



NEW ZEALAND AGRICULTURAL AVIATION

SAFETY UPDATE

SEPTEMBER 2019

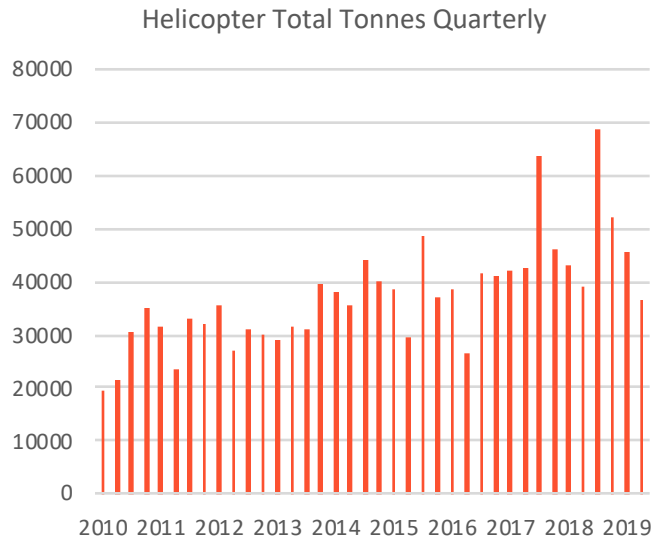
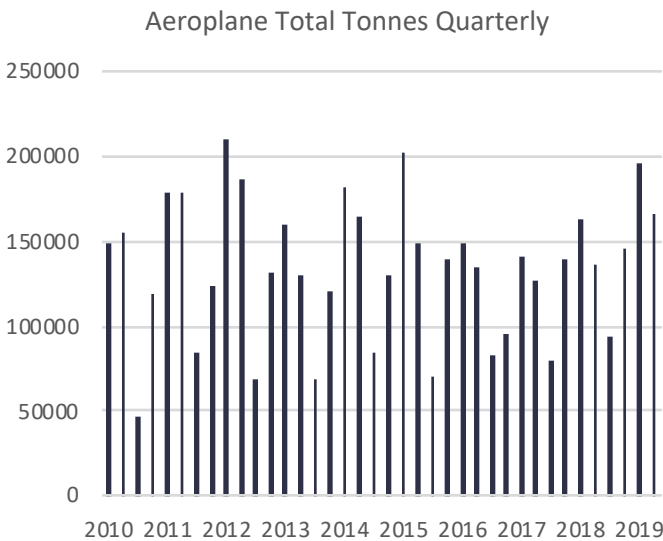


INTRODUCTION

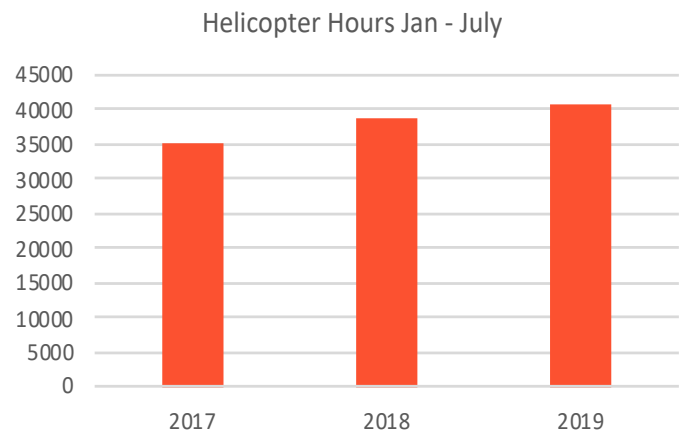
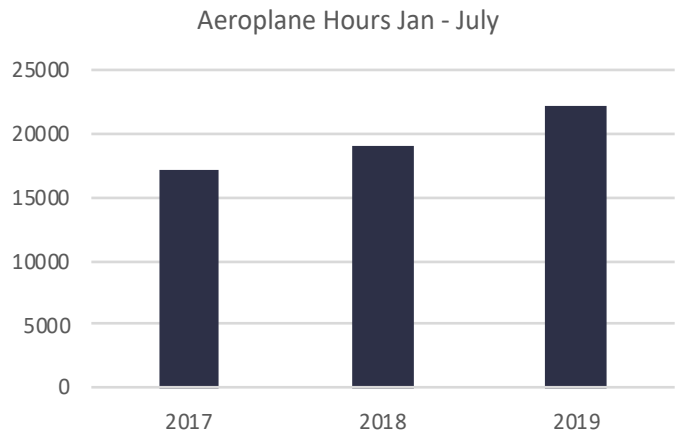
This is a another update on activity and safety in the agricultural sector, with activity and accident rate information current to July 2019. Like the previous updates it includes further details about accidents, incidents and defects reported this year to date. If you have questions or comments about the information then please contact me at Joe.Dewar@caa.govt.nz.

AGRICULTURAL ACTIVITY

The agricultural product statistics to date indicate that overall sector activity has been higher than in 2018. A total 443,500 tonnes have been reported, 62,000 more than for the first half of 2018. The increase has been driven exclusively by fixed wing agricultural operations; helicopter operators have reported approximately the same amount of tonnes as last year.



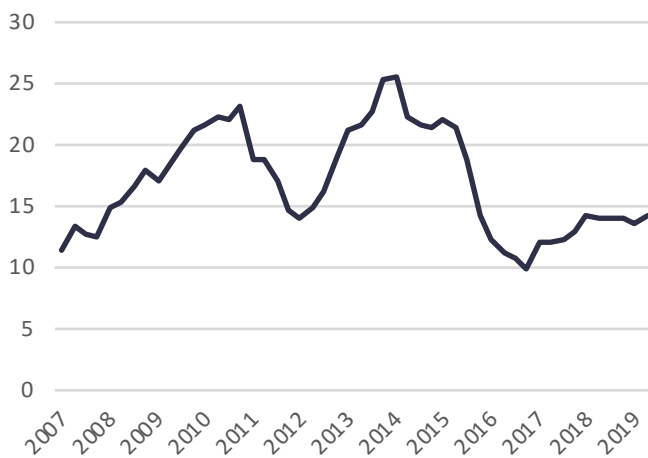
The increased fixed wing activity is also reflected in the reported hours.



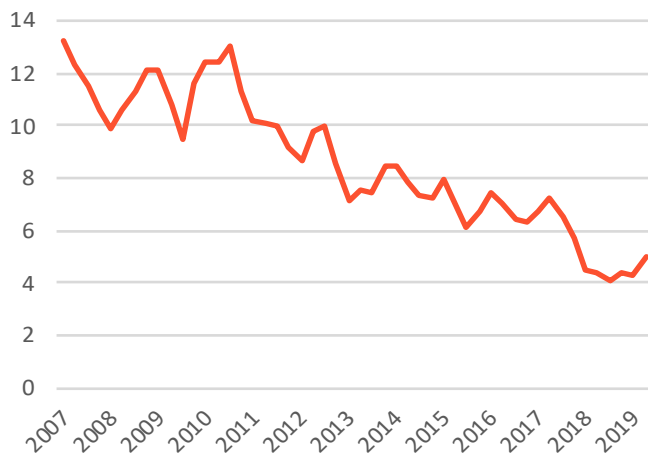
SAFETY PERFORMANCE

There have been 4 accidents on agricultural operations in the year to date; for the same period in 2018 there were also 4 accidents. The accident rate trend for both fixed wing and helicopter agricultural operations has recently been increasing. The charts below show the rolling average 3-yearly accidents per 100,000 hours. The current rate for fixed wing operations is **14.22** while for helicopter operations it is **4.96**.

3-Yearly Accidents per 100,000 Hours - Aeroplane Ag Operations



3-Yearly Accidents per 100,000 Hours - Helicopter Ag Operations



ACCIDENTS IN 2019



January



North of Taupo



Bell 206



Collision/strike - wire

The helicopter hit power lines and crashed while spraying. During the last load of the job and while searching for broom to spray, the aircraft contacted high voltage power lines. The aircraft rotors cut through the power lines, rendering the helicopter uncontrollable, and it subsequently impacted the ground. The pilot indicated that although he was aware of the power lines, he lost situational awareness while focused on the search for pockets of broom.



April



Manawatu



Robinson R44



Collision/strike - wire

The pilot was conducting aerial spraying work when the helicopter struck an electric fence wire while completing the third load of the job. The pilot was aware of the location of the wire and had avoided it during the other spray runs and on previous work on the block. He managed to execute an emergency landing, however the helicopter suffered extensive damage to the front canopy, a rotor blade and during the ensuing heavy landing.



May



East of Te Urewera National Park



750XL



Takeoff accident

The aircraft failed to get airborne and crashed off the end of the airstrip, coming to rest inverted. The loader driver assisted the pilot from the wreckage, the pilot sustained minor injuries. The operator's initial investigation identified that, possibly due to distraction, the aeroplane's flaps were not set for take off on the take off roll. The operator's investigation into the accident is continuing.



June



Waikato



Fletcher



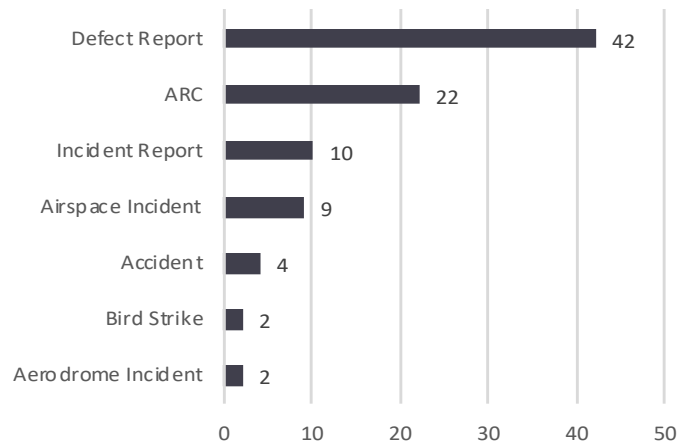
System/component failure - engine power loss

A sudden loss of engine power required a forced landing from low level. The only available area was swampy and flat with numerous trees surrounding it. In order to avoid contacting a larger tree, a small dead tree could not be avoided on landing, and the aircraft sustained damage to the right hand outer wing panel on contact. A faulty fuel gauge was determined to be the cause of the engine power loss.

INCIDENTS AND DEFECTS

A total of 91 occurrence reports have been received for the year to date for agricultural operations. Below, a number of these are described.

Agricultural Occurrences in 2019 Jan - June



April



Waikato

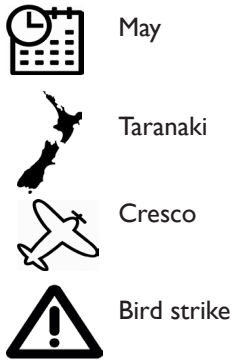


Fletcher

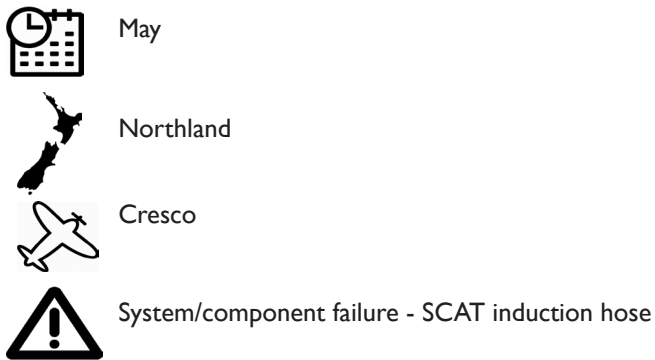


System/component failure - steering torque tube

During landing roll, the nose wheel began to shimmy. Soon after that, directional control through rudder pedal inputs was lost, and differential braking was needed to maintain heading. Steering torque tube was found to be cracked above the bottom mount-block. The steering torque tube was found to have separated above the bottom bearing. The torque tube was removed. Visual inspection carried out on attachment points and no additional damage found.



While operating in the Taranaki district collided with a Kereru. The bird contacted the prop spinner resulting in a large dent. Nil change in vibration levels was detected by the pilot and all controls worked as usual. The area was inspected with a dent noted on the side of the spinner. Nil evidence of bird contact was detected on the propeller blades, engine cowls, fuselage, wings or tail plane. The spinner was removed, the back plate and reverse pitch / beta range inspected. Spinner replaced.

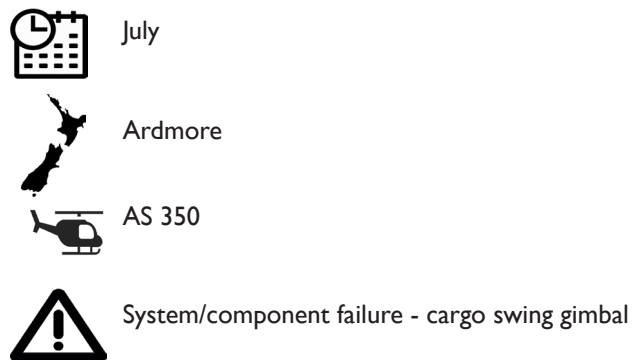


During the first runup of the day there was low fuel pressure, manifold pressure, and reduced RPM. It was determined that this was due a partially collapsed SCAT induction hose.



During aircraft taxi the left-hand wing tip contacted a heavy metal gate. Resultant damage consisted of a shattered fibreglass wing tip and torn, buckled skin and outer rib on the outer panel.

The outer panel was removed, and a detailed visual inspection conducted on the mounting points. Nil defects were detected so a replacement outer panel C/W aileron was installed with new attaching hardware.



During scheduled maintenance, while complying with Airworthiness Directive DCA/AS350/129A on the cargo swing gimbal/universal joint assembly, P/N OAL 114-10504, a crack indication was identified. The part was removed and the 146 Design Organisation was notified of the defect.

Gimbal to be scrapped. Link to the AD is here, page 54: https://www.caa.govt.nz/assets/legacy/Airworthiness_Directives/AS350.pdf



August



Wairarapa



AS 350



System/component failure - cargo hook frame

Pilot reported was carrying out Ag operations when he heard a loud noise and noticed his fertiliser bucket had detached from the aircraft, the pilot landed immediately and found the cargo hook frame in 3 pieces. The cargo hook frame has been inspected, the cause is yet to be confirmed. The cargo hook frame assembly was replaced.



August



Canterbury



MD 500N



External load - airframe contact

After finishing a bucket job on landing back at a the load site. The bucket's hangar was hanging rearward down on landing causing it to pierce the under side of the belly of the aircraft on landing. The operator's investigation determined that a lack of situational awareness and a lack of experience on bucket hanger behaviour were the primary causes of the incident.



Image of the cargo hook frame.



August



Southland



Hughes 500



External load

While carrying out a bucket operation, the pilot failed to maintain a positive rate of climb once he had picked up the bucket. The bucket clipped the top of a previously unseen post resulting in damage to the spinner. The operator's investigation determined that *"The pilot had been operating from the same loadsite for several hours on the day and the preceding day of the mishap. He got complacent as he had plenty of power and room to carry out the operation safely but a lapse in concentration resulting in him not clearing the obstacle."*



August



Hamilton



Cresco



System/component failure - electrical system

Aircraft received for 4 yearly inspection in conjunction with installation of Hydraulic Hopper control system and Battery relocation. Historically the aircraft had had prior significant electrical system and instrument panel changes before being modified back to agricultural role. A number of wiring issues not matching wiring diagram, engine instruments found not to match mod data. Found prior modifications not completely disembodied, incorrect data or unapproved data previously used when returning aircraft to normal configuration. Electrical system and engine instruments repaired/installed referring maintenance manual and Technical data obtained from manufacturer. Modification data raised and approved for instrument panel changes and to allow compatibility with modifications being carried out.

Buckets produced a new spreader bar for the bucket, the eye ring the hook goes through was too wide with flat sides and when twisted sideways would result in the keeper to lift up on the hook.”

The incident occurred on the first day the bucket was used.



August



Opotiki



Hughes 500



External load

The fertiliser spreader bar bolts hooked on the cargo hook release cable and pulled the wires out of the hook.



September



West Coast



AS 350



Other

Pilot stopped operation to allow engineer to carry out a nut re-torque as part of maintenance following Starflex installation. Previously detachment of 3x retaining nuts allowing yoke assembly and ring to become displaced. Previous experience with an identical situation indicates the cause may be attributed to heavy contact of the droop stop due to excessive blade flapping at ground RPM. Inspection IAW MM 62-21-00, 62-31-00 and previous correspondence with manufacturer following an Identical incident. No damage detected, components reassembled, and A/C released to service.



August



Southland



Hughes 500



External load

While spreading fertiliser, once the bucket emptied it twisted and came off the hook falling into the paddock below. Bucket was unserviceable after the event. The operator’s investigation determined the following: “ISM

EXTERNAL LOAD NOTICE

Accidents, incidents, and defect reports relating to external load operations and equipment are increasing (see the chart below).

In response the CAA has organised a series of regional workshops in partnership with Cookes (a Bridon Bekaert Ropes Group Brand). These workshops will deliver both a theoretical and practical understanding of lifting equipment usage, including pre-use inspection criteria. The course fee is \$100.00 incl GST, lunch will be provided.

A link to the course information and registration page is below:

<https://www.caa.govt.nz/safety-info/seminar-info/inspection-and-safe-use-of-lifting-equipment/>

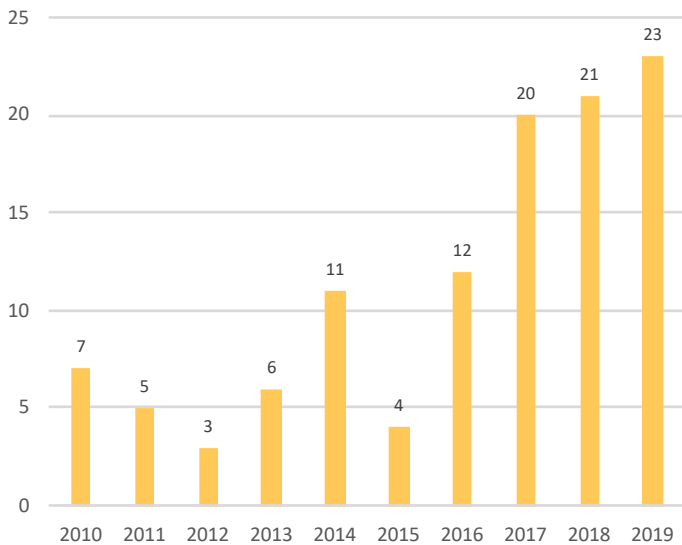
You will also find a summary of the course attached to the end of this safety notice. If you cannot attend, then please consider reviewing some other available safety resources to ensure that your knowledge and procedures are fully up to date. The UK CAA has a great guidance document covering external load operations:

<https://publicapps.caa.co.uk/docs/33/CAP426.PDF>

While the flight safety foundation has also published useful material in the Basic Aviation Risk Standard Volume Two:

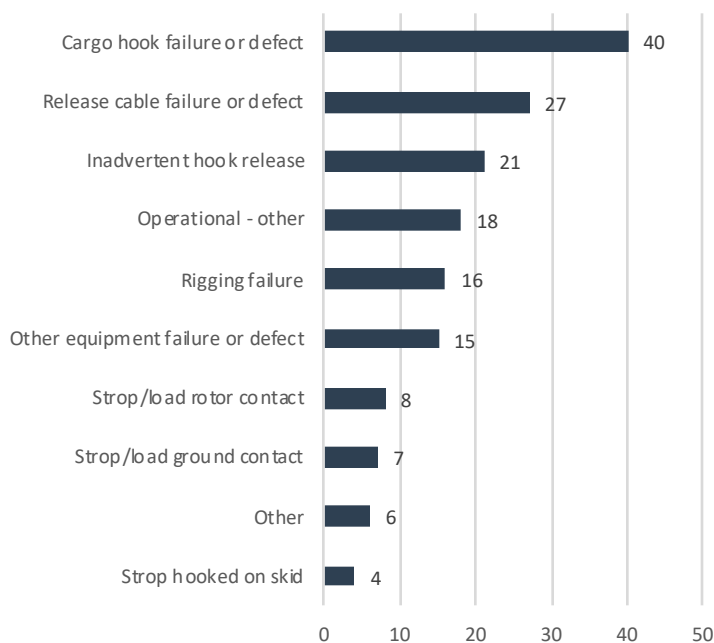
https://flightsafety.org/files/bars/bars_implementation_guidelines_vol2_aug13.pdf

Annual External Load Occurrences



The nature of the occurrences vary. Equipment failure and defects are common, as are operational incidents relating to rigging, maintaining appropriate terrain clearance, and ‘flying the load’ correctly.

External Load Occurrences by Type 2000 - 2019





WORKSHOP FOR **HELICOPTER OPERATORS**

Inspection and safe use of lifting equipment

The Civil Aviation Authority is partnering with Cookes – a Bridon Bekaert Ropes Group brand – to deliver a workshop for helicopter operators on how to inspect and safely use lifting equipment.

The workshop delivers both a theoretical and practical understanding of lifting equipment usage. This includes pre-use inspection criteria at a user level and how to assess the safety condition of equipment. The course covers the following:

- Introduction from the CAA
- The Health and Safety at Work Act
- ACoP Load-Lifting Rigging & LEENZ CoP New Zealand
- Pre-Use Inspections of Lifting Equipment (under aircraft)
- Safe use of lifting equipment – specific to Aviation Industry
- Understanding Lifting Equipment Load Limit Charts (LEENZ)
- CAA Rule 133 - Helicopter External Load Operations
- Understanding asset registers

At the end of the course, the attendees are taken through a recap / group discussion to cover any underlying queries and for general information sharing.

Workshops

The workshops will cost \$100 per person. Each session runs from 10am to 3pm and will include a lunch break with meal provided.

Auckland

Tuesday, 5 November

Sudima Auckland Hotel

Queenstown

Tuesday, 12 November

Rydges Queenstown

Christchurch

Tuesday, 19 November

Sudima Christchurch Airport

Wellington

Wednesday, 27 November

Asteron Centre