	2	2	9	0
Number of Serious + Minor Injuries²	19	6	16	23	13	11
Number of Aircraft Accidents²						
Large Aeroplanes	2	0	0	1	0	0
Medium Aeroplanes	0	0	0	0	1	0
Small Aeroplanes	8	3	2	4	7	6
Agricultural Aeroplanes	2	0	0	1	1	1
Helicopters	5	2	4	3	7	2
Sport Aircraft	22	5	2	13	8	5
Unknown Aircraft	2	0	0	0	0	0
Hang Gliders	6	0	5	7	6	7
Parachutes	4	3	2	3	1	2
Number of Incidents³	1,290	1,244	1,379	1,288	1,432	1,432
Number of Aviation Related Concerns⁴	271	171	214	227	244	188
Number of Hours Flown⁵	235,075	189,092	199,715	209,012	244,904	193,755
Number of Air Transport Flights⁵	97,035	78,312	77,733	91,697	110,624	83,020
Number of Aircraft Movements⁶	247,546	221,072	232,016	220,846	237,404	211,137
Number of Aircraft on the Register⁷	4,587	4,552	4,570	4,615	4,662	4,610
Number of Part 119 Certificated Operators						
Air Operator – Large Aeroplanes	9	9	9	8	8	7
Air Operator – Medium Aeroplanes	15	14	13	12	13	13
Air Operator – Helicopters and Small Aeroplanes	167	168	167	165	163	163
Number of Part 137 Agricultural Aircraft Operators	99	99	98	97	101	103
Number of Part 115 Adventure Aviation Operators	32	28	27	27	27	28
Number of Part 102 Unmanned Aircraft Operators	0	0	0	0	0	0
Number of Part 141 Training Organisations	52	53	55	55	56	56
Number of Part 149 Recreation Organisations	8	8	8	8	8	8
Number of Licences (Type of Medical Certificate)⁸						
Recreational Pilot Licence (RPL Medical)	289	293	311	320	337	366
Private Pilot Licence (Class 1 & 2)	2,948	2,816	2,763	2,617	2,587	2,580
Commercial Pilot Licence (Class 2 only)	2,527	2,544	2,515	2,442	2,390	2,448
Commercial Pilot Licence (Class 1)	2,147	2,098	2,107	2,125	2,141	2,046
Airline Transport Pilot Licence (Class 2 only)	990	994	986	998	987	995
Airline Transport Pilot Licence (Class 1)	1,204	1,223	1,232	1,226	1,232	1,228
Air Traffic Controller Licence (Class 3)	381	381	384	379	379	387
Aircraft Maintenance Engineer Licence (N/A)	2,678	2,699	2,708	2,726	2,737	2,754

¹ All aircraft statistics categories. Includes hang gliders and parachutes. Cost of fatal, serious and minor injuries, and aircraft destroyed, in June 2015 dollars.

² All accidents. All aircraft statistics categories. Includes hang gliders and parachutes.

³ Number of reported incidents. All incident sub-types.

⁴ Number of reported Aviation Related Concerns.

⁵ New Zealand registered aircraft. Includes the aircraft classes aeroplane, helicopter and balloon only; excludes other aircraft classes, hang gliders and parachutes. Based on reported Aircraft Operating Statistics for periods up to the quarter ended 31 December 2015 (the most recent quarter for which adequate data are available) with an allowance for aircraft for which reports were not received. Estimated for 2016/1, 2016/2 and 2016/3. Data not yet available for 2016/4.

Quarter	2015/3	2015/4	2016/1	2016/2	2016/3	2016/4
Social Cost \$ million¹	1.87	32.69	8.18	9.33	2.84	28.46
Number of Fatal Accidents²	0	1	1	2	0	3
Number of Fatal Injuries²	0	7	1	2	0	5
Number of Serious + Minor Injuries²	12	15	18	5	12	12
Number of Aircraft Accidents²						
Large Aeroplanes	0	0	1	0	1	0
Medium Aeroplanes	0	0	0	0	0	0
Small Aeroplanes	4	7	8	2	2	6
Agricultural Aeroplanes	0	0	0	1	1	2
Helicopters	5	4	3	4	2	3
Sport Aircraft	7	9	7	6	5	4
Unknown Aircraft	0	0	0	0	1	0
Hang Gliders	7	8	11	2	2	4
Parachutes	1	4	3	0	0	5
Number of Incidents³	1,233	1,309	1,420	1,604	1,601	1,531
Number of Aviation Related Concerns⁴	171	136	259	202	224	176
Number of Hours Flown⁵	198,241	223,183	261,940	221,845	233,053	
Number of Air Transport Flights⁵	85,686	103,776	133,568	91,375	85,814	
Number of Aircraft Movements⁶	222,320	227,208	237,499	213,927	221,092	231,730
Number of Aircraft on the Register⁷	4,650	4,679	4,700	4,657	4,687	4,723
Number of Part 119 Certificated Operators						
Air Operator – Large Aeroplanes	7	8	8	8	8	7
Air Operator – Medium Aeroplanes	13	15	15	15	15	15
Air Operator – Helicopters and Small Aeroplanes	163	164	161	162	163	164
Number of Part 137 Agricultural Aircraft Operators	104	104	102	103	103	102
Number of Part 115 Adventure Aviation Operators	30	30	28	28	28	29
Number of Part 102 Unmanned Aircraft Operators	4	16	31	45	54	76
Number of Part 141 Training Organisations	57	55	54	53	51	52
Number of Part 149 Recreation Organisations	8	8	8	8	8	8
Number of Licences (Type of Medical Certificate)⁸						
Recreational Pilot Licence (RPL Medical)	385	395	401	420	429	419
Private Pilot Licence (Class 1 & 2)	2,585	2,530	2,492	2,462	2,418	2,385
Commercial Pilot Licence (Class 2 only)	2,376	2,316	2,248	2,281	2,240	2,192
Commercial Pilot Licence (Class 1)	2,048	2,076	2,073	2,051	2,045	2,030
Airline Transport Pilot Licence (Class 2 only)	1,046	1,034	1,019	1,002	1,016	1,006
Airline Transport Pilot Licence (Class 1)	1,173	1,210	1,221	1,268	1,249	1,248
Air Traffic Controller Licence (Class 3)	387	383	380	381	373	366
Aircraft Maintenance Engineer Licence (N/A)	2,766	2,779	2,789	2,800	2,817	2,830

⁶ Certificated aerodromes. Reported to CAA by Airways Corporation and Taupo Airport. Includes Auckland, Christchurch, Dunedin, Gisborne, Hamilton, Invercargill, Napier, Nelson, New Plymouth, Ohakea, Palmerston North, Paraparaumu, Queenstown, Rotorua, Taupo, Tauranga, Wellington and Woodbourne. Excludes Chatham Islands/Tuuta Airport, Hokitika, Kerikeri/Bay of Islands, Mount Cook, Te Anau/Manapouri (certificated until April 2015), Timaru, Westport, Whakatane (certificated from April 2015), Whanganui and Whangarei.

⁷ As at the last day of the quarter. Includes the sport aircraft statistics category, excluding hang gliders, paragliders and parachutes.

⁸ As at the last day of the quarter. For RPL holders, a medical fitness certificate, in accordance with the NZTA medical fitness standards that are applicable for a Class 2, 3, 4 or 5 driver licence with a passenger endorsement. For PPL, CPL & ATPL holders, an active class 1 or active class 2 medical certificate; this means that for CPL and ATPL licences, the number with a class 2 medical only, must only be exercising PPL privileges (or not flying at all). For ATCL holders, an active class 3 medical certificate. This does not show the number of licence holders as each client may hold more than one licence.

Definitions

Accident

An occurrence that is associated with the operation of an aircraft and takes place between the time any person boards the aircraft with the intention of flight and such time as all such persons have disembarked and the engine or any propellers or rotors come to rest, being an occurrence in which–

- (1) a person is fatally or seriously injured as a result of–
 - (i) being in the aircraft; or
 - (ii) direct contact with any part of the aircraft, including any part that has become detached from the aircraft; or
 - (iii) direct exposure to jet blast–

except when the injuries are self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to passengers and crew; or

- (2) the aircraft sustains damage or structural failure that–
 - (i) adversely affects the structural strength, performance, or flight characteristics of the aircraft; and
 - (ii) would normally require major repair or replacement of the affected component–

except engine failure or damage that is limited to the engine, its cowlings, or accessories, or damage limited to propellers, wing tips, antennas, tyres, brakes, fairings, small dents, or puncture holes in the aircraft skin; or

- (3) the aircraft is missing or is completely inaccessible.

Aircraft Incident

Any incident, not otherwise classified, associated with the operation of an aircraft which did not immediately affect the safety of an aircraft operation but which,

- (1) if allowed to continue uncorrected, or
- (2) if repeated in different but likely circumstances,

could affect the safety of an aircraft operation.

Social Cost

Social cost is a way of measuring safety performance by accounting for the number and severity of casualties, and aircraft damage. The values used to estimate cost to the nation of fatal, serious and minor injuries are obtained from the annual report of the 'Social Cost of Road Crashes and Injuries' published by the Ministry of Transport. The Ministry of Transport has directed its agencies to use social cost to permit comparisons between transport modes. The current value of statistical life is \$4.06 million. Estimates of the values of aircraft destroyed or written off are made by the CAA on the basis of market prices in a number of developed aviation nations.

Aircraft Statistics Category

The following table shows the definition of each aircraft statistics category and the aircraft classes included.

Aircraft Statistics Category	Definition	Aircraft Class
Large Aeroplanes	Aeroplanes that must be operated under Part 121 when used for air transport	Aeroplane
Medium Aeroplanes	Aeroplanes that must be operated under Part 125 when used for air transport, except for those required to operate under Part 125 solely due to operating SEIFR	Aeroplane
Small Aeroplanes	Other Aeroplanes with Standard Category Certificates of Airworthiness	Aeroplane
Agricultural Aeroplanes	Aeroplanes with Restricted Category Certificates of Airworthiness limited to agricultural operations	Aeroplane
Helicopters	Helicopters with Standard or Restricted Category Certificates of Airworthiness	Helicopter
Sport Aircraft	All aircraft not included in the groups above	Aeroplane, Amateur Built Aeroplane, Amateur Built Glider, Amateur Built Helicopter, Balloon, Glider, Gyroplane, Helicopter, Jetpack, Microlight Class 1, Microlight Class 2, Power Glider

Other Aircraft Types (not included on the NZ Aircraft Register)

Hang Glider

A glider, including a powered glider, that is capable of being launched and landed solely by the use of the pilot's legs, and includes paragliders. **Paraglider** means a hang glider with no rigid primary structure.

Parachute

Any device, without a motor in operation, comprising a flexible drag, or lift/drag, surface from which a load is suspended by shroud lines capable of controlled deployment from a packed condition.

Airspace Incident

An incident involving deviation from, or shortcomings of, the procedures or rules for–

- (1) avoiding a collision between aircraft; or
- (2) avoiding a collision between aircraft and other obstacles when an aircraft is being provided with an Air Traffic Service.

Bird Incident

Means an incident where–

- (1) there is a collision between an aircraft and one or more birds; or
- (2) when one or more birds pass sufficiently close to an aircraft in flight to cause alarm to the pilot.

Defect Incident

An incident that involves failure or malfunction of an aircraft or aircraft component, whether found in flight or on the ground.

Fatal Injury

An injury which results in death within 30 days of the accident.

Incident

Any occurrence, other than an accident, that is associated with the operation of an aircraft and affects or could affect the safety of operation.

Incident Sub-Types	
Aerodrome Incident	Dangerous Goods Incident
Aircraft Incident	Defect Incident
Airspace Incident	Facility Malfunction Incident
Bird Incident	Promulgated Information Incident
Cargo Security Incident	Security Incident

Occurrence

Means an accident or incident.

Serious Injury

Means any injury that is sustained by a person in an accident and that–

- (1) requires hospitalisation for more than 48 hours, commencing within 7 days from the date the injury was received; or
- (2) results in a fracture of any bone, except simple fractures of fingers, toes, or nose; or
- (3) involves lacerations which cause severe haemorrhage, nerve, muscle, or tendon damage; or
- (4) involves injury to an internal organ; or
- (5) involves second or third degree burns, or any burns affecting more than 5% of the body surface; or
- (6) involves verified exposure to infectious substances or injurious radiation.

Severity

The following definitions apply to the severity accorded to accidents and incidents as the result of investigation of occurrences:

Severity	Definition
Critical	An occurrence or deficiency that caused, or on its own had the potential to cause, loss of life or limb;
Major	An occurrence or deficiency involving a major system that caused, or had the potential to cause, significant problems to the function or effectiveness of that system;
Minor	An isolated occurrence or deficiency not indicative of a significant system problem.

Safety Target Structure

