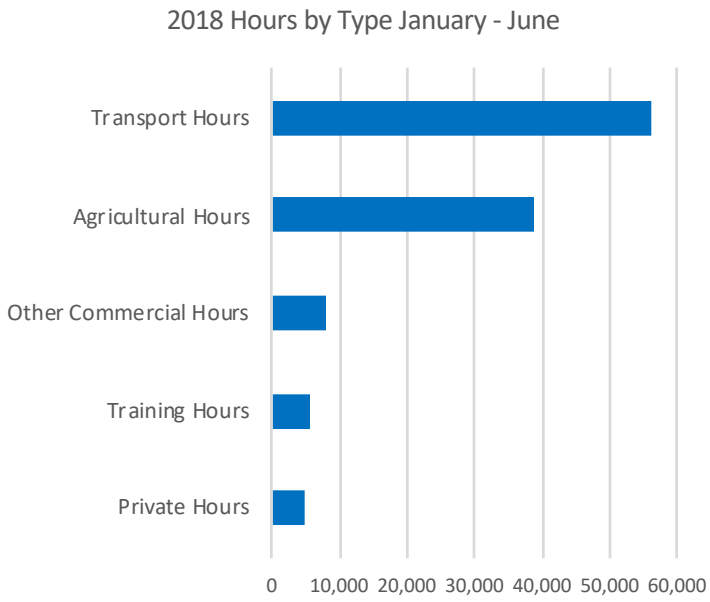
NEW ZEALAND HELICOPTER SAFETY UPDATE SEPTEMBER 2018

NZ HELICOPTER ASSOCIATION

CAA
CIVIL AVIATION AUTHORITY OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

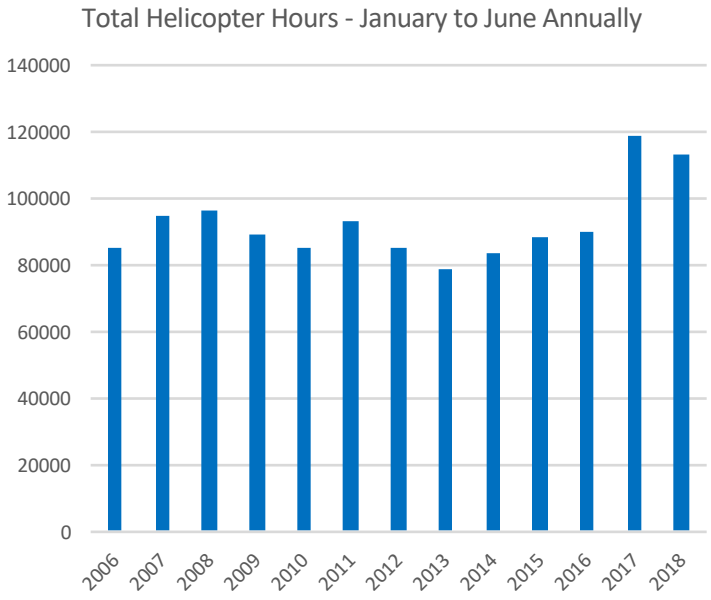
INTRODUCTION

This is a further update on activity and safety performance in the helicopter sector, with activity and accident rate information current to June 2018. If you have questions or comments about the information then please contact me at Joe.Dewar@caa.govt.nz.



ACTIVITY TRENDS - HELICOPTERS

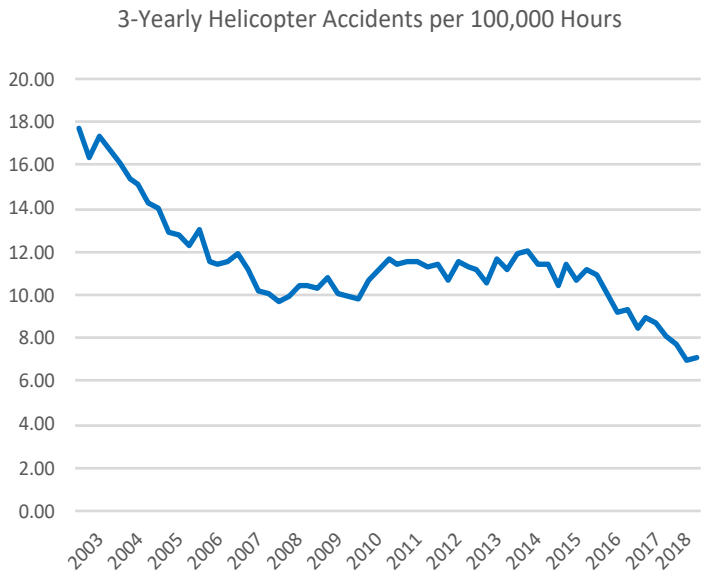
The total estimated hours for the first half of 2018 is 113,600, 4,100 fewer total hours than in the first half of 2017.

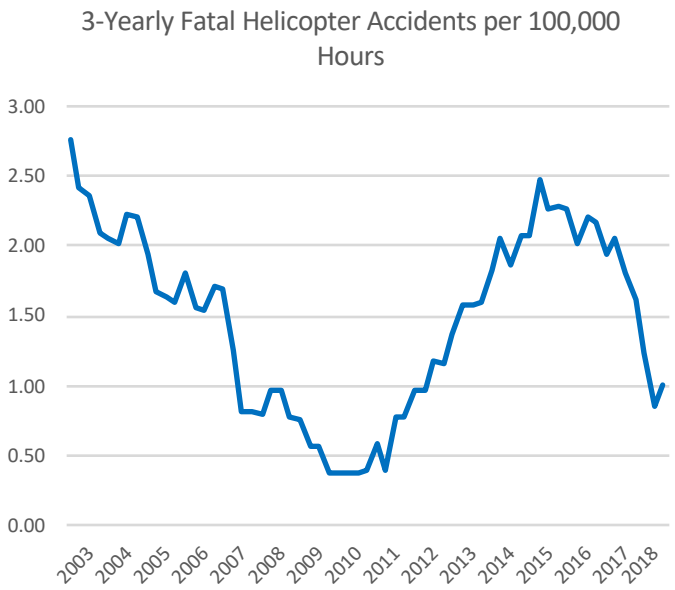


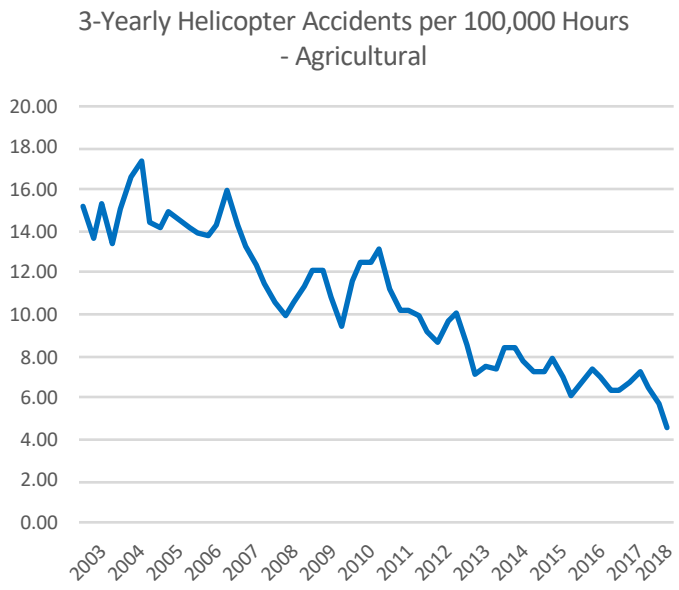
Most of the hours reported have been on transport and agricultural hours. Compared to 2017 there have been increased hours reported in agricultural and other commercial operations.

ACCIDENT RATES - HELICOPTERS

The overall New Zealand helicopter accident rate continues to decline, and at the end of the first half of 2018 the 3-yearly rate sits at 7.05 accidents per 100,000 hours. The fatal rate has increased slightly, currently sitting at 1.01 per 100,000 hours.

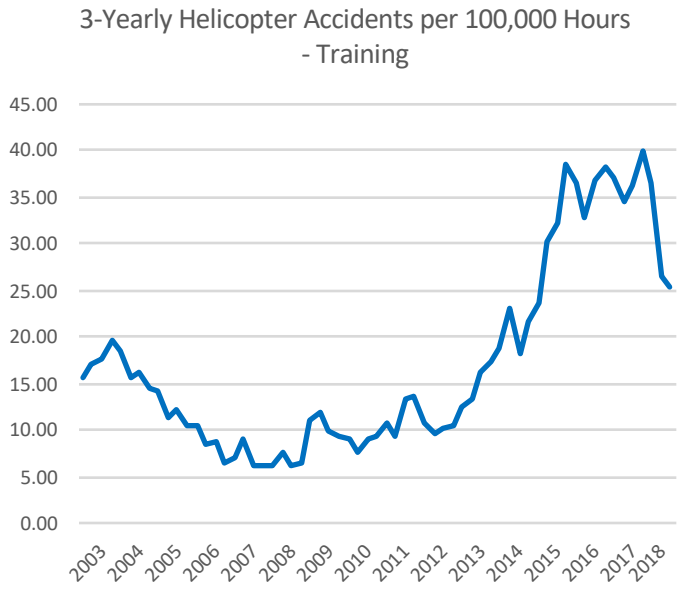


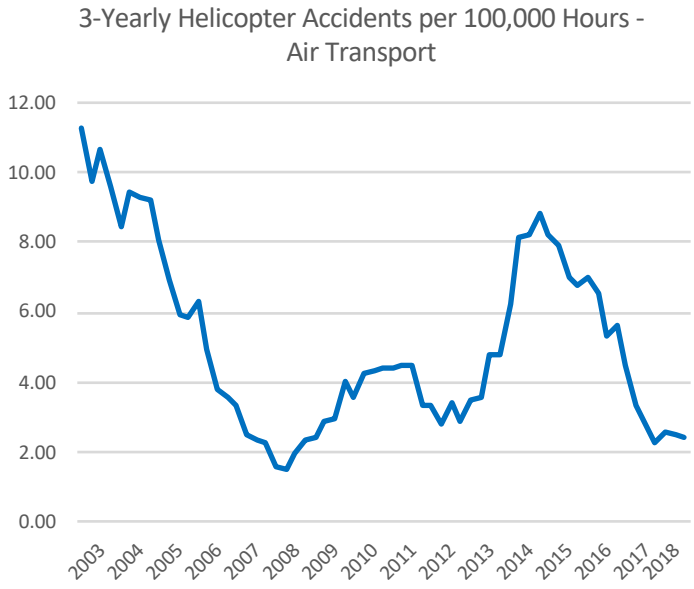


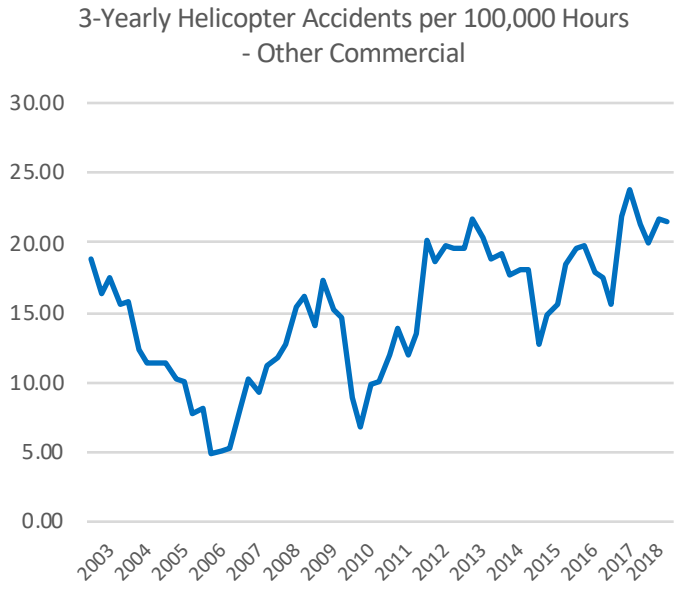


ACCIDENT RATES - BY SECTOR

The transport and agricultural sectors have seen their accident rates continue to trend downwards. The three yearly transport rate sits at 2.43 per 100,000 hours and 4.38 for agriculture. The training rate sits at 25.37 per 100,000 hours and the other commercial rate sits at 21.57.







2018 ACCIDENT DETAILS

So far in 2018 there have been eight helicopter accidents, which is a reduction from the same period in 2017 when there were twelve accidents. Two of the 2018 accidents have been fatal.
Accident details are provided below:


January


Canterbury


Hughes 300


Loss of control - performance management

The helicopter's RPM decayed on final approach, approximately 150m from the landing point, at 100 ft. altitude. The pilot was unable to recover the situation, and auto rotated onto a slope from which the helicopter slid 5-6m down the slope, breaking the tail boom and one skid.
No defects were found. The pilot had very limited experience on the helicopter type and did not recognise the onset of low RRPM which required proactive contol inputs including rolling on throttle. Due to the height above ground and the descent rate, impact with the ground could not be avoided.
Pilots are remined to actively monitor the RRPM and to manage the required control inputs.


January


Canterbury


R44


Collision/strike - tree

The pilot was engaged on an external load operation, sling loads of fencing equipment. While entering a hover and focusing on positioning the load, the main rotor blade made contact with a tree on the pilot's blindside. The pilot released the load and turned towards the track to land. The helicopter made contact with the edge of a bank, spun to the right, and descended backwards into the bush. The pilot was not injured.
The operator's investigation identified situational awareness as the main contributor to the accident. The key lessons identified were the importance of making sure that ground crew understand their responsibilities around providing guidance to pilots where terrain/ obstacle clearance has been identified as a hazard. In addition the operator noted the importance of ensuring that longlines are of sufficient length to give maximum practical clearance of obstacles.


January


Wellington


BK 117


Collision/strike - tree

At the conclusion of an external load operation it was determined after an inspection of the main rotor blades that they had made contact with trees. The internal investigation identified that the use of a previous risk assessment, without evaluating the site for hazards, prevented the identification of the hazards presented by the tree line. The use of the 50’ long line reduced the safety margin and would not have been used if a 100’ long line had been available on the site.


February


Wanaka


Cabri G2


Abnormal landing

The operator reported that the helicopter landed heavily and rolled over following a practice autorotation. An investigation into the accident is underway.


May


Nelson


AS 350


Collision/strike - tree

On an operation spraying a forestry block, during a turn coming back to start another spray line the helicopter struck a tree with the main rotor blade. The strike damaged one of the blades significantly and put the aircraft out of balance. The pilot landed the helicopter on an old forestry skid site a 100m away. Cloud cover and poor light were identified as key causal factors for the pilot not identifying the tree.


June


Near Waiouru


Hughes 600


Under investigation

The helicopter crashed while on a survey operation, with one of the occupants dying in hospital after the accident. TAIC are investigating the accident.


June


Otago


Hughes 300


Under investigation

During the takeoff and departure, the helicopter suffered a loss of power, with the pilot attempting to return and land on a ridge. Due to insufficient power the helicopter impacted a bank and rolled. The pilot was not injured.

July

Otago

Robinson R44

Under investigation

The aircraft went missing in the vicinity of Stevenson's Island, Lake Wanaka. A TAIC investigation into the accident in underway.

A SAMPLE OF OTHER OCCURRENCES IN 2018

This is a selection of other incident and defect reports submitted in 2018 to date.

January

Wanaka

AS 350

External load - inadvertent release

During fire fighting operations, as the aircraft approached the fire line for a water drop, the pilot repositioned his hand on the cyclic grip in preparation and inadvertently electrically released the cargo hook, and the fire bucket was dropped.

January

Wanaka

AS 350

System/component failure - door

During external load operations, removing beehives, the right hand sliding door came off and was lost in flight. The pilot noticed the door light illuminated on the third run. After two more runs, with the light still illuminated, pilot looked over his shoulder and realised that the door was gone. Initial inspection of the door and with reference to CAN 05-008, it appears that at least 2 elements of the right hand sliding door installation (SB52-00-14) was not carried out when aircraft was modified in 2014.

January

Not reported

Hughes 500

Passenger/cargo related incident

While conducting bee hive placements the two front doors of the aircraft were removed. As planned, the pilot landed to pick up two beekeepers to relocate them to another site. While in the cruise between the two sites one of the beekeepers removed a mobile phone from a pocket to take a photograph. The phone dropped from the helicopter.

When the pilot landed and shut down marks were noticed on the tail rotor blades, consistent with a strike

from the mobile phone. A small mark on the leading edge of the vertical stabilizer was also visible. The helicopter was inspected and the tail rotor blades removed from service.
In future, the pilot will ensure that all persons on board the aircraft, while doors are removed or windows open, are reminded that all mobile phones are to be stowed or sufficiently secured before flight.


February


Central North Island


R44


Near collision/strike - wire

While conducting an agricultural spray job the pilot noticed that a section of the paddock had been missed during the previous spray runs. From a low approach the pilot sprayed the previously missed section, uphill through a small gully, to the top of the ridge. The pilot turned to see where the spray fell and when looking ahead again it was noticed that the pilot had drifted into the path of 220kV power lines.
The pilot flared the helicopter and made a sharp turn to the right to avoid hitting the power lines. There was damage to the right spray boom due to electricity arcing as the helicopter came into close proximity to the power lines. The pilot landed immediately and shut down. The operator determined that during the winter months more time could be dedicated to the pilot's remedial training. It was also recommended that the pilot attend a Wire Strike Avoidance course.


March


Upper South Island


AS 350


Other

During take-off the left hand transmission cowl came open and contacted the Main Rotor Frequency adapter bolt tails and Blade pin tails, causing light composite damage to the cowl. The transmission cowl lower latches had not been fastened securely prior to flight.


March


Southland


R44


Component/system failure or malfunction

Conducting a low level agricultural operation the helicopter experienced a cylinder failure. The cylinder was found to be cracked. The engine was removed and sent to maintenance provider for detailed inspection.


April


Wanaka


AS 350


Collision/strike object - other

On shutdown the pilot noted a slight swishing noise from the main rotor blades. On inspection they noticed

that two tip weights on the main rotor blades had been damaged. They traced the incident back to a landing in a confined area, and believe the blades may have come in contact with a bush on the left corner of aircraft in the pilot's blind spot. No feedback was felt through the controls at the time.


May


Canterbury


Hughes 500


Ground handling

After an aerial wand spraying operation, with the helicopter at ground idle, as crew removed the spray gear the loader driver inadvertently lifted the spray wand into the rotating main rotor blades. The helicopter was immediately shut down. One main rotor blade was found damaged and a replacement blade was fitted.


May


Waikato


R44


Component/system failure or malfunction

During the approach to land the helicopter lost some power and the engine started vibrating. The investigation revealed that number 4 cylinder exhaust valve had stuck and caused the push rod tube to bend. The cylinders had recently been top overhauled 100-200 hours prior.


May


Otago


AS 350


Passenger/cargo related occurrence

The front seat passenger's digital camera fell out of of his lap, rolled along the floor, landing on the perspex center bubble and breaking it. The camera fell through the bubble and was not recovered. The operator undertook to generate an operational notice stating that all front seat passengers must have neck straps attached to their cameras and must be worn at all times.


May


Central North Island


R44


Near collision/strike - RPAS

On take off and climb out from Huka Falls Road the helicopter had a near miss with a drone that was being flown at a lookout of SH1. The drone was close enough that the pilot could identify it was a DJI Mavric and flying above 500ft AGL. By the time the pilot saw the drone he was climbing out past it and estimated that it passed 2-4 meters past the tip of the rotor blades.

February

Southland

Hughes 500

Component/system failure or malfunction

During an external load operation spreading fertiliser, the cargo hook attach-point bolts failed during a turn and the cargo hook assembly detached from the fuselage. The load released from the cargo hook and the cargo remained attached to the helicopter by the hydraulic release line. The engineering investigation determined that the cause for the failure was the loosening of the mounting bolts for the base plate due to movement of the load.

May

Kaikoura

Hughes 500

Component/system failure or malfunction

Whilst carrying out a daily preflight damage was found to the T/R thrust fan blades. On further inspection it was found that one of the cowling screws in front of the fan thruster was missing and another screw was partially undone. The fairing in front of the T/R thruster fan is constructed from fibreglass. When tightening screws when replacing the fairing after inspections it is easy to over tighten the screw and potentially crack or compromise the integrity of the fibreglass around the screw assembly area. Screws can migrate loose. Loctite compound now applied to screws.

May

Southern Lakes

AS350

Component/system failure or malfunction

During flight the pilot noted a low frequency vibration, with a vertical vibration followed by a high lateral vibration. The pilot landed at their base, upon inspection the pilot found the bearing of the lower link of the two (upper) rotating drive links had separated from the bearing housing. It was found that the bearing cage/ housing has failed where it was split in house. The drive link was replaced and the main rotor drive and all affected areas inspected for serviceability. Inspection carried out for any further cause for the bearing to fail. Upon inspection the lower diapason link bearing was found to have axial play. The link was replaced to avoid this bearing failing in the future.

August

Canterbury

Hughes 500

Other

Damage to the main rotor blades was noted post flight. The damage was caused by ejected shell cases during a venison recovery operation.The blades removed, and 3 out of 5 were found out of limits. The blades were sent for repair.

March

Queenstown

AS350

Runway incursion

The lead aircraft in a flight of five helicopters crossed the runway centreline with an aeroplane on short final.
The pilot of the lead aircraft called Tower for taxi and departure instructions. The flight was given instructions to hold short of the runway, which were acknowledged correctly by the pilot.
The operator's investigation identified distraction and pilot workload as contributing factors to the incident.
The CAA investigation found that the ATC instruction and read back were clear and correct. The controller in the tower did not challenge the aircraft prior to the clearance limit being exceeded. The lead helicopter was clear of the runway prior to the fixed-wing crossing the runway threshold.
The operator briefed its pilots on the event and adjusted the flight duties for lead pilots of multiple aircraft flights.

May

Gisborne

Bell 206

Component/system failure or malfunction

While ferrying the helicopter a bolt out of the tail rotor transmission flaring came out and made contact with the leading edge of one of the tail rotor blades. The pilot did not notice in flight but noticed the damge after shutdown. An engineer replaced the blade on site, and the operator's investigation report noted the importance of being vigilant on pre flight inspections, especially after maintenance.

July

Central North Island

AS 350

Component/system failure or malfunction

The pilot was carrying out sling load operations and experienced two instances of uncommanded yaw. The first was thought to be turbulence but the second was more pronounced and the pilot made a precautionary landing. There had been no indication of engine failure or problems on the instruments or annunciator panel. Suspecting a faulty power turbine governor, the PTG was replaced and the part sent for inspection.