AVIATION SAFETY

Spotlight

01 2018

INSIDE

Unreliable collision avoidance

Failure of alerted see-and-avoid

DECLARE ALL DANGEROUS GOODS

BATTERIES

GASES

FUEL

AMMUNITION

PRESSURE CAN

PAINTS

MAGNETS

EXPLOSIVES

UNSURE?

Always check with movements staff or flight crew

Failure to declare Dangerous Goods is an offence under the Defence Force Discipline Act

TOXIC ITEMS

RADIOACTIVE

THERMOMETER

LIGHTERS

Dangerous goods are a risk to health, safety, property or the environment. These include obvious things, such as: explosives, radioactive materials, flammable liquids, dangerous or volatile chemicals, strong acids, compressed gases, poisons and aerosols. Everyday items that can cause problems include toiletries, aerosols, tools and lithium batteries. **REMEMBER – IF IN DOUBT, ASK!**

AVIATION SAFETY Spotlight

the aviation safety magazine of the Australian Defence Force

Foreword

In this edition of *Spotlight* it is my sad duty to inform our readers of the passing of two stalwarts of Defence aviation safety – GPCAPT Rob Lee and SQNLDR Glen Campbell.

GPCAPT Lee was an internationally renowned expert and pioneer in the field of safety systems and human factors in aviation. As a former senior psychologist in Operational Command as well as a past Director of the Bureau of Aviation Safety Investigation, he brought to DDAAFS a wealth of skills and experience as well as an eagerness to impart that knowledge to staff and on the various courses conducted by the Directorate.

SQNLDR Glen Campbell was a very experienced pilot with more than 6000 hours on numerous aircraft types. He served DDAAFS from 2015 to 2017 as an aviation accident investigator, undertaking a range of investigations during his tenure at the directorate. He was currently serving with DDAAFS' sister unit, the Airworthiness Co-ordination and Policy Agency, at the time of his passing. The article on a near mid-air at Gingin in this edition is taken from an investigation undertaken by Glen.

The passing of these two charismatic and intelligent men is a loss to both aviation safety and aviation in Australia in general.

Vale GPCAPT Rob Lee and SQNLDR Glen Campbell.

GPCAPT John Grime
Director,
Defence Aviation and Air Force Safety

Aviation Safety Spotlight is produced in the interests of promoting aviation safety in Defence by the Directorate of Defence Aviation and Air Force Safety (DDAAFS). Opinions expressed in *Spotlight* do not necessarily express the views of DDAAFS or Defence. While every care is taken to examine all material published, no responsibility is accepted by Defence, *Spotlight* or the editor for the accuracy of any statement, opinion or advice contained in the text of any material submitted by a contributor.

With the exception of occasional articles published for which specific and/or one-time permission has been granted for reproduction, and for which an appropriate caveat is included in the text, organisations may reproduce articles with appropriate acknowledgment to DDAAFS and *Aviation Safety Spotlight* magazine and/or article(s) originator, as appropriate.

The contents do not necessarily reflect Service policy and, unless stated otherwise, should not be construed as orders, instructions or directives. All photographs and graphics are for illustrative purposes only and do not represent actual incident aircraft unless specifically stated. Comments, contributions et cetera are invited from readers in the interests of promoting aviation safety as widely as possible throughout Defence.

Correspondence, or enquiries regarding magazine distribution, may be addressed to:
The Editor,
Aviation Safety Spotlight,
DDAAFS F4-1-047,
Defence Establishment Fairbairn
28 Scherger Drive, Canberra, ACT 2600

Contributions by way of articles and photographs are invited from readers across Defence and the retired community in the interest of promoting Aviation Safety. *Spotlight* magazine staff reserve the right to edit all articles submitted for content, length or format. Contributions should be sent by email: dasa.registry@defence.gov.au

May 2018

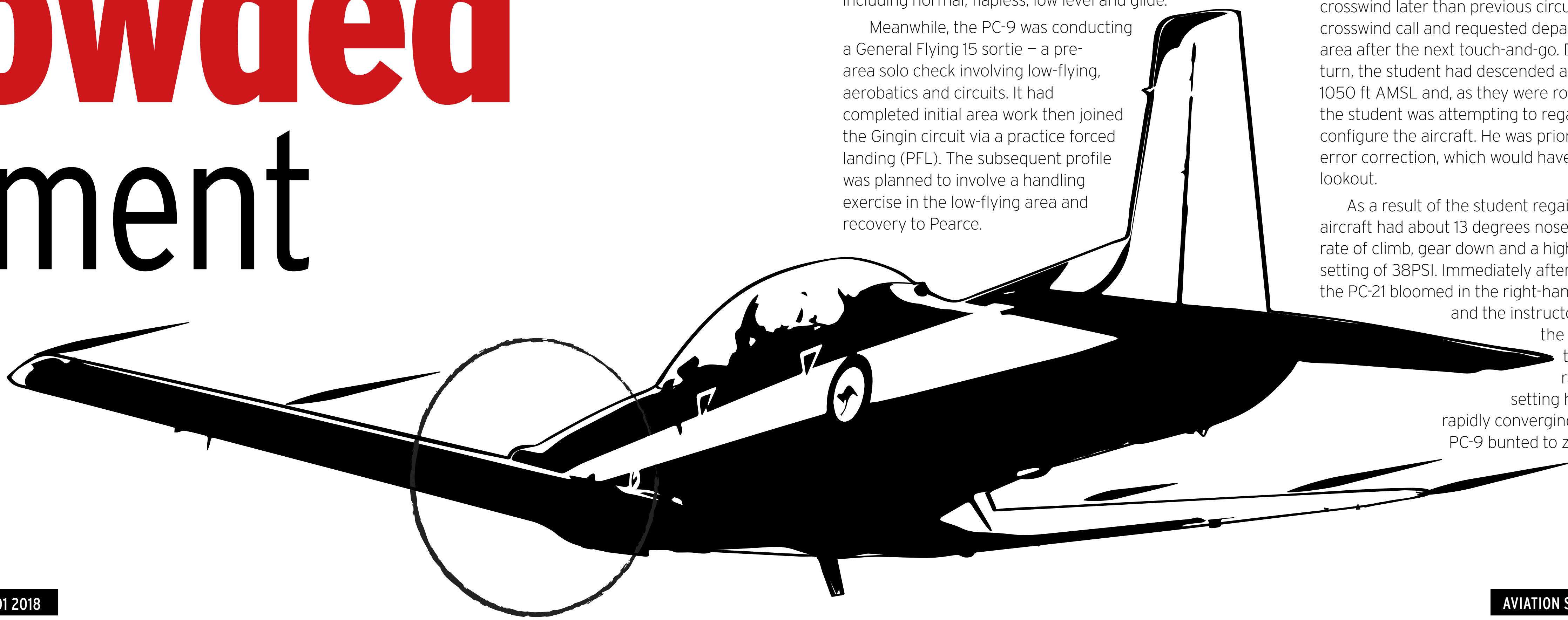
INSIDE

One **crowded** moment

On 13 April, 2017, a near miss occurred in the circuit at RAAF Gingin, between a Republic of Singapore Air Force PC-21 on late crosswind and a RAAF PC-9 on early downwind. Both aircraft took avoiding action with a miss distance of just 100 ft vertically and an estimated 500 ft lateral displacement.

The PC-21 was conducting a Flying Instructor Course sortie and had transited from RAAF Pearce to Gingin to conduct circuit training. The Qualified Flying Instructor (QFI) was in the front seat and the Instructor Candidate (IC) in the rear. The sortie profile required the IC to instruct circuits including normal, flapless, low level and glide.

Meanwhile, the PC-9 was conducting a General Flying 15 sortie – a pre-area solo check involving low-flying, aerobatics and circuits. It had completed initial area work then joined the Gingin circuit via a practice forced landing (PFL). The subsequent profile was planned to involve a handling exercise in the low-flying area and recovery to Pearce.



The Bureau of Meteorology (BOM) reviewed the forecasts, ground and satellite observations in the Gingin area at the time of the incident. Its analysis reported no significant cloud; however, there was a moderate easterly wind and areas of significant haze because of bush fires to the east of Gingin. There is no vismeter[1] installed at Gingin, therefore, only the forecast visibility of eight to 10 km in the haze was available. Aircrew interviews and PC-21 HUD tape confirmed reduced visibility of eight to 10 km in haze at the time of the incident.

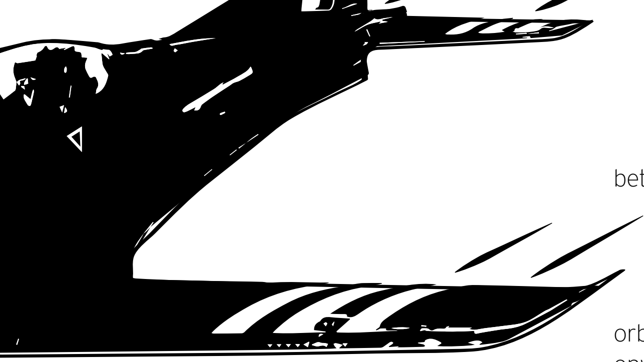
While the PC-21 was established in the circuit at Gingin, radar tapes showed the PC-9 join the circuit via a PFL at a suitable distance ahead of the Singaporean aircraft. Appropriate separation remained for the next three circuits and both crews consistently turned crosswind about 2 nm from the upwind threshold.

On the incident circuit the crew of the PC-9 turned at approximately 2.5 nm and the PC-21 turned at 1.5 nm – this difference was enough to set the pre-conditions for a mid-air collision.

Radar tapes showed the PC-9 consistently flew circuits at 1200 ft AMSL and the PC-21 at 1300 ft AMSL. There appeared to be no OIP that specifically stated an altitude to be flown; only references to 1000 ft AGL in base SIs. The aerodrome elevation at Pearce and Gingin are 150 ft and 247 ft AMSL respectively.

On upwind of the incident circuit the crew of the PC-9 were discussing the previous circuit and departure requirements, this discussion resulted in them turning crosswind later than previous circuits. They made their crosswind call and requested departure for the low-flying area after the next touch-and-go. During the crosswind turn, the student had descended approximately 150 ft to 1050 ft AMSL and, as they were rolling out onto downwind, the student was attempting to regain the lost height and configure the aircraft. He was prioritising his concentration on error correction, which would have reduced his capacity for lookout.

As a result of the student regaining circuit altitude, the aircraft had about 13 degrees nose-up attitude, 800 ft/min rate of climb, gear down and a higher-than-normal power setting of 38PSI. Immediately after the student set the power, the PC-21 bloomed in the right-hand side of the windscreen and the instructor took over. At this point the PC-9 was 100 ft below the PC-21 but the attitude, rate of climb and power setting had both aircraft vectors rapidly converging. The instructor in the PC-9 bunted to zero-G, reduced power



and retracted the gear – levelling the aircraft 150 ft below the PC-21.

Meanwhile in the PC-21, the IC was demonstrating a flapless circuit, which resulted in a go round from about 300 ft AGL. The aircraft was then levelled at 1300 ft AMSL early on upwind. The crew was debriefing the circuit and overtalked the PC-9's crosswind call but heard their request for onwards clearance. Turning through a heading of 100 degrees magnetic the PC-21 was maintaining 160 kts at 1300 ft when the PC-9 first appeared in the field-of-view of the HUD.

The PC-9 appeared below the horizon relative to the PC-21 and, thus, among the ground clutter. This relative positioning, coupled with the smoke haze resulted in the PC-9 being inconspicuous. Through 200 degrees magnetic the PC-21 was belly up to the PC-9 but they saw it appear under the nose of their aircraft and initially rolled wings level to pass behind it, achieving a 500 ft lateral separation. Shortly after rolling wings level a climb was initiated to 2000 ft AMSL.

There was a small time delay between the crews seeing each other. By the time the PC-21 had seen the PC-9, the PC-9 had already bunted and reduced the attitude from 13 NU to 5 ND. Both aircraft then orbited Gingin until they had obtained onwards clearance then transited to Pearce. During the transit the PC-9 conducted a controllability check as they were unsure if they had exceed the speed or G limit for the undercarriage during the avoidance manoeuvre.

Air traffic control

At the time of the incident there were three controllers in Gingin Tower – the tower controller, who was under check for an endorsement; a tower controller conducting that check and a tower supervisor, who was also performing surface-movement control. During the period leading up to the occurrence there was a consistent three-to-four aircraft in the circuit. Several of the PC-21s in the circuit had been going around on final, which was not unexpected as they were mainly conducting pre-first solo training.

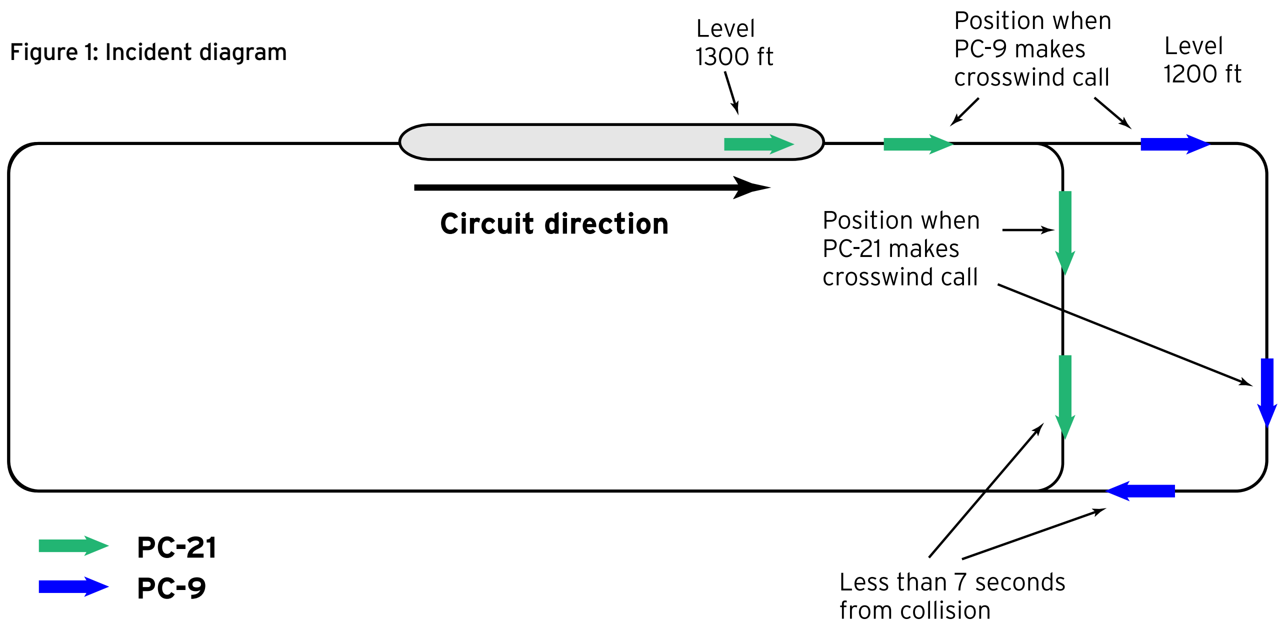
The PC-9 had requested an onwards clearance after their next circuit. Gingin ATC co-ordinated with Pearce approach to obtain the onwards clearance and the tower controller had started to issue that clearance to the PC-9. The PC-21, which had been cleared to the runway, commenced a go around and the controller shifted priority to issuing a runway clearance to the next aircraft on base. The tower controller then returned to issuing the onwards clearance to the PC-9. It was at this point that the PC-9 advised tower of the near collision. This report shifted the controllers' attention to downwind where they observed the incident aircraft in close proximity but on diverging paths.

Analysis

To be as effective a control as possible, see-and-avoid must be alerted. Alerted see-and-avoid is a procedure whereby aircrew, having been alerted to the existence and approximate location of other aircraft in their immediate vicinity, seek to sight and avoid colliding with those known aircraft. Research commissioned by the US Federal Aviation Administration and referenced by the ATSB, has shown that the effectiveness of a visual search for other traffic is eight times greater under alerted see-and-avoid circumstances than when un-alerted.

When the crew of the PC-21 over-talked the PC-9's crosswind call, the consequence was that alerted see-and-avoid did not occur and the opportunity to gain situational awareness and identify the PC-9 was missed. The PC-21 IC conducted a lookout, commenced

Figure 1: Incident diagram



crosswind and made his call without identifying all circuit traffic.

At the time the PC-21 made his crosswind call, the QFI in the PC-9 was providing guidance to the student, the student was turning onto downwind adjusting circuit spacing, altitude and configuring the aircraft. The QFI and student hear the crosswind call from the PC-21 but disregard it as their mental picture has the PC-21 behind them in the circuit. ATC actively listen to circuit calls to maintain their situational awareness. If an aircraft calls through different position in the circuit ATC will, if the situation permits, attempt to visually identify the aircraft. The PC-21's crosswind call occurred at the time the controller had prioritised issuing a runway clearance, missing the opportunity to identify the conflict.

Responsibility for separation of visual traffic in a military Aerodrome Traffic Zone is jointly shared by the pilot and controller. This joint responsibility is expanded in Pearce SIs stating that segregation in the circuit pattern is "a joint ATC/pilot responsibility based on alerted see-and-avoid principles".

Alerted see-and-avoid in the Pearce and Gingin circuit areas is achieved by a combination of pilot calls at circuit entry points and crosswind and ATC providing arriving aircraft with traffic information.

When implementing this joint responsibility, controllers need to prioritise their attention. The highest priority is monitoring aircraft during the critical phase of flight, being within 200 ft of the ground. The next priority is issuing the subsequent instructions that are time critical, which will routinely be the next aircraft to use the runway. Beyond these two priorities spare attention is directed where required.

Crew lookout

At the normal circuit altitudes flown, a PC-9 would appear 1 degree below the horizon, relative to the PC-21 and, at the time of the incident, the student was up to 150 ft low on normal circuit altitude and as a result would have been 2.5 degrees below the horizon. This was evident in the PC21 HUD video, with the PC-9 appearing in the HUD field of view below the horizon in among the ground clutter as the PC-21 passed through a heading of 100 degrees disappearing from the field of view around 140 degrees. This visibility was further degraded as the PC-9 was also intermittently obscured by the HUD symbology. Had both aircraft been flying at the same circuit altitude they would appear on the horizon and be more visible with the sky as the background. The difference in the circuit altitudes contributed to the PC-9 being harder to see.

See-and-avoid

In this incident see-and-avoid was the final defence against mid-air collision and the only successful control. See-and-avoid is an appropriate but unreliable risk control. Had neither crew reacted, they would have collided within seven seconds of the student increasing power.

International Civil Aviation Organisation (ICAO) studies show that the use of Airborne Collision Avoidance Systems (ACAS) can reduce the risk of mid-air collision by 75 to 95 per cent. Two systems currently in use elsewhere in the ADF could have prevented this incident – Automatic Dependant Surveillance Broadcast (ADS-B) and Traffic Collision Avoidance System (TCAS).

The PC-21 is fitted with ADS-B in, providing the pilots with improved situational awareness through the ability to see other ADS-B-equipped aircraft operating in the airspace. Unfortunately the PC-9 is not fitted with either ADS-B in or out and was therefore not visible to the PC-21 on that system. TCAS provides situational awareness and traffic warning/guidance to aircrew but is not currently fitted to the PC-9 or the PC-21.

On 16 August, 2012, the Director of Aviation Safety, Civil Aviation Safety Authority (CASA) issued Instruments for a phased requirement for all IFR aircraft operating in Australian airspace to be equipped for ADS-B out by 2 February, 2017. However, in 2013, Air Training Wing identified that CASA-led changes to aircraft Communication, Navigation and Surveillance (CNS) and Air Traffic Management (ATM) requirements would affect AFTG operations. After a cost, risk and benefit analysis the PC-9 was ultimately not fitted with TCAS or ADS-B.

The reliance on cost-versus-benefit methodology to determine whether modifications should be implemented may no longer align with the latest risk-management methodology. SFARP methodology requires risk to be eliminated or minimised so far as reasonably practicable and any residual risk is then retained at an appropriate level.

Had ADS-B in, ADS-B out or TCAS been fitted, the crews would have had greater situational awareness or would have been alerted to the situation earlier, preventing the occurrence.

Conclusion

Ultimately the failure of alerted see-and-avoid and an ineffective lookout brought the two aircraft into close proximity. Both crews needed to rely on an inherently unreliable collision avoidance technique – un-alerted see and avoid.

---

1. A vismeter is a device that measures visibility

From the investigation by SQNLDR Glen Campbell

References:

HOAC ID – AC1855603 Appointment of Aviation Incident Investigation Team (AIIT) for serious incident – Near Mid Air between a Royal Australian Air Force PC-9/A and a Republic of Singapore Air Force PC21 at RAAF Gingin, 13 April 17

AAP 6734.001 – *Defence Aviation Safety Manual*, (AL5)

ASOR 2FTS-015-2017 – *Near Miss in the Gingin Circuit Area*

SOCD U4529298 – *Emerging CNS/ATM issues for AFTG fleet – cost, risk and benefit analysis*

DDAAFS/2015/AB20044138 – *CT-4B VH-YCU near mid-air collision 05 November 2014*

THUD!

WHAT WAS THAT?

By CAPT Matthew Worrad

It's likely you have asked this question of your crew at some stage in your flying career and the response has been "I think we hit something". Army aviation has had a recent spate of birdstrikes, myself included, which has prompted the question, are routine birdstrikes preventable? And, in turn, what implications will the proliferation of drones have on rotary wing operations?

The answer is – strikes and encounters can be minimised if you take into account the time of day you are flying.

The time of day is the critical factor that influences whether you are likely to encounter a bird, a flying fox or a drone. For example, you are at next-to-no risk of hitting a flying fox at lunchtime.

The first birdstrike was recorded in 1905 by none other than Wilbur Wright:

"Twice passed over fences into Bread's cornfield. Chased flocks of birds on two rounds and killed one, which fell on top of upper surface and after a time fell off when swinging a sharp curve."

WILBUR WRIGHT, 07 SEP 1905

What Wilbur didn't know is that his birdstrike was preventable. It's a reasonable assumption that Wilbur was flying in the early morning, due to the wind limits of his aircraft, and he was flying over a cornfield. These are two conditions that you should aim to minimise your exposure to – aside from chasing birds.

Between 2006 and 2015 the Australian Transport Safety Bureau (ATSB) recorded 16,069 birdstrikes on aircraft in Australia and of those 631 were by ADF aircraft. I decided to look at what we are hitting and if there is a reason why we seem to be hitting certain bird species at certain times of the day.

After reading this data from the 2006–2015 ATSB wildlife report I had two questions for bird expert Jill Brown from Birdlife.org.au. Why is there an increased risk in birdstrikes between 7 am and 10.30 am, and why is there an increase in strikes between February and July on the east coast?

"That is simply the morning forage for food, when all the best bird watching occurs... and during the first half of the year migratory shorebirds arrive in the south of Australia and transit up the east coast or inland to Kakadu before departing, sometimes non-stop, for Siberia.."

JILL BROWN OF BIRDLIFE.ORG, OCT 17

So the first part of Jill's statement explains why Wilbur hit the bird; he was over a cornfield (a food source) during the morning forage. At this time you could expect to have a flock of galahs foraging on the ground, a pair of wedge-tailed eagles orbiting at 7000 ft or pelicans soaring at flight levels.

This kind of activity can be expected to be amplified during the early half of the year with the addition of the migratory shorebirds inhabiting the mainland.

Aside from being conscious of the morning forage we can also avoid routine interaction with birds; by avoiding kites at bushfires, giving the resident airfield plover some space when you taxi and bypassing known shorebird roost sites.

But the key takeaway about birds is that you need to understand the birds in your local training area. At Oakey, for example, I have noticed there is a resident flock of galahs who transit from the mess across the airfield to feed on cultivated crops north of the field early in the morning and return in the late afternoon. But because our daily flying program is conducted from 9 am to 4.30 pm we are deconflicted by time from the galahs.

In the 2006-2015 reporting period, there were 104 birdstrikes involving civilian helicopters, meaning that, civilian rotary wing operations only make up 6.4 per cent of total birdstrikes. This is thought to be because of the lower operating speeds, therefore making it easier for both parties to see and avoid.

But in rotary wing, in the military at least, it is not birds that we need to worry about seeing and avoiding. We regularly train how we fight, which means we fly at night and at low-level. So again the time of day comes into the equation and with the onset of darkness we enter the realm of microbats and flying foxes.

Out of these two flying mammals, microbats have far superior navigation skills with their primary source being echolocation; they are able to ping 10 times per second with the acuity to define a mosquito's legs.

However, flying foxes primarily navigate by visual means, making them night VFR warriors flying in instrument conditions. This means, with us flying on NVG (legally blind in driving terms) and the flying foxes under night VFR condition we are bound to interact with them.

With the flying fox weighing up to one kilogram, they present a far greater risk than a microbat who weighs just a few grams. Long story short, flying foxes pose a greater likelihood and consequence to us as aviators.

The good news is flying foxes are routine and predictable. They transit by night, at 200 to 260 ft, at 13 to 16 knots and for a range of up to 27 nm where they operate below 130 ft while foraging on fruit trees.

According to the ATSB report, flying foxes are most commonly struck between 6 pm and 8 pm and again between 4 am and 6 am. I contacted

Glenn Hoye of Fly by Night Bat Surveys and he provided an explanation for this;

"They rest in camp by day; they then fly up to max range to fruit trees after dusk, feed overnight and then return home the next morning before sunrise."

GLENN HOYE, BAT EXPERT, 23 OCT 17

The image below is from an ASOR, AAvnTC-020-2016 when a Tiger collided with a flying fox. This occurred at 7.40 pm at a range of 6 nm from a major flying fox camp. The flight was safely recovered by the rear-seat pilot to a local aerodrome.

An MRH ASOR in 2016 involving aggressive manoeuvring to avoid a flying fox has revealed a sobering narrative.

"RH GUN Aircrewman is ejected from his station; impacts butterfly grips on the gun with his NVGs mounted on the helmet potentially causing the gun to fire a couple of rounds; is restrained by RH Safety Supervisor trainee from flailing further."

SUPERVISOR COMMENTS

"...applying this knowledge to overcome instinctive reactions that may further endanger the aircraft when a potential threat is perceived. This is equally applicable to instinctive reactions to bats and birds as it is to enemy fire."

5AVN-080-2016 – OVER CONTROL OF AIRCRAFT TO AVOID BAT COLLISION, 16 AUG 16

When you assess the outcome of these two ASORs in terms of risk management it is clear to see the difference in potential outcomes. The ARH aircraft captain had identified something in the flight path but had not attempted to avoid it; which resulted in a high probability of a strike but a low consequence to the crew. While in the case of the MRH, avoiding the threat slightly lowered the probability of a strike while drastically increasing the potential consequence to the safety of the crew.

If you think about a bird or a flying fox with their pneumatised (hollow) bone structure impacting your windscreen most of you probably think 'pink mist' and RTB to maintenance. Now, in comparison I would like you to think of a carbon fibre composite propeller attached to an exposed electric motor impacting your windscreen. This thought highlights the potential severity of a drone strike.

Like birds and flying foxes, we can draw conclusions about the time of day we are at risk of encountering a drone. An ATSB report on drone safety recorded between 2012 and 2017 has revealed that we are most likely to encounter a drone between 10 am and 3 pm local. This is because humans are diurnal and because the operator's intent is usually to film or survey, which needs to occur by day. During the reporting period there were 242 drone-related safety occurrences of which 63.6 per cent were encounters with manned aircraft reported by mostly fixed wing pilots in the illustrated altitude bands.

The use of drones is growing exponentially and Google data shows that drone-related searches have doubled between 2016 and 2017. By typing "using drones to/for..." into Google, it gives us enough auto-complete options to understand what applications people are using them for. Some of these applications include commercial surveying for bushfires, mines, roadworks, new housing developments, quarries, industrial construction sites and agricultural operations. It also gives us as aviators an idea of the locations they may be present based on the applications.

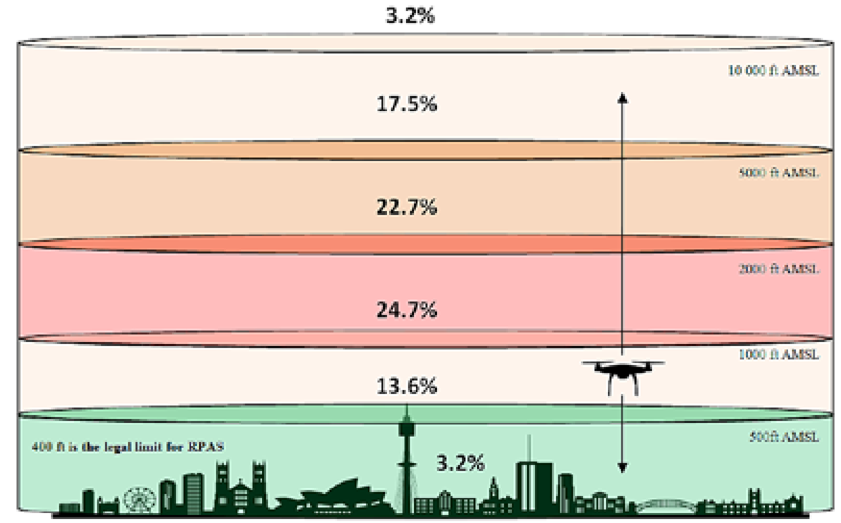
AAvnTC-020-2016 – ARH Bat Strike Causing Front Windscreen Damage

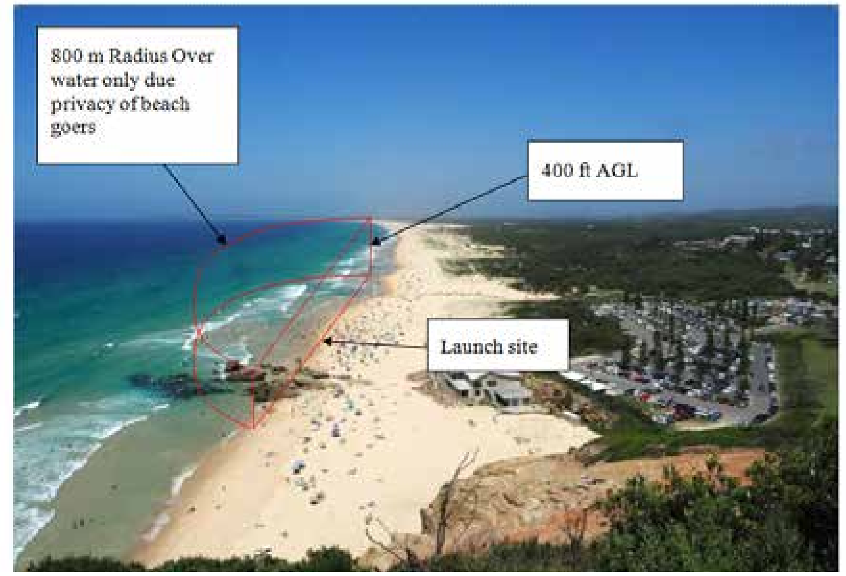
Surf Life Saving (SLS) NSW have, as of February 2017, purchased 35 drones in varying weight categories up to 25 kg. They are being used to spot sharks and deliver lifebuoys to individuals in distress. SLS NSW has trained 60 drone operator and intended to train a further 115 in December 2017.

Little Ripper Life Saver, the organisation responsible for training and supplying drones to SLS NSW, was contacted to obtain a greater understanding of the conditions under which their drones will be operating. They carry radios and operate Visual Line of Sight (VLoS) only and are constrained to the limits shown right. On 19 January 2018 at Lennox Head, a Westpac Little Ripper drone delivered a life buoy to save the lives of two teens, so it is safe to assume that SLS Little Rippers is here to stay. The footage of the rescue is available online.

Finally, recreational use is widespread and evolving. It is safe for us to assume hobbyists operating in urban areas are doing so without an altimeter or are unaware of the 400 ft AGL limit. Or, if they are anything like I was as a teenager, they're going to want to see how high their new toy can go. The reason I make these assumptions is because the altitude of the drone was known in around 85 per cent of reported encounters since 2012, with the majority taking place above 1000 ft AMSL. Most of these occurrences were in capital cities, predominantly Sydney.

It is likely the drones operating above 400 ft are operating beyond VLoS, because at that altitude they become difficult to see. Given the altitudes, the locations and the over representation on weekends (43 per cent), it is safe to say it is not registered operators jeopardising their expensive licenses.





Drone ASOR

The aircraft had completed an aft-facing departure from HMAS *Canberra* with LHS pilot flying and was climbing to 500 ft AGL. The aircraft was approaching the Sydney Opera House (approximately 300 m displaced from the southern shoreline and over water) and enroute for the southern pylon when both pilots noticed an airborne object in the aircraft flight path. The flying pilot (LHS and aircraft captain) rolled left through 30 degrees to avoid collision and the drone passed down the right side of the aircraft at a range of approximately 40 m.

808SQN FLT 1-004-2017, 01 May 17

While the above ASOR did not occur on a weekend, it did occur in the 10 am to 3 pm window and over a capital city. These conditions align with other reported encounters between 2012 and 2017, which confirms we need to consider drones in our planning when we are operating under these circumstances.

Battle damage assessment

So, what happens when you have been unable to avoid a birdstrike or you are the first person in Australia who is unlucky enough to strike a drone? Let's first talk about damage caused by birds because we are able to draw better conclusions from the data.

Between 2006 and 2015, of the 631 birds or bats struck by the Australian military, only 13 strikes resulted in varying damage. Out of all the birdstrikes reported by civil and military aviation in Australia, in the

Drone flying at 500 feet over Sydney harbour. Image captured from the back of an MRH90 by LS Jordan Berkhout, 808Sqn.

10-year reporting period, only 11 incurred serious damage.

As mentioned previously, minimal numbers of civilian helicopters in the 10-year reporting period recorded a birdstrike and only four of those sustained substantial damage. Therefore once a helicopter hits a bird there is only a 3.8 per cent chance of substantial damage occurring. So if reaction time is limited and other factors like formation or proximity to the ground limit your ability to avoid a bird threat safely; do as the good Major said;

"You're a 10 tonne helicopter... take the (expletive) bat."

MAJOR ANTHONY NORTON, SAFETY DAY 26 MAY 2017

You would have worked out by now it wasn't a bat that Major Norton was talking about. It was a flying fox; however, his principle couldn't be more correct. It is difficult to say at this stage whether you can apply this principle to drones as there have only been six actual collisions with drones worldwide. It is in our interest as aviators to discuss ways to de-conflict with drones because the consequence of a strike could be catastrophic. The British Military Aviation Authority study on drone impacts suggests that contact with a drone will result in more substantial damage than that of a bird or flying fox of similar weight.

The study showed that a non-bird strike certified windscreen will be penetrated by a drone at velocities much lower than cruising and although the bird-strike certified windscreens tested had greater resistance, they could still be critically damaged at normal cruise speeds.

Smaller drone components, which included exposed metal motors, caused critical failure of the helicopter windscreens at lower speeds than heavier drone components, that had plastic coverings on their motors. Helicopter tail rotors were also vulnerable to the impact of a drone, with modelling showing blade failures from impacts with the smaller drone components tested.

Conclusion

When considering the bird and drone threat in your planning, the most important consideration is the time of day that you are planning to fly. By using the table below you can become familiar with which threat you need to plan to avoid for your specific sortie.

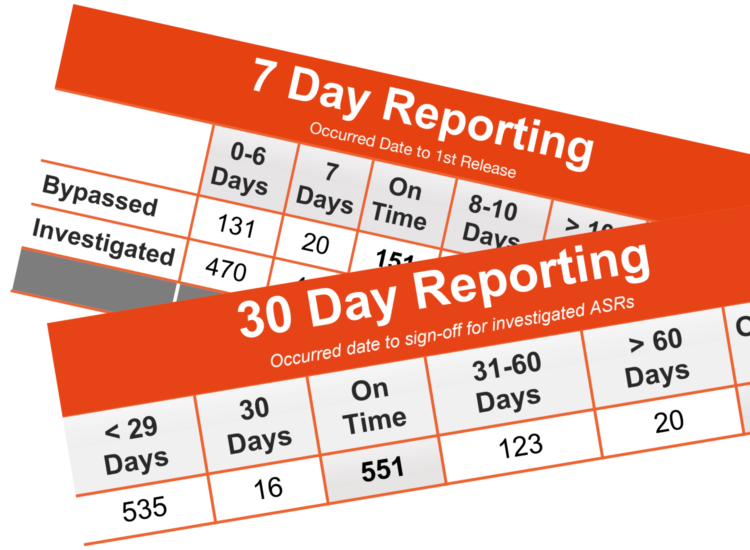
A lot of the time the mission profile will dictate where and when you need to fly, so this will require you to fly 'bird and drone aware' similar to how we fly wire aware during low-level operations.

Like the surface-to-air threat in a hostile environment, you cannot entirely predict when and where the threat of bird or drone strike will be. However we can plan to minimise routine strikes by sharing local knowledge on wildlife, engaging with local drone operators and encouraging them to communicate through NOTAMs or other means.

Threat	Where	Window	Altitude
Flying foxes	50 nm radius from roost sights	4 am to 6 am; 6 pm to 8 pm	0 to 300 ft AGL
Birds	Food and water sources	7.30 am to 10.30 am	0 to flight levels
Drones	Cities	10 am to 3 pm (especially weekends)	0 to 10,000 ft AMSL

SALUS

AVIATION SAFETY INTELLIGENCE SYSTEM



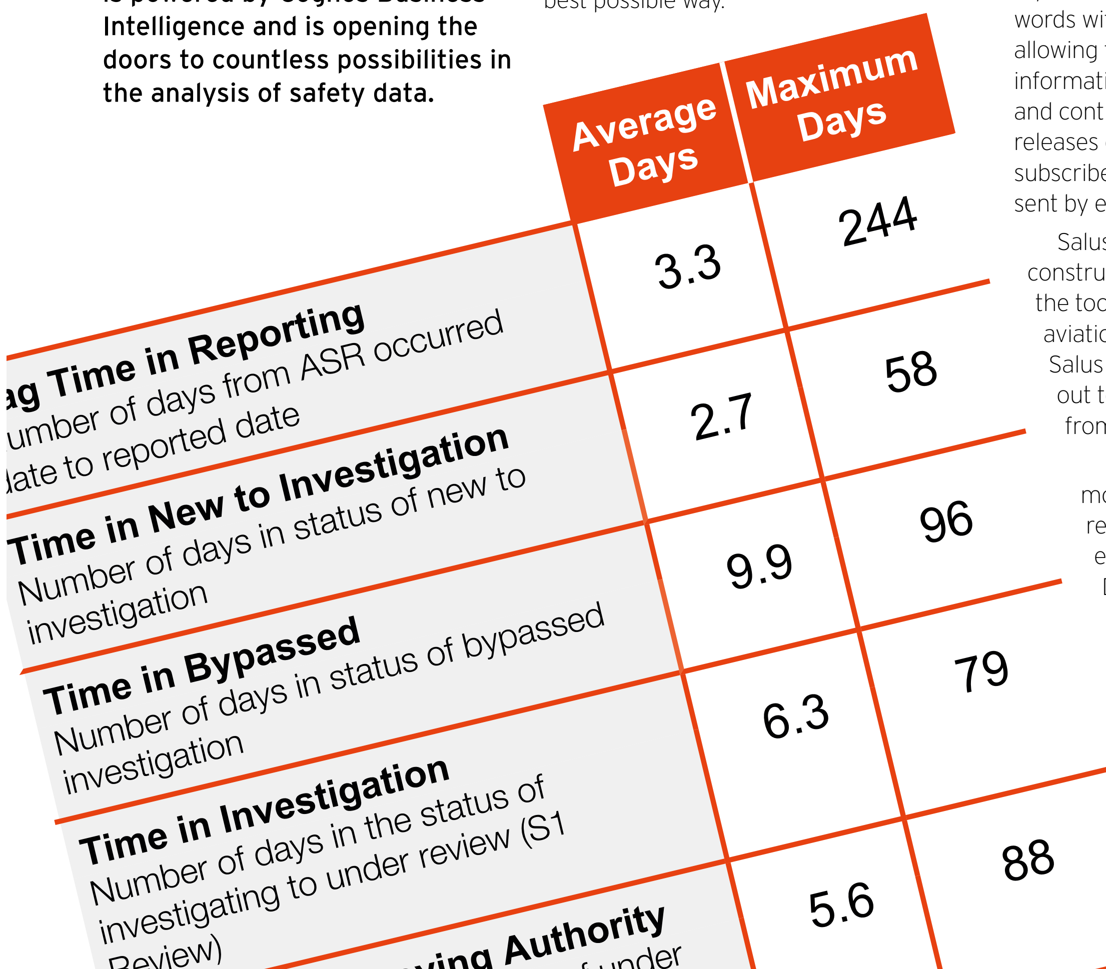
By Dr Wesley McTernan

By now you will have heard that Defence aviation's safety reporting has moved to Sentinel, which offers a more user-friendly and contemporary interface as well as improved taxonomies that allow us to better capture aviation safety events and operational hazards. What you may not have heard is that the way we analyse safety information is also changing. We are introducing Salus: Aviation Safety Intelligence System, Salus is powered by Cognos Business Intelligence and is opening the doors to countless possibilities in the analysis of safety data.

Salus will give Defence aviation an enhanced safety-intelligence capability; that is, a tool capable of accessing, processing and visualising a variety of different data sets.

People working in safety positions will be able to use Salus to quickly retrieve large volumes of past ASR and ASOR (DAHRTS) records. This data can then be carefully analysed to create meaningful reports for monitoring key safety-performance indicators.

Salus reports can be tailored to contain data summaries, tables, charts and graphs to present safety data in the best possible way.



Salus can be used by all people working in an aviation-safety role in Defence. Its reporting functions are designed to allow users to easily navigate up and down levels of data; providing a picture of safety at the service level, or taking a deep dive into a particular unit. In this way, Salus can support a broad range of users across different levels of command.

From the Salus portal page users will have access to a suite of reporting capabilities including reports that can track the number, classification, keywords, and contributing factors of ASRs by a particular unit or aircraft. DDAAFS has also developed reports that enable users to search for words within ASR and ASOR narratives, allowing them to monitor critical safety information that falls outside of keyword and contributing-factor taxonomies. Future releases of Salus will enable users to subscribe to favourite reports, which can be sent by email automatically.

Salus' capabilities are still under construction and we expect to make the tool available to the wider Defence aviation safety community in 2018. As Salus continues to grow, we will reach out to different users who can benefit from this tool.

Salus is currently being used to monitor past and present safety reports. However it will continue to evolve by tapping into other vital Defence aviation datasets and act as a vehicle to bring together these datasets – gradually piecing together a more robust picture of the overall safety puzzle.

If you would like to discuss how Salus can help you, contact the ASR helpdesk on 02 612 87476 or email ASR.helpdesk@defence.gov.au.

The importance of COMMUNICATION

By FLGOFF Tim Hawthorne

An incident during a recent exercise highlighted the influence maintenance has on aviation safety and the importance of communication between maintainers and operators.

During the exercise, staff identified that the configuration of an aviation support system required a change-of-day crypto procedure, resulting in the system being unavailable for operations. Unfortunately, the procedure was conducted without consulting operations staff and the system was offline during the middle of the exercise mission, negatively impacting desired objectives.

This system outage posed a potential risk as operations personnel were unable to maintain their situational awareness of the mission for some minutes.

This highlights the importance of maintenance personnel understanding the impact of their actions on system performance and safety. If maintenance personnel had recognised the impact of the procedure, they could have negotiated a solution with operations personnel before the mission began, reducing or eliminating the potential impact.

So the question is – how can we change the mindset of all personnel to understand aviation safety? In the short term, communication between maintenance and operators needs to be both constant and accurate.

Maintenance personnel already have the knowledge to understand how their actions affect the system but communicating that to operations personnel can be a challenge if it's not expressed the right way.

Ultimately it comes down to operations personnel making their priorities clear and maintainers understanding these priorities and ensuring any impact is communicated clearly. In the longer term, senior maintenance personnel need to gain an appreciation of how the systems are used, so they can make informed decisions that may impact operations.

This could be achieved through briefings and familiarisations, or short operational conversion courses. This knowledge would then flow down through the maintenance workforce, so that even the most junior members understand the importance of working with operations personnel.

This organisational understanding should not be limited to maintenance, as operations also have an important role to play in understanding maintenance procedures. In particular, operations personnel need to have a working understanding of the maintenance procedures they interact with (that is; operator acceptance of equipment, raising of unserviceabilities, et cetera.).

This could be achieved through maintenance briefings or short courses. Correct procedures should be outlined in a BLI or similar, to remove any confusion.

Everybody involved in aviation has a responsibility to understand safety. It is only through constant, effective communication and understanding of each other's roles, that the maintenance and operational workforces can work together to minimise the risks.

TUNING OUT

– IGNORING THE WARNING SIGN

By MAJ Hermanus Pieterse

I was conducting a 1 v 1 ACM instructional mission on an MB326 when, towards the end of the mission, the hydraulic gauge started to show slight oscillations with a drop in pressure.

This was not an uncommon occurrence and was (almost always) attributed to a snubber valve failure. If the problem didn't go away after a few taps of the gauge, the mission was normally terminated.

It was the last engagement and I allowed the student to complete the exercise before doing the recovery. A couple of taps on the hydraulic gauge still did not resolve the problem. The emergency system indications were fine.

Lowering the gear on downwind seemed to take longer than normal to lower.

After vacating the runway I responded to the slight uneasiness in the back of my mind by checking the emergency braking system before we commended the taxi back, but I was still convinced I was dealing with a snubber valve failure.

On shut down, I could see a concerned look on the crew chief's face and when I got out I found myself looking at a large pool of hydraulic fluid below the aircraft. About half of the bolts on top of the hydraulic fuel pump had failed.

It was with great embarrassment that I stood in front of the squadron the next morning, as flight commander, reminding them that we do not taxi back with hydraulic problems.

We are all aware of the incident in the 1980s when a Buccaneer destroyed another Buccaneer and a number of MB326s after taxiing back with a hydraulic malfunction.

The ARH is currently experiencing false CHIP warnings and had just gone through a spate of false FIRE warnings. This has prompted the RASO to email all the aircrew to warn them about the risk of desensitisation.

The warning systems in an aircraft must be highly reliable, otherwise the credibility of the warning will be greatly diminished if the crew comes to expect false warnings. This also includes the excessive appearance of an alerting signal or warning, because it will influence the pilot's response to it.

There is a history in industry of alarms being disabled because they were too frequent and always (almost) false.

Examples of this include the disabling of an alarm to warn of explosive gas on the Transocean rig in the Gulf of Mexico, train dispatchers ignoring multiple alarms per week before a crash on the Washington subway system and ATC in Guam ignoring a system in the control tower – a minimum-safe-altitude-warning alarm – that tells controllers that a plane on approach was too low, that could have helped prevent the 1997 crash of a Korean Airliner.

According to psychologist Mark Rosekind, a member of the National Transportation Safety Board, accidents like these share the common thread where the volume of alarms desensitises people and they learn to ignore them.

James Keller, vice president of the ECRI Institute refers to this as "alarm fatigue" and Bill Waldock, professor of safety science at Embry-Riddle Aeronautical University says that one of the classic problems we have in general with warning horns is that people tend to ignore them if they are prone to go off inadvertently.

Following the crash of Helios Airways Flight 522, NASA's Aviation Safety Reporting System (ASRS) revealed that pilots flying Boeing 737s frequently ignored an on-board alarm horn designed to warn of a critical loss of pressure – and thus a lack of oxygen – in the cockpit, with cockpit crew failing to deploy oxygen masks.

Subsequently it was found that pilots continued ignoring the horn even after the FAA issued an emergency airworthiness directive requiring more emphasis – in manuals and in training – on heeding the alarm.

Some warnings are intentionally silenced. An example is where the pilots of a Learjet that crashed in Grand Bahama disabled the plane's "terrain awareness warning system" when it warned them they were flying too low and said "ah, shut up" when the TAWS sounded "pull up". Other warnings are simply ignored, such as the aircrew on a Tu-154's that crashed, killing Polish President Lech Kaczynski.

Occasionally warnings contradicts other system indication. The crew of an Air Nelson plane that skidded along a runway on its nose landing gear doors ignored two warnings that the landing gear was unsafe as it came in to land at Blenheim in 2010.

As the two pilots prepared to land, the nose landing gear stopped before it had fully extended. A second independent system showed the pilots that all the landing gear was down and locked in spite of the other indications that it was not.

The pilots assumed there were a fault in one of the landing-gear sensors and continued the approach to land expecting that all the landing gear was locked down.

On the final approach the landing gear warning horn sounded to alert the pilots that the landing gear was not safe. The pilots ignored both of these warnings in the belief they had been generated from a single sensor they assumed was faulty and had given them the original unsafe nose landing gear indications.

There are occasions when aircrew ignore warnings and act in a manner that contradicts their training or find themselves in situations where their training is inadequate.

The crew of Air France Flight 447 faced a situation where the fly-by-wire computers could not cope with a sensor malfunction and ceded control (with an audible alarm) to the two pilots. The pilot flying the plane initiated a climb that resulted in a stall.

The pilots ignored a stall warning that was sounding continually, with the aircraft in a nose-high attitude. The combination of the warning system ergonomics, and the conditions under which pilots are trained and exposed to stalls, did not result in reasonably reliable expected behaviour patterns.

The ensuing accident can, in the end, be attributed to the simple fact that the stall warning was ignored.

Warnings are there to alert crew of a malfunction and in all cases, even when the validity of the warning may be questioned due to a history of false warnings, crew are to react to the warning as per the relevant checklists and not let their expectation or perception influence their decision-making.

Subsequently it was found that pilots continued ignoring the horn even after the FAA issued an emergency airworthiness directive requiring more emphasis – in manuals and in training – on heeding the alarm

How big is that sky?

Author's name provided

As a trainee pilot at 2FTS I had my first lesson that maybe that sky isn't so big.

In a rapid-planning exercise as part of the 2FTS curriculum, an oversight was made in our de-confliction plan. Before departing Geraldton, Western Australia, students were expected to submit our flight route to check for any flight conflictions for 2FTS low-level navigation aircraft.

En-route to Pearce, the second aircraft of the two-ship formation was approximately 2 nm in trail when the lead aircraft saw a co-altitude PC9 heading in the opposite direction.

It was at that point that the oversight became apparent and that the route had never been submitted. At the same time, two crop dusters were spotted co-altitude conducting operations in closer proximity than the opposite-direction PC-9.

During the debrief, both student pilots scored poorly because of the confliction oversight with the other school aircraft for an otherwise, well executed mission. It is interesting to note that if we had submitted the route, the crop dusters would still have been a confliction but they were not mentioned as a safety concern, despite being so close.

Later in life, as a C-130J co-pilot conducting medium-level personnel airdrop at Hillman Farm, Western Australia, a PC-9 was sighted nearby during a low-level navigation exercise.

The crew was concerned as there were parachutists in the air. Multiple radios including the area Melbourne Centre frequency and guard (121.5) were both used in attempts to contact the PC-9 but to no avail.

Fortunately, the PC-9 turned on their route before getting too close to Hillman Farm, so no confliction resulted.

Learning from earlier mistakes, we had contacted 2FTS by phone to let them know of our operations and resolve any potential conflictions instead of resorting to crisis management over the radio – with no control over the environment.

A valuable lesson was learnt with de-confliction at 2FTS; however, there were still questions about how big that sky really was.

During operations in the MER as a member of a C-130J crew, we had a Resolution Advisory (RA) on Instrument Flight Rules (IFR) departure from a mountainous airfield.

The aircraft that led to the RA was in our flight path – while we were utilising maximum performance to enable departure from the threat environment as quickly as possible and also because of terrain clearance.

While it was daytime Visual Meteorological Conditions (VMC), the crew could not react to the RA instructions because of the terrain confliction and potentially follow-on traffic confliction for not complying with IFR departure instructions.

The result was an aircraft flying within approximately 500 ft of the departing C-130J and losing visual contact during a turn while the aircraft was at maximum safe performance.

In my experience, the perspective that has been taken about confliction issues is an interesting one. Where the de-confliction was within our control there was certainly a feeling of guilt and an appropriate debriefing occurred.

It is perhaps more concerning that, in circumstances that were out of the crew control, the confliction seemed less concerning to others.

Even with the advantages of RA-equipped Traffic Collision Avoidance System (TCAS), the sky is still very small. As not all aircraft have RA or TCAS, they may not appear to the TCAS-equipped aircraft.

The instance where the crew got an RA was the most concerning personally and the RA alerted us to how close we were to the other traffic. Without TCAS we would have never known that the traffic was in the same piece of sky and the results may have been very different.

Artificial time pressure leads to mistakes

By FSGT Allan Wright

You could hear a loud pop then the tinkle as the small ball bearings hit the ground and rolled about the tarmac. The maintenance manager and trade supervisor looked at each other – "What was that?"

It was late afternoon and the day had been very busy. The weapons program had just started and as usual there were a couple of unserviceable guns to replace.

The day-shift crew wanted to get the gun out of the F-18/A to lighten the workload for late shift. However, there was also a brief being given in the hangar for all personnel to attend.

The shift maintenance manager and trade supervisor decided they had sufficient time to carry out the task. They had about one hour to remove the gun, which was plenty of time with an experienced crew.

This crew did have a couple of inexperienced members but the people in key positions were experienced. During the lowering of the gun the front of the barrels contacted the rear of the radar package. The tradesman tasked for maintaining control over the barrels had not realise this had happened as his attention was focused elsewhere.

As the gun continued to lower, the stuck barrels caused the gun package to pivot on the guide bearings. This in turn caused them to rotate against the guide arms. When the stress on the bearings reached breaking point they shattered and spilled the ball bearings over the tarmac. Now they had an unserviceable gun and FOD on the tarmac. The initial time frame had blown out and the aim of alleviating the late shift workload had not been achieved.

The gun was lowered the rest of the way as it could not be left hanging by the winch cable. The guys started to pick up the bearings they could find. How did this seemingly routine task end up like this? If we use PEAR we can see where the ambers were.

People: the task was at the end of the day in which there was a high workload and the crew members were fatigued as a result – the first amber.

Environment: there were time pressures created by wanting to finish the removal task before having to go to a squadron brief – that was an amber.

The removal was done out on the flightline with engines running and aircraft movements – another amber.

The person tasked with maintaining control of the barrels was focused elsewhere – a fourth amber.

Actions: all personnel were briefed on their tasks.

Resources: there were time constraints because of a squadron brief – yet another amber.

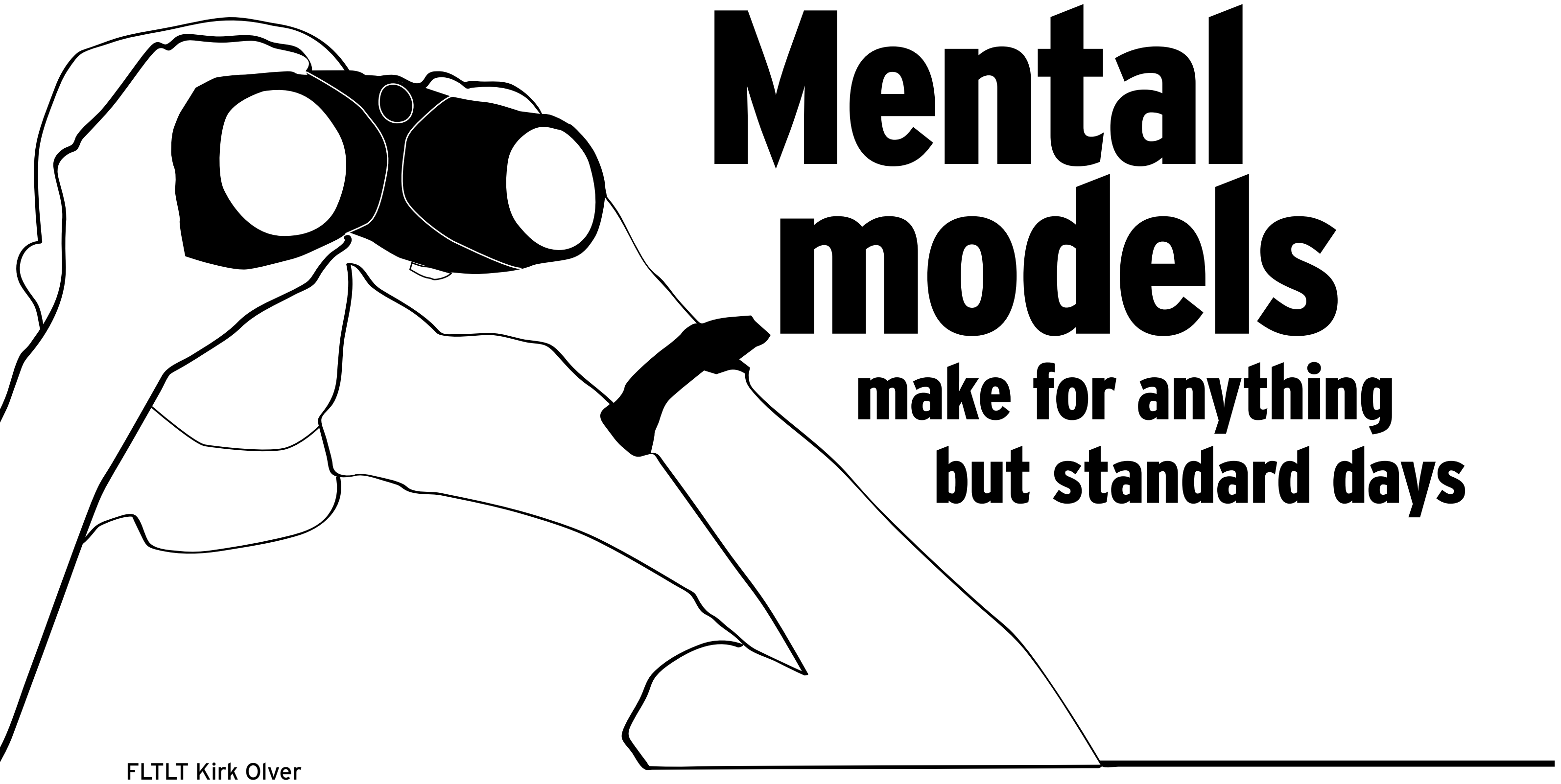
So we can see there are at least five ambers, which equates to a red. This means the task should have been stopped and actions taken to reduce the number of ambers.

What could have been done to reduce the ambers? Well first of all the pressure placed on the task by introducing time constraints should have been alleviated.

The task could have been postponed until after the squadron brief or the team members could have excused themselves from the brief and concentrated on performing the task without the distractions.

Either of these solutions would have removed two of the five ambers and the others could have been appropriately dealt with by providing extra supervision.

A better solution would have been to leave the job to the incoming crew who are rested and can 'plan, brief, execute and debrief' the task from the beginning, eliminating the ambers.



Mental models

make for anything but standard days

FLTLT Kirk Olver

It was a standard day at Williamtown ATC– the traffic levels were lower than usual and the weather was fine with good visibility.

Earlier in the day, Westpac 3 (MEDEVAC helicopter) had tracked north through the Williamtown airspace to a location in the vicinity of Soldiers Point, approximately 13 nm to the north east. They were on the ground and expected to become airborne again for direct tracking back through Williamtown airspace enroute to the John Hunter Hospital. Cheetah, a formation of three Hawk aircraft, was issued an airways clearance and was taxiing for departure at Williamtown. Westpac 3 became airborne at Soldiers Point and I, as the approach controller, gave them clearance to track direct to the John Hunter Hospital in Newcastle at 1500 ft.

This track would result in Westpac 3 crossing the extended centerline of Runway 12 at approximately 3nm upwind. I contacted the tower controller to notify them of Westpac 3's tracking, as the clearance given would take the aircraft through the circuit area. The tower controller acknowledged the clearance and advised that they had no requirement for Westpac 3 on their frequency.

Cheetah contacted the tower who notified them that the helicopter was ready for departure and was provided a line up clearance. The tower controller visually identified Westpac 3 and assessed its tracking. The controller formed a mental model of Westpac 3 tracking closer to the airfield and passing the threshold overhead vice 3 nm upwind.

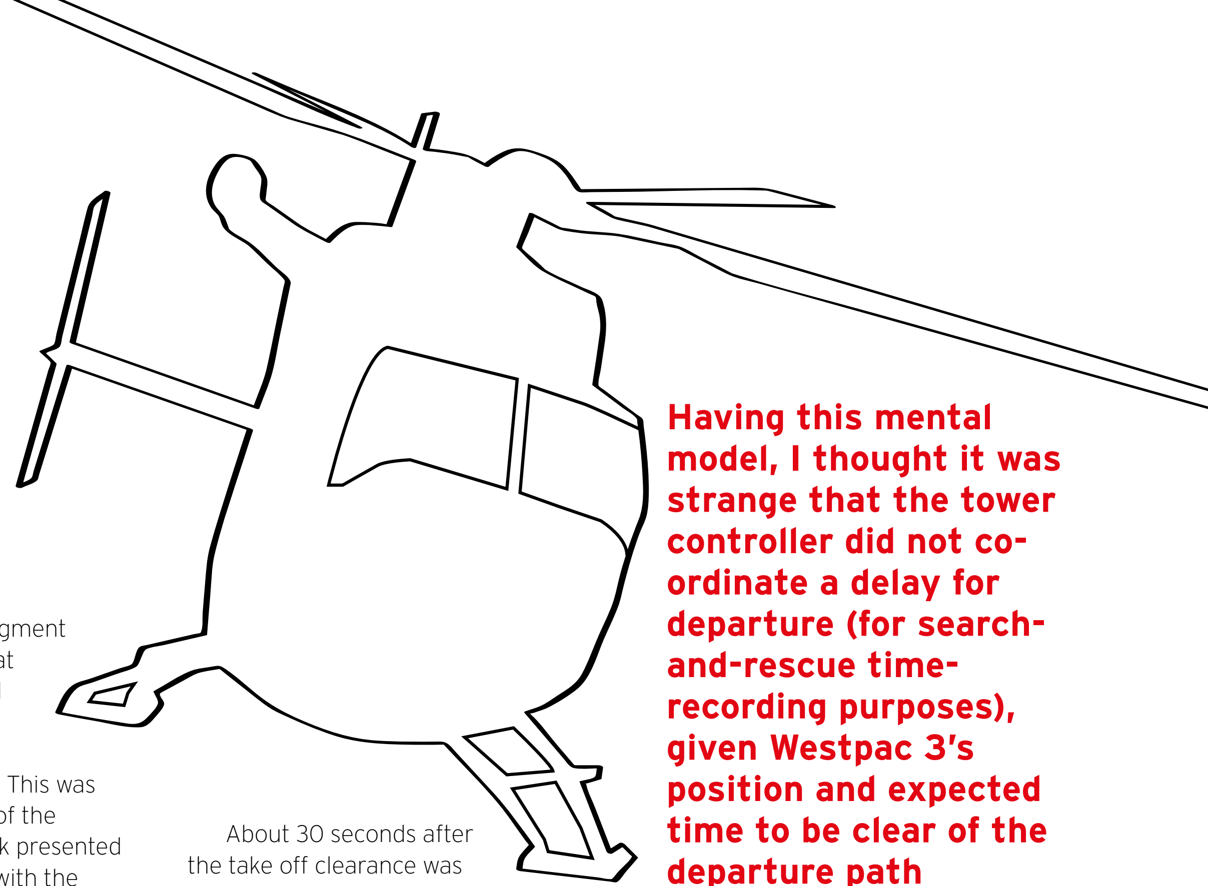
The tower controller conducted co-ordination for Cheetah's departure to me, and offered the separation between the two aircraft. I accepted this and issued an appropriate departure instruction. I had personally trained the tower controller years before on their posting into Williamtown and was very comfortable with their judgment and abilities. I assessed that the tower controller would depart Cheetah once Westpac 3 had passed the upwind area of Runway 12. This was based on my assessment of the traffic, as Westpac 3's track presented a crossing-track scenario with the departure path of Cheetah and visual separation can only be applied where projected paths do not cross.

Having this mental model, I thought it was strange that the tower controller did not co-ordinate a delay for departure (for search-and-rescue time recording purposes), given Westpac 3's position and expected time to be clear of the departure path.

At the time of the next call, Westpac 3 still had two minutes to fly until clear of the upwind path, meaning that it was unlikely that Cheetah would be on my frequency within the default two minute search and rescue time.

I considered challenging the tower controller to confirm a delay for Cheetah's departure reference Westpac 3, but, given the low traffic levels, I was comfortable in managing the search-and-rescue time appropriately to the expected on-frequency time.

The tower controller gave Cheetah a takeoff clearance. At this point, Westpac 3 was 8 nm to the north and approximately 5.5 nm from crossing the Runway 12 centerline. Westpac 3 was still on the Approach frequency and would not have been aware of any departing aircraft at Williamtown.



About 30 seconds after the take off clearance was issued, with Cheetah still stationary on the runway, the tower controller questioned me on the position of Westpac 3 as it looked to be further east than they expected (based on their mental model of tracking).

I confirmed Westpac 3's tracking, direct to the John Hunter. However, the tower controller maintained the original mental model of Westpac 3 tracking closer to the field over the Runway 12 upwind threshold, despite the visual evidence that it may not have been. Westpac 3's track was further east than the tower controller assessed and was tracking to cross the Runway 12 centerline at 3 nm upwind.

The first pair of the formation (third element was in trail) started the roll approximately one minute after the take off clearance was given. Westpac 3 at this point was 1.5 nm from crossing the 3 nm extended Runway 12 centreline.

The tower controller requested I pass traffic information to Westpac 3 on the formation departing, which I did and also included that Tower was separating them with these aircraft. The tower controller did not pass traffic to Cheetah on Westpac 3.

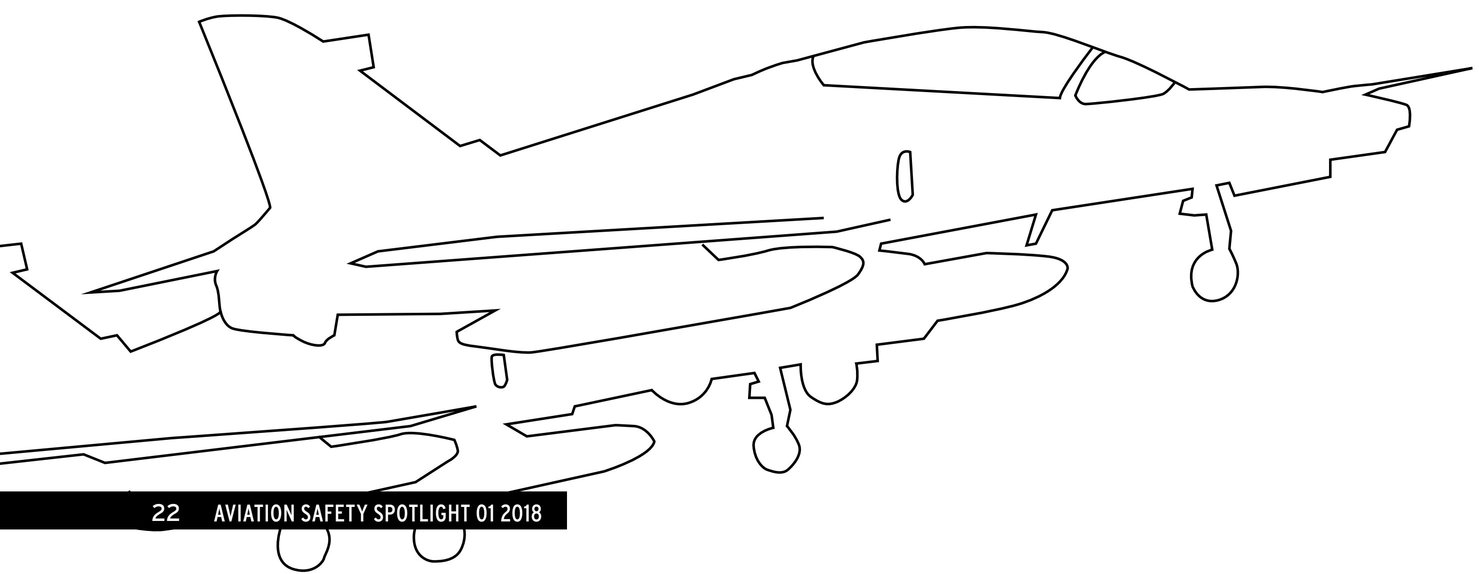
Following take off and climb, Cheetah automatically changed to my frequency IAW local procedures and on first contact, an audible TACS warning was heard when Cheetah advised me that they had passed the helicopter.

Having this mental model, I thought it was strange that the tower controller did not co-ordinate a delay for departure (for search-and-rescue time-recording purposes), given Westpac 3's position and expected time to be clear of the departure path

The pilot elected to reduce the rate of climb to ensure that there was no risk of collision and at time of passing, assessed that they had passed behind Westpac 3 by approximately 2000 ft and 400 ft below. I was not aware that Cheetah was oblivious to the presence of Westpac 3.

Had I challenged the tower controller on the expected on-frequency time, the possibility existed that our two opposing mental models on the situation could have been identified and thus alerted the tower controller to ensure that the Westpac 3's projected flight path did not conflict with the departing Hawk aircraft.

Furthermore, once the tower controller raised the question of tracking, an opportunity arose for me to identify that the tower controller had an incorrect assessment of the situation. If I had provided an alternate method of position as opposed to re-stating the clearance of Westpac 3, this could have broken the incorrect mental model held by the tower controller.



Reporting unlawful UAS operations

By FLTLT Marc Nesbitt

Existing Defence policy governing the use of UAS (Unmanned Aerial System) and RPAS (Remote Piloted Aircraft System) was replaced at the end of 2017. The new regulations were to be better aligned with what is expected of today.

There are now three categories of UAS; Certified, Specific and Open. The Open category concerns UAS that are up to 25 kg IAW restrictive standard operating conditions similar to those as outlined by the Civil Aviation Safety Authority (CASA).

There are rules and regulations to self-govern Defence-owned UAS for all sizes, but what about the general public?

Spotlight 03 2017 featured a drone (UAS) awareness campaign to educate pilots about the proliferation of drones operated by the general public either knowingly or unknowingly breaking the law.

On 2 July, 2017, a drone was seen on the approach path to Gatwick airport and many aircraft were placed in holding patterns out of the way or diverted due to fuel considerations. This caused several interruptions to a large number of passenger aircraft and has the potential for a serious incident or crash.

Locally, at East Sale, there have been drones sighted within 3 nm final to Runway 09 (the minimum CASA regulation distance to a controlled aerodrome) by various members of the base.

On one particular occasion while air traffic services were open, a local air traffic controller was on the way to work and the operator of an airborne drone was asked to land the Phantom 3 he was flying and if he was licensed.

The operator was not licensed and operating commercially. Minutes later a PC-9 flew overhead to land. RAAF Security Force called but lacked the authority to leave the base to investigate – even the local police are still trying to understand the laws that may apply and, although advised, did not respond to the address.

The footage was uploaded two weeks later showing the drone operators' videography prowess on behalf of a local real estate agent with cinematic aerial vision correlating to house that the drone was first reported being sighted at.

How should this incident be reported?

Confusion arose when an event had to be raised as an Aviation Safety Report (ASR). Who submits the ASR and who is investigating?

Should it be the personnel on base who saw it, the controller who spoke to the drone operator, the base squadron or the ATC unit responsible for the airspace?

There is no standard reporting for drone activity operated unlawfully by civilian operators in the new Sentinel-based Aviation Safety Management Information System and is merely data capture at the moment – if it does get reported.

What controls are in place?

The *can I fly there?* app for IOS and Android, available in store from CASA, features these aerodromes as well as current fire-and-emergency situations such as fires or car accidents to advise operators that they can't fly in the area.

But quite often the geofencing set up does not match the minimum safe distance as set out by the CASA app.

There are some things in place to help prevent inadvertent flight of a drone. DJI, a prominent player in the drone industry has set up geofencing to prevent the operation of DJI drones near controlled and uncontrolled aerodromes.

It is all too easy to avoid geofencing and continue flying if a rogue operator wishes too. In the above instance, the geofence setup by DJI did not extend past the runway and so the operator could become airborne at any time.

Reporting and operating for civilians?

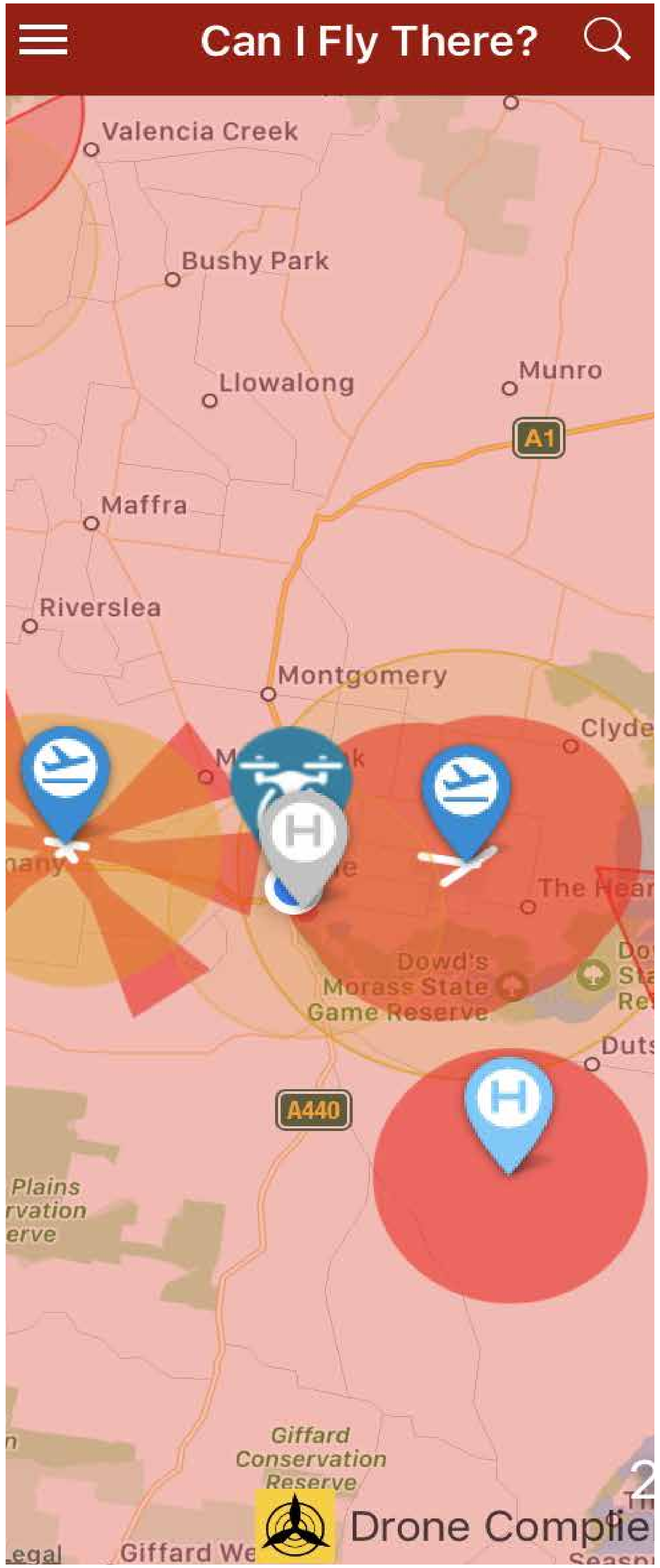
There are other avenues for reporting unsafe operation of drones/UAS, which can be done on the online complaint form on the CASA website. Unless there is overwhelming information about the incident there are limitations as to what can be done to catch rogue operators.

There are; however, operators who commit to the rules and are operate in a safe manner. This can be nurtured by allowing an operator to use a UAS in the correct manner. For example, UAS operating within 5 nm of an aerodrome for specified periods and distances can utilise the NOTAM template as set out on NAIPS website or liaise with local air traffic control units to apply segregation or separation with manned aircraft like Williamtown ATC does.

General awareness programs can also be a method of alerting the public to correct drone use. Parks Victoria is one such agency that advertises heavily against the use of drones in specific areas. Another method is to send incorrect geofencing to DJI to be corrected.

Drones, UAS, RPAS – whatever name you want to apply – are growing in popularity and require regulation for the safety of all airmen. Standardised reporting will centralise the collection of data.

What can you do to make a difference?



GOOD SHOW AWARD

FLTLT TRAVIS BATTEN – 453SQN

FLTLT Travis Batten is presented his Good Show Award by CO 453 Squadron, WGCDR Stuart Jones.

On 5 February 2018, FLTLT Travis Batten from 453SQN Williamtown Flight was presented with a Good Show Award by the squdron's CO, WGCDR Stuart Jones, to recognise his contribution to the safe outcome of a civilian light aircraft which inadvertently entered cloud near Williamtown on 13 November 2017.

FLTLT Batten was working as part of a team of three controllers providing approach control services when the single-pilot aircraft, required to be flying visually, entered cloud. This is a serious emergency which often leads to disorientation and loss of control, statistically resulting in impact with terrain in less than three minutes from entering cloud.

FLTLT Batten's calm and timely response instilled confidence in the pilot while also providing navigational advice to assist the pilot to re-establish visual reference. After an extended period passing into and out of cloud, the aircraft was finally safely landed at a disused airstrip north of Williamtown. FLTLT Batten's emergency response was critical to the safe outcome of this emergency.

CAPT RYAN TURNER – BFTS QFI

CAPT Turner is presented his Good Show Award by AIRCDRE Glen Braz.

An ADF Basic Flying Training School QFI has been recognised for his management of an in-flight emergency on 12 September 2017.

While captain of a CT4B aircraft flying a FIC mutual sortie from East Sale, CAPT Ryan Turner demonstrated outstanding airmanship and flying skill when he safely landed an aircraft experiencing a serious malfunction.

The aircraft suffered rough running and a significant loss of oil pressure as a result of an oil pump failure, followed by an alternator failure.

CAPT Turner's skill and measured reaction saw the aircraft recovered to the nearest airfield via a non-standard straight-in precautionary landing.

His actions have been recognised as demonstrating exceptional leadership, vigilance, flying skill, prioritisation, and airmanship under stress.

On 2 March 2018, while visiting ADF BFTS, CDR AFTG AIRCDRE Glen Braz, presented CAPT Turner with a Good Show Award for his outstanding application of emergency handling standards, airmanship and leadership that prevented a serious aviation safety incident.

Nominations are being called for SQNLDR David John Gunn "Gunny" Memorial Aviation Safety Award

The Air Command "Gunny" Memorial Aviation Safety Award is presented annually to the individual assessed as being the highest performing member in an aviation safety-related role in Air Command. The award was raised in memory of SQNLDR David John Gunn who was instrumental in the promotion of aviation safety throughout Air Command during his tenure as the Command Aviation Safety Officer (CASO) from September 2007 to February 2010.

This aviation safety award is available for award to the aviation safety officer who has made an outstanding contribution, and identifiable difference, to aviation safety in their workplace, and possibly beyond to their base, Wing or FEG. The award is open to all individuals who hold a formal aviation safety appointment as part of their duties, including deployed units. The nominee must have played a significant role in an aviation-safety initiative and have gone above and beyond the expectations of their formal safety role. Air Commander Australia (ACAUST) will decide the recipient of the award on the advice of Director A9.

To nominate please visit the Headquarters Air Command SQNLDR David Gunn "Gunny" Memorial Aviation Safety Award Intranet site.

2018 Courses

Aviation Safety Training

ASO (I)
Aviation Safety Officer (Initial) Course

COURSE AIM: To graduate Unit ASOs, Maintenance ASOs and Flight Senior Maintenance Sailors.

PREREQUISITES: Personnel who are required to perform the duties of an ASO.

COURSE DESCRIPTION: The course provides theory and practical exercises in the broad topics of the Defence Aviation Safety Management System, risk management, human factors, the Defence Safety Analysis Model, safety event investigation and reporting.

ASO (A)
Aviation Safety Officer (Advanced) Course

COURSE AIM: To graduate Base, Wing, Regiment, Fleet, Group and Command ASOs.

PREREQUISITES: ASO (I) Practical and applied experience as a ASO (or equivalent)

COURSE DESCRIPTION: The course provides theory and practical exercises in the broad topics of the Defence Aviation Safety Management System, human factors and risk management, and base/unit emergency response. Includes participation in a practical emergency response component.

NTS
Aviation Non-Technical Skills Trainer

COURSE AIM: To graduate students with the knowledge and skills to deliver non-technical skills training.

PREREQUISITES: A solid background in Crew/Maintenance Resource Management and/or Human Factors.

COURSE DESCRIPTION: The course provides the theoretical background of aviation non-technical skills and trains students in the skills and knowledge for delivering non-technical skills training. The course also introduces students to scenario-based training and assessment techniques.

AIIC
Aviation Incident Investigator Course

COURSE AIM: To develop members with the skills to conduct aviation incident-level investigations in support of their ASOs.

PREREQUISITES: Any personnel who are involved with Defence aviation. There is no restriction on rank, defence civilians and contractor staff are also welcome to attend.

COURSE DESCRIPTION: This one-day course provides theory (taken from the ASO(I) course) on the topics of; the Defence Aviation Safety Management System; generative safety culture; error and violation; the Defence Aviation Safety Analysis Model; aviation safety event investigation and reporting. Interested personnel should contact their ASO.

COURSE NAME /NUMBER	DATES	LOCATION	NOMINATIONS CLOSE
1/18 ASO Initial	13 to 22 Feb	Nowra	29 Jan
2/18 ASO Initial	19 to 28 Mar	Canberra	19 Feb
3/18 ASO Initial	10 to 19 Apr	Canberra	9 Mar
4/18 ASO Initial	15 to 24 May	Canberra	13 Apr
5/18 ASO Initial	21 to 30 Aug	Canberra	20 Jul
6/18 ASO Initial	18 to 27 Sept	Canberra	17 Aug
7/18 ASO Initial	20 to 29 Nov	Canberra	20 Oct
1/18 AvnNTS	30 Apr to 4 May	Canberra	3 Apr
2/18 AvnNTS	6 to 10 Aug	Canberra	9 Jul
3/18 AvnNTS	3 to 7 Sept	Canberra	6 Aug
1/18 ASO Advanced	4 to 8 Jun	RAAF Williamtown	11 May 18
2/18 ASO Advanced	TBA		

Updated 24 Apr 2018

All courses are generally oversubscribed, dates provided are for planning purposes and are subject to change due to operational requirements, nominations from individual units or candidates will not be excepted, nominations are to be forwarded with Commanding Officers endorsement to :

- **Air Force:** the relevant Wing Aviation Safety Officer, or for CSG, Staff Officer Safety HQCSG
- **Navy:** the Fleet Aviation Safety Officer and
- **Army:** ASDC Aviation Safety, Aviation Branch, HQ FORCOMD.

For further details regarding the above courses visit the DDAAFS Aviation Safety Assurance and Training intranet site or email ddaafs.setcourses@defence.gov.au

NEW TRAINING

Aviation non-technical skills courses

DASM AL7 introduces a new training framework to replace the CRM and MHF programs

Key changes include:

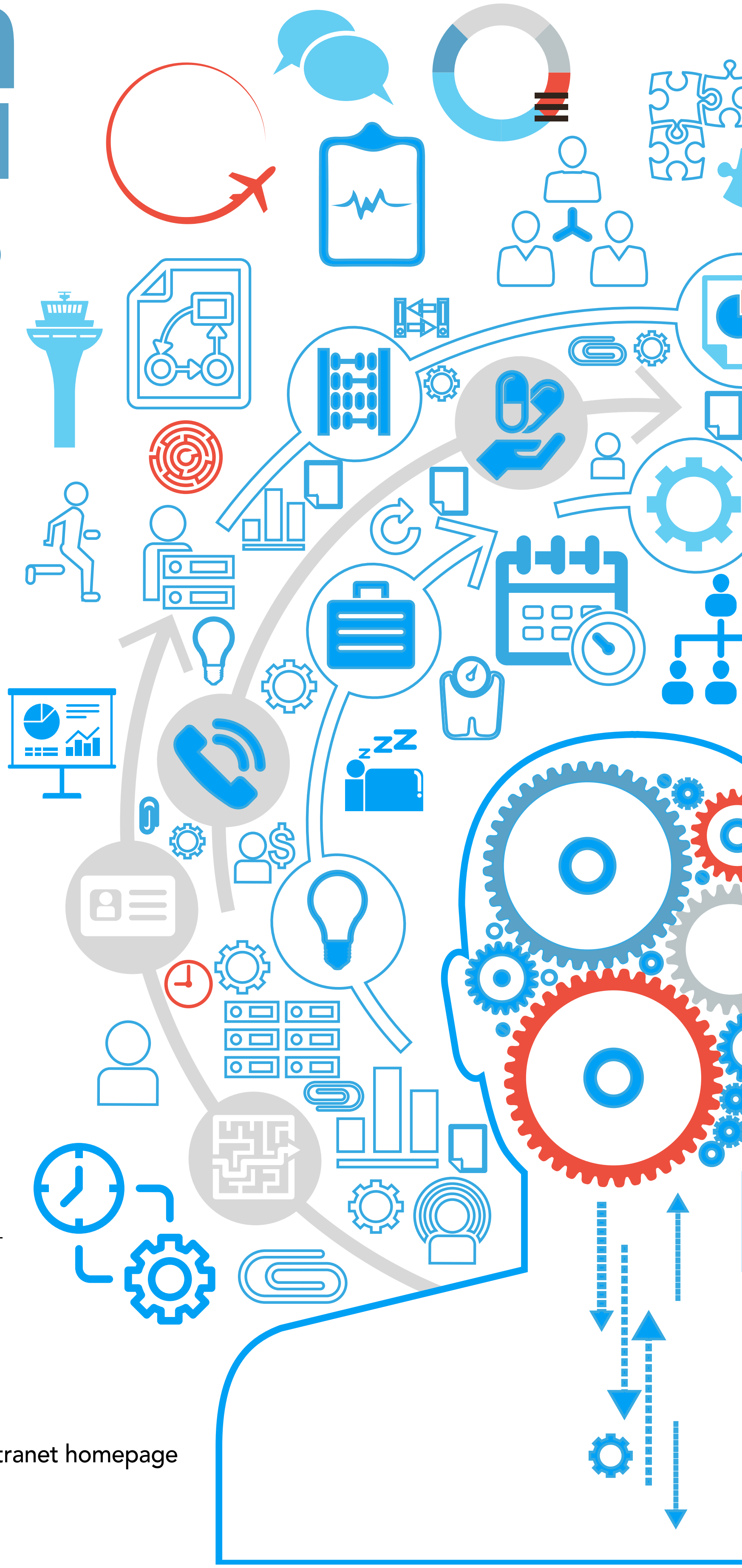
A change in terminology from Crew Resourse Management (CRM) or Maintainence Human Factors (MHF) to **NON-TECHINICAL SKILLS (NTS)**. The term NTS denotes targeted human-factors training designed to promote reliable and effective performance. It promotes the integration of technical and non-technical training and assessment and recognises that not all Defence aviation personnel work in crew-based environments.

Aviation NTS Trainer Course replaces SFAC and prepares participants to deliver NTS Foundation and Continuation and awareness training.

Aviation NTS Foundation Course replaces CRM and MHF Foundation courses and will be integrated into all initial employment training for aviation-related trades.

Aviation Continuation Training replaces refresher training sessions and consists of targeted scenario-based NTS training packages developed by DDAAFS. It must be conducted every two years for all aircrew, JBAC, ABM, UAS pilots and operators, engineers and maintenance personnel.

The new framework supports a move beyond classroom-based NTS training to the conduct of skills-based training integrated into the broader training system. There are several evidence-based techniques for assessing performance; DDAAFS recommends using the Method for Assessing Personnel Performance (MAPP) contained in the DASM.



For more information on NTS visit the DDAAFS intranet homepage