AVIATION SAFETY

Spotlight

03 2017

Drone dangers

The proliferation of drones presents emerging threat

INSIDE

AVIATION SAFETY
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Foreword

Aviation is not an inherently dangerous profession but it is an activity where complacency or inattention can have severe and possibly fatal consequences. It's also a profession that is constantly changing and evolving, where new hazards and threats emerge and existing hazards find new ways to manifest themselves.

All of us in the profession need to constantly manage these new hazards and identify new and improved controls to eliminate or mitigate these risks. As technology has improved, investigations into serious incidents and accidents reveal that the human in the loop can often be one of, or the primary, causal factor. Although this is true, I am also very aware that the maintainers and aircrew working in Defence Aviation prevent dozens of incidents and safety occurrences through their professionalism and diligence every day. Indeed, I regard humans as one of the most effective controls to mitigate these new emerging hazards. However, to do this effectively, we need to understand what is causing safety occurrences and update and improve our training and practices to continue to meet and best these new threats.

On a final point, as we approach Christmas and the opportunity to spend time with family and friends, think about the preventative controls that could save your life before you travel; start your trip well rested, drive in a well-maintained vehicle and plan your rest breaks to ensure that Mum's prawns/turkey/pavlova are enjoyed by all of the family.

GPCAPT John Grime
Director,
Defence Aviation and Air Force Safety

INSIDE

DRONE
~~Bird~~ strike hazard

By Rebecca Codey

Just 20 feet (six metres) was all that separated a RAAF PC9 and an unmanned aerial system (UAS) in the airspace above Western Australia's coastline on a fine day in August.

The 2FTS crew of instructor and student were conducting a curriculum sortie, that involved an authorised transit from RAAF Base Pearce to Rottnest Island via Observation City, Scarborough, during the close call.[1]

About 2 nm north of Observation City the aircraft captain noticed a UAS, commonly known as a drone, co-level at 270 feet and within 20 feet.[1] It's estimated the UAV was about 50 cm in diameter and weighed around 6 kg.

According to DDAAFS aviation safety investigators, if contact had been made with this large UAS, the results could have been catastrophic for the PC9 crew and the aircraft. The size and weight of a large bird, the UAS could have caused significant damage to the aircraft or smashed through the windscreen killing the crew. As a comparison, in 1977, an F-111 hit a pelican (about the same weight at the UAS), causing the death of the two crewmembers on board and the loss of the aircraft.

Bird strike is the best parallel aviation safety investigators can use when discussing the repercussions of impact between an aircraft and UAS. Despite the use of UAS becoming widespread in the civilian world, there have not been many serious incidents – reported to aviation authorities at least – to draw upon.

"While the likelihood of a drone strike can be correlated, to a degree, with current assessments of bird strikes, the consequence is largely unknown," says SQNLDR Shane Rowe, Air Force Headquarters' Command Aviation Safety Officer (CASO), who is in charge of the 2FTS-UAS serious incident investigation.

"I understand the UK Civil Aviation Authority (CAA) is about to, or has, injected a drone into a turbine engine. This will eventually provide some information on consequence."

In what is believed to be the first incident of its kind, a US Army Black Hawk helicopter collided with a small drone in domestic airspace over New York City in September this year. The crew flew the Black Hawk at 500 feet over Staten Island while providing a security flight for the United Nations General Assembly meeting at the time.

"The collision caused minor visible damage to a main rotor blade and a window on the upper left-hand side of the helicopter, which landed safely at Linden Airport in New Jersey," says LTCOL Joe Buccino, 82nd Airborne Division public affairs officer.[2]

The investigation into the collision continues; however, LTCOL Buccino says the Army is rethinking its procedures for domestic missions over populated areas. "We traditionally fly [in] restricted airspace or in combat, so this is a new experience," he says.

"We were obviously flying over a residential area – a municipal area – supporting this mission. We are reviewing the process now should we receive another mission like this."[2]

Earlier this year, a Royal Australian Navy MRH90 was involved in a near miss with a small UAS in the airspace above Sydney Harbour. In this case it is believed the UAS was controlled by an overseas pilot who was taking aerial photographs of the Opera House, and was not aware the area was a no-fly zone.

While the report into Air Force's near miss with the UAS in August is not yet finalised, it is believed neither party was in the wrong. The 2FTS crew was flying an authorised low-level sortie and the UAS was being flown under 400 feet, as per regulations.

In a bid to raise awareness, SQNLDR Rowe has offered some thoughts on how to share the airspace with UAS/drone operators as safely as possible.

"We need to operate within the rules governing our operation (drone or aircraft), with an awareness of the parameters governing other airspace users, and an appropriate awareness of the risks involved," he says.

"It is probable that we cannot entirely isolate ourselves from law-abiding drone operators, and impossible to isolate ourselves from the non-law abiding drone operators. We need to be risk aware."

With an increasing number of UAS (and ever-improving technology) on the market in Australia and around the world, this trend is only set to grow – and with that, the risk of an incident such as that over the west coast ... or much worse.

UAS in Defence

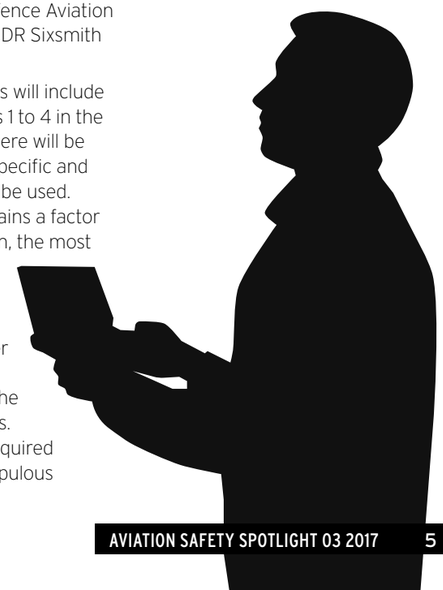
From Defence's perspective, the use of UAS has expanded exponentially within both the aviation and the traditional non-aviation units such as Defence Science and Technology Group and Combat Support Group, as explained by WGCDR Phil Sixsmith, Deputy Director Regulations, Airworthiness Coordination and Policy Agency (ACPA).

Existing Defence policy governing the use of UAS will be replaced by the end of the year with new regulations that are more contemporary and better aligned with global regulations. An important part of the development of the new regulations has been an examination of world and Australian regulations.

"The new Defence Aviation Safety Regulations recognise that UAS are used in current operations by all services and provide – in limited situations – commanders at the appropriate level the ability to make decisions about UAS use, without seeking specific approval from the Defence Aviation Authority (Defence AA)," WGCDR Sixsmith says.

In a general sense, changes will include the removal of UAS categories 1 to 4 in the current regulations. Instead there will be three categories – Certified, Specific and Open – under which UAS may be used. While the size of the UAS remains a factor when considering classification, the most important element is the operational mission.

"Regulations are based on the risk the UAS poses to other aircraft in the air, or personnel and critical infrastructure on the ground," WGCDR Sixsmith says. "For example, if the mission required the UAS to be flown over a populous



ADF'S UNMANNED AERIAL SYSTEM

In 2017 there were two UAS listed on the Defence Register – the Shadow 200 and the recently decommissioned Heron. The MQ-4C Triton is set to be introduced from mid-2020.

Shadow 200

Operated by Army, the Shadow 200 is a tactical aircraft with high-resolution cameras and laser systems. The Shadow can reach speeds in excess of 200 kilometres per hour, and has a wingspan of 6.2 metres.

Heron

In contrast to the 84-kilogram Shadow, the Heron weighs 1.1 tonne, and has a wingspan of 16.6 metres and maximum speed of 180 kilometres per hour. Due to its size, the Heron is operated from an airfield runway and is operated by qualified pilots. The Heron ceased operation in June 2017.

Triton

Defence's next planned UAS acquisition is the MQ-4C Triton, and is expected to be operational by 2023-24. Weighing in at over 14.5 tonnes, and with a wingspan of nearly 40 metres, the Triton will be Defence's largest UAS to date. Sensors aboard the Triton provide 360-degree view for over 2000 nautical miles. The Triton will also be able to reach speeds of up to 575 km/h, and fly for 30 hours. During the last financial year (16/17) the Shadow and Heron were involved in 32 aviation safety occurrences which were largely human-related (43.8 per cent). Human-related ASORs include incorrect or unauthorised flight or handling of the UAS. Of the 32 occurrences there was one serious incident involving an electrical systems failure resulting in a loss of link and irreparable damage to a Shadow.

Sources

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http://www.defence.gov.au/publications/docs/HeronFactSheet.pdf

https://en.wikipedia.org/wiki/AAI_RQ-7_Shadow

https://www.army.gov.au/our-future/modernisation-projects/aviation-projects/shadow-200

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Shadow 200


Heron


Triton


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

area, there is the potential for greater risk than flying a UAS within a remote locality."

The following is a brief look at the way UAV operation is classified in the new regulations:

- Certified – must comply with similar regulations as required for manned aircraft.
- Specific – includes two categories; Specific Type A – must be operated under a UAS Operating Permit (UASOP); Specific Type B – must be operated in line with the UAS standard scenarios with a pre-defined set of controls, as approved by the Defence AA.
- Open – UAS up to 25 kg must be operated IAW restrictive standard operating conditions in a similar approach to the CASA Excluded category to promote commonality in Australian civil and military UAS operation.

The new regulations will be released by the end of the year. In the meantime, for more information on the current UAS regulations go to: http://www.defence.gov.au/dasp/Docs/DASR-Documents/ACPA-Regs/47-pdf-Part-UAS.pdf

UAS in the civil world

Civil Aviation Safety Authority (CASA) provides a plethora of information for civilians on flying UAS/drones/remotely piloted aircraft (RPA) in Australia – whether flying for economic gain or for fun. CASA's website covers issues such as: when you require an RPA operator's certificate; when you must notify CASA that you are flying the RPA; safety laws and rules and recent changes to legislation; how to gain your remote pilot licence and RPA certificate; where you can fly; emergency situations; privacy considerations; how to report unsafe activity; and links to other relevant resources.

CASA has a number of valuable tools, including an e-learning module and 'Can I fly there? – drone safety app', that can be found on the website http://www.casa.gov.au

References

1. DAHRTS Aviation Safety Occurrence Report 2FTS-050-2017

2. Bill Carey, 25 September 2017, Army confirms Black Hawk, drone collided over New York City; *Defense News: Aviation International News*; https://www.ainonline.com/aviation-news/defense/2017-09-25/army-confirms-black-hawk-drone-collided-over-new-york-city

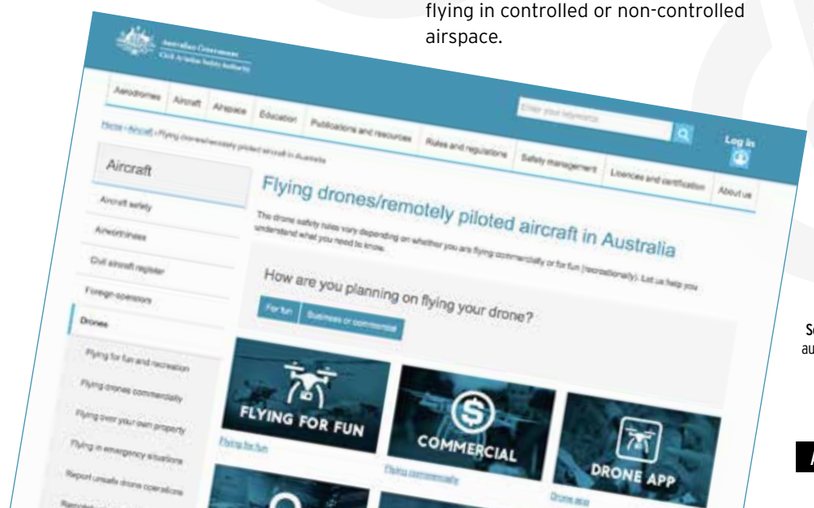
Safer controls

Everything you need to know about flying drones in Australia

CASA's e-learning module is packed with everything you need to know to safely and legally fly a remotely piloted aircraft (RPA) (unmanned aerial system/drone) in Australia – from a micro RPA at less than 100 g to a large RPA weighing more than 150 kg.

What follows is a selection of CASA's requirements for piloting a small RPA for recreation.

- When operating your RPA it must be within your visual line of sight – in other words, you must be able to continually see, orient and navigate it without use of binoculars or a telescope. If you want to operate it beyond these boundaries, you must contact CASA for approval.
- General users can only fly RPA during the day and keep clear of cloud. You must not fly in any weather conditions that stop you, or pilots of other aircraft, from seeing your RPA clearly, such as smoke, mist, or fog.
- You must operate your RPA at least 30 m away from people or their property. Flying close to populated areas, such as crowded beaches, parks, sports ovals where a game is underway or other people's backyards is strictly off limits.
- You should operate it far enough away that if something goes wrong it does not pose an unreasonable risk to life, safety or property. They should not be flown where they may create an obstruction to an aircraft taking off or approaching for landing.
- Dropping or discharging something from an RPA must not create a hazard to another aircraft, person or property.
- Where you fly your RPA is just as important as how you fly it, so it's important to familiarise yourself with go/no go areas.
- If you are operating your RPA outside an approved area, you must keep it within sight at all times, keep it clear of populous areas and, unless you are outside an area of controlled airspace, stay below 400 ft above ground level.
- When flying your RPA outside an approved area, be aware of where you are in relation to any nearby airports, aerodromes and helicopter landing sites. It is imperative that you do not create a hazard to any aircraft while it's taking off or landing and you must keep away from the approach and departure paths of runways and landing areas. In addition, different rules apply to the airspace around airfields depending on whether you are flying in controlled or non-controlled airspace.
- During public-safety operations it can be tempting to use your RPA to get a better view. You should be aware that helicopters or emergency service RPAs often fly at lower levels during public-safety operations such as routine surf patrols, law enforcement, or fighting bushfires. There have already been a number of close calls involving RPAs that have put public safety at risk. You are much more likely to see them before they see you, so for safety's sake, keep well away from manned aircraft.
- Access to some areas of airspace may be restricted because they present a potential hazard to aircraft operations. For safety or security reasons, particular airspace may be designated as being prohibited, restricted or danger areas. Restricted airspace has horizontal and vertical limitations and, depending on the type of restriction or hazard involved, it may be active during certain times on a temporary or permanent basis. More information can be found on the Airservices Australia website http://www.airservicesaustralia.com/
- In addition to Civil Aviation Safety Regulations Part 101, you must comply with any other regulatory requirements that may exist under Commonwealth, State or Local law when operating your RPA, such as local council and national parks, for example.



If you have further questions about flying your RPA recreationally, contact CASA's RPAS team via email rpas@casa.gov.au or phone 131 757 (ask for the RPAS section).

Source: CASA e-learning module: http://services.casa.gov.au/elearning/casa_101/

Situational awareness

… on the GROUND and in the air

By FLGOFF Ryan Immanuel

A C-17A was grounded for a week after being struck with the back of an elevating work platform (EWP) during maintenance.

A panel on the left-hand shoulder of the aircraft (just forward of the wing root) had to be removed during an intermediate-level servicing. Two maintenance personnel – a tradesperson (TP) and a maintenance manager (MM) – used an EWP to gain access to the panel.

As they powered the EWP upwards, they heard a noise and found that the number two engine in-board thrust reverser door had been struck by the rear end of the platform, causing visible damage.

The damage required an engineering disposition for repairs from the aircraft manufacturer and consequently grounded the aircraft for a week.

An investigation followed, and revealed that both members were watching the same direction at the point of the EWP strike. The members instead should have been 'spotting' in opposite directions to observe all areas around the EWP to avoid impact with any objects or surfaces.

The MM was overseeing the intermediate servicing and their primary role was to manage tasks, personnel and resources. However, for this particular task the MM decided to assist and become directly involved in the job, rather than directing other maintenance personnel to do the task.

Furthermore the TP was not previously involved in the servicing and was brought in to assist with this particular job.

The MM and TP admitted that when they went out to the EWP they thought the basket may get too close to the aircraft, but did not actually highlight it as a cause for concern.

The MM assumed the role of the spotter while the TP drove the EWP. The TP was trained, authorised and deemed competent in EWP operation. The member had carried out several tasks previously requiring EWP operation.

In this instance they went about the task in the same manner they had done in the past. The TP assumed the MM was aware of their responsibilities as a spotter and; therefore, there was no prior briefing or planning between them before they conducted the task.

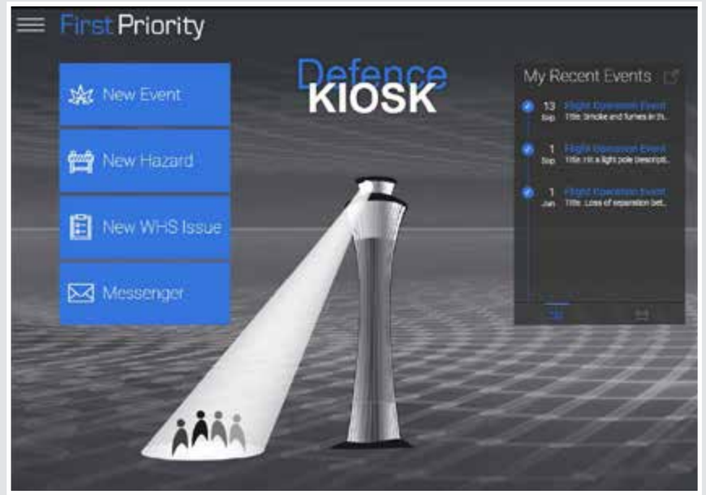
As a result when the TP drove the EWP upwards, it was assumed the MM would be observing the opposite direction to the TP. Instead both members were looking in the same direction and the rear of the basket struck the engine.

It was eventually determined the cause of the occurrence was that the technicians did not establish communication when planning and executing the vertical operation of the EWP. This inadequate planning saw both technicians lose situational awareness of the EWP, culminating in impact damage to the aircraft.

In the end a seemingly simple error incurred a considerable penalty maintenance and more importantly unnecessary aircraft unavailability of a primary Air Force asset.

Better reporting of Defence aviation safety events

Defence's new aviation safety report (ASR) will make recording safety events easier and result in better quality data – enhancing our ability to learn from experience and take action to improve safety.



Delivered by DDAAFS, the Aviation Safety Management Information System (ASMIS) Project replaces the aging Defence Aviation Hazard Reporting and Tracking System (DAHRTS) by providing ASR within the existing Sentinel system in February 2018.

The ASR has completed user-acceptance testing (UAT), having been put through its paces by a group of 80 testers across four sites since mid-September. Any system errors experienced by the testers will be resolved before the system is released.

Following UAT, the project is progressing into the training phase, with transition training available to users employed in a Defence aviation unit. According to Project Manager Linda Norden, the one-day course will cover the new methodologies, policy, taxonomies, workflow, and system process as well as an ASR introduction to Sentinel.

Defence Aviation has an outstanding safety record across a broad spectrum of training and operations, from counterinsurgency to humanitarian support.

In years to come, responding to global and regional events will pose new challenges with the growth in technology and transformational change within the Defence Aviation environment.

Defence Aviation must evolve to rapidly harness the potential of emerging technologies in order to meet these new challenges.

The ability to pro-actively manage risk, reactively learn from safety occurrences, and to achieve continuous improvement within the safety space, will play a critical role in Defence Aviation maintaining its excellent track record and enhancing future capability.

In October 2016, then-DCAF AVM Warren McDonald formally initiated development of the DAHRTS replacement system by signing the ASMIS contract with Managing Director Risk Management Technologies (RMT) Dean Apostolou.

RMT has used the existing Sentinel platform to develop a contemporary aviation safety reporting, investigation and analysis information management system that will enhance Defence Aviation's safety-management capability well into the 21st century.

The replacement system will not only deliver a significant improvement over DAHRTS, it will also provide an integrated platform where incident precursors can be correlated with risk controls, thus providing critical early warning of risk-control effectiveness.

An agile implementation methodology has been used for the design, build and test of the new system, including continual stakeholder engagement, essential to ensure the new system meets user requirements.

A COGNOS Data Warehouse is being built/populated alongside the ASR and will also go live in February 2018, providing historical aviation safety data (extracted from DAHRTS) and future ASR data mining capability.

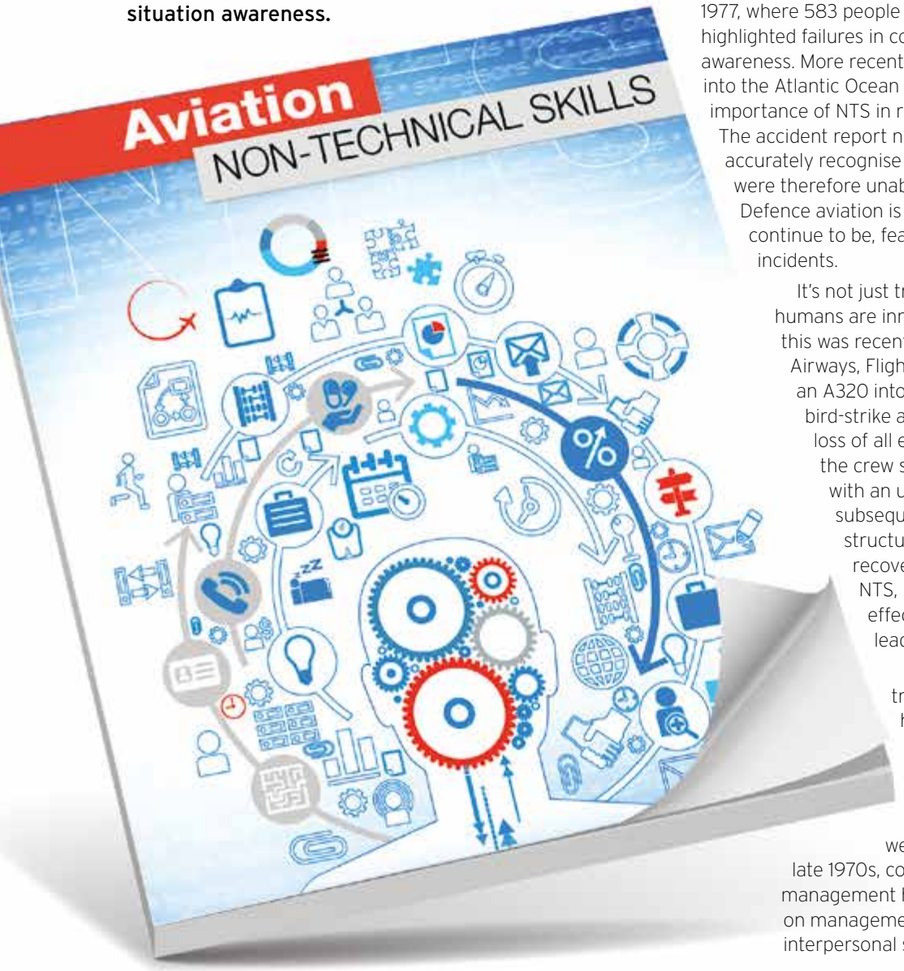
"At the moment in DAHRTS, the second-most common word used is 'other', with 7000 instances," Ms Norden explains. "In the new system, if other is selected at any point, the user will be required to specify what it is. This will result in meaningful data in Sentinel and COGNOS."

Non-Technical Skills

NOT JUST A NAME CHANGE

By SQNLDR Clare Fry

It's long been recognised in aviation that it's not just an individual's technical knowledge and skills that impact safety and performance, but their non-technical abilities as well. The term non-technical skills (NTS) describes skills such as the ability to recognise and manage human performance limitations, to make sound decisions, communicate effectively, lead and work as a team and maintain situation awareness.

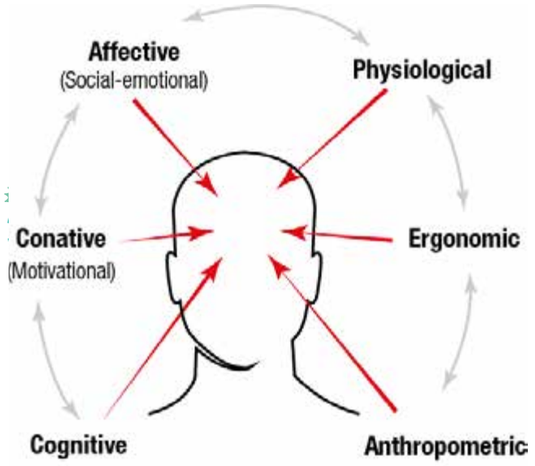


NTS are sometimes referred to as the soft skills, but that diminishes their impact on performance. When coupled with effective technical skills, NTS can be the difference between acceptable and outstanding performance. The nature of military operations, complex, dynamic and often conducted in challenging environments, warrant an increased emphasis on NTS.

Aviation has learnt the hard way. A number of accidents have highlighted the importance of NTS, notably the collision of two Boeing 747s in Tenerife in 1977, where 583 people were killed. The accident report highlighted failures in communication and situation awareness. More recently, Air France 447, which crashed into the Atlantic Ocean in June 2009, highlighted the importance of NTS in reacting to unexpected events. The accident report noted that the crew failed to accurately recognise and comprehend the stall, and were therefore unable to respond appropriately. Defence aviation is not immune, NTS have, and continue to be, featured in accidents and serious incidents.

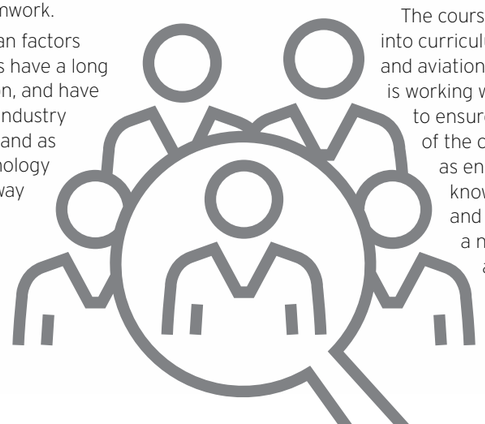
It's not just tragedy that teaches us lessons, humans are innovative problem solvers and this was recently highlighted in aviation by US Airways, Flight 1549, where the crew landed an A320 into the Hudson river following a bird-strike after take off and with subsequent loss of all engine power, or QF 32, where the crew safely landed a Airbus A380 with an uncontained engine failure (and subsequent damage to a range of aircraft structures and systems). Both of these recoveries were attributed to a range of NTS, including sound decision making, effective communication and good leadership and teamwork.

Targeted human factors training programs have a long history in aviation, and have evolved as the industry learns lessons and as aviation technology changes the way we operate. In the late 1970s, cockpit resource management had a focus on management and interpersonal skills. As the programs evolved, they became known as crew resource management (CRM) and began to include a number of occupations, including cabin crew, air traffic controllers and maintenance personnel. In the ADF, similar programs have existed for many years but formal, systemic CRM programs were first introduced in the 2000s. Specific programs for engineers and maintainers have evolved from those. NTS programs are the latest evolution, and bring the ADF into line with our military and civilian counterparts. It also emphasises the importance of integrated technical and non-technical skills to effective performance.



DASM AL7, published July 2017, introduced the term NTS and a new training framework to support Defence aviation personnel working in high-risk occupations. The framework lays out the requirements for NTS education in initial and conversion courses, and for ongoing continuation training. DDAAFS Aviation Non-Technical Skills Foundation course ensures Defence Aviation personnel have basic HF and NTS knowledge and supports the development of practical skills.

The course is to be incorporated into curriculums for initial aviation and aviation related trades. DDAAFS is working with a number of schools to ensure effective integration of the courseware. As well as ensuring standardised knowledge across all trades and occupations, this offers a number of efficiencies across the training continuum.



NTS theory needs to be contextualised for platform and type of operation, so DASM AL7 requires conversion and refresher courses to also include NTS training.

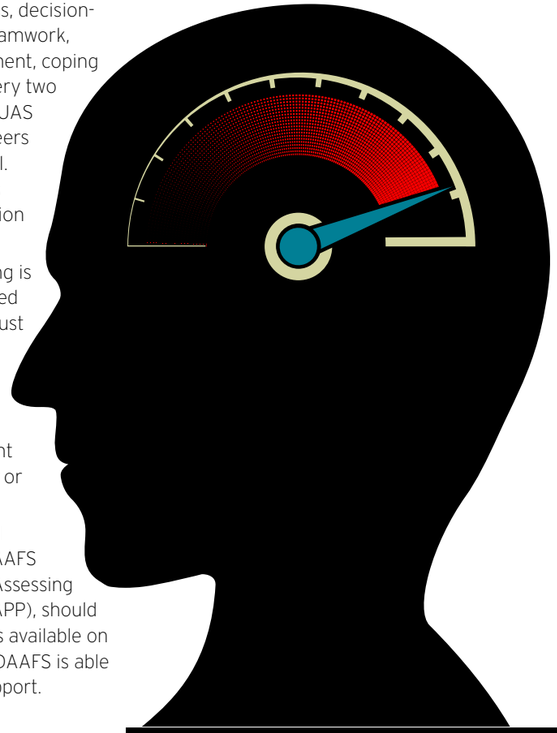
There is no standardised pack and DDAAFS recommends the use of case studies to develop this training and can provide guidance and support to structure the courseware. It is also necessary to reinforce and update HF and NTS theory on a regular basis. DASM AL7 requires continuation training that includes situation awareness, decision-making, communication, teamwork, leadership, stress management, coping with fatigue and culture every two years for all aircrew, JBAC, UAS pilots and operators, engineers and maintenance personnel. DDAAFS provides packages online to support continuation training.

Classroom-based training is only the beginning. For skilled performance, individuals must also have the opportunity for active practice and feedback. One aim of a mature system is to have NTS training and assessment incorporated into simulator or line proficiency checks.

Specific evidence-based techniques, such as the DDAAFS recommended Method for Assessing Personnel Performance (MAPP), should be used. More information is available on the DDAAFS website, and DDAAFS is able to provide guidance and support.

Delivery of all NTS training, including foundation, conversion/refresher and continuation, requires a DDAAFS Aviation NTS Trainer proficiency. The NTS Trainer Course replaces Safety Facilitator Course (SFAC) and provides personnel identified as NTS trainers with the knowledge and skills to deliver the courseware, as well as introducing students to scenario-based training and assessment techniques. Individuals who have previously completed CRM Facilitator or SFAC courses, and are current (that is, have conducted NTS/CRM or MHF training within the past three years) may continue to deliver NTS training.

The new NTS framework is designed to ensure Defence Aviation personnel are able to meet their full potential for safe and efficient operations and introduces a number of efficiencies across the training continuum. DDAAFS will continue to work with organisations to ensure smooth integration of courseware. DDAAFS focus for the future will be on enhancing NTS training and assessment programs beyond the classroom. More information is available in the DASM Section 3 Chapter 6, online at DDAAFS NTS Courses or by emailing the DDAAFS ASAT section at DDAAFS.ASAT@defence.gov.au.



Something doesn't seem quite right

How well do you understand another stakeholder organisation's aviation safety culture?

Name supplied

You are probably very comfortable with "the way things are done around here" in your own workplace – but how well do you understand the aviation safety culture that exists in other organisations that have a stake in your mission?

Does the stakeholder organisation share the same aviation safety beliefs, attitudes, values and behaviours as yours?

I work for one of the air base operations squadrons and our job is crucial to capability and aviation safety – we operate an aerodrome.

Following is an account of how a 'for information' email very quickly developed into a valuable lesson that regardless of your role in delivering aviation capability, it's important to be mindful of the aviation safety culture of your stakeholders.

After going for a midday run and grabbing some lunch, I returned to my office and launched into my standard after-lunch routine – start with all the action-addressee emails and then grind through the plethora of information-addressee emails that I have received since leaving the office.

On this particular day, I eventually arrived at an information-addressee email in which, two hours earlier, local ATC had reported a situation where an infrastructure works contractor conducting time-limited works on a taxiway had vacated the taxiway worksite at the request of ATC in order to facilitate recovery of a resident aircraft. (Time-limited works are defined as aerodrome works that may be carried out if normal aircraft operations are not disrupted and the movement area can be restored to normal safety standards in not more than 30 minutes.)

Whenever works are being carried out on a certified aerodrome open to aircraft operations, aviation-safety regulations require a works safety officer (WSO) to be present to ensure aerodrome safety while the works are being carried out.

One of the functions of a WSO is to make sure the movement area is safe for normal aircraft operations following removal of vehicles, plant equipment and personnel from the works area.

On this occasion, the works contractor was being accompanied by a sub-contracted WSO. However, the ATC email was reporting that the WSO had vacated the taxiway leaving it covered in slurry after completing two parallel saw cuts across the full width of the taxiway, that is, the taxiway had been left in an unsafe condition.

Only in response to an ATC interrogative seeking assurance that the taxiway was FOD-free did the WSO inform ATC the taxiway was, in fact, unsafe, and the aircraft was consequently recovered via an alternative taxiway.

At this point, something didn't seem quite right and my aviation-safety instincts were screaming at me to immediately investigate this situation further.

Sure, I was only an information addressee on the email and the occurrence had been reported more than two hours previously, so it was certainly conceivable that any other hazards would have been identified by now – but I'm part of an aviation safety culture that values people who are proactive and not afraid to question decisions and actions and, if it smells like a rotten pineapple . . . well it probably is. So I immediately jumped into my vehicle and went onto the airfield to get my eyes on the situation.

This is what I discovered during my initial inspection:

- Two parallel saw cuts, spaced 400 mm apart and located between the holding point and the runway, had been made across the full width of three of the four operating taxiways.
- Poor execution of one of the parallel saw cuts on one taxiway had resulted in realignment of the cut and a thin residual sliver that deviated from the primary cut for 150 mm.
- On the same taxiway, a 300 mm-long equilateral triangle had been cut between the parallel saw cuts. The triangle cuts penetrated through the bitumen layer and I was able to pull the unsecured shape out of the taxiway.

I conducted an immediate risk assessment and determined the level of risk to keep the affected taxiways available was unacceptable, and I quickly directed the lead WSO accompanying me to inform ATC that each of the three affected taxiways were immediately unavailable.

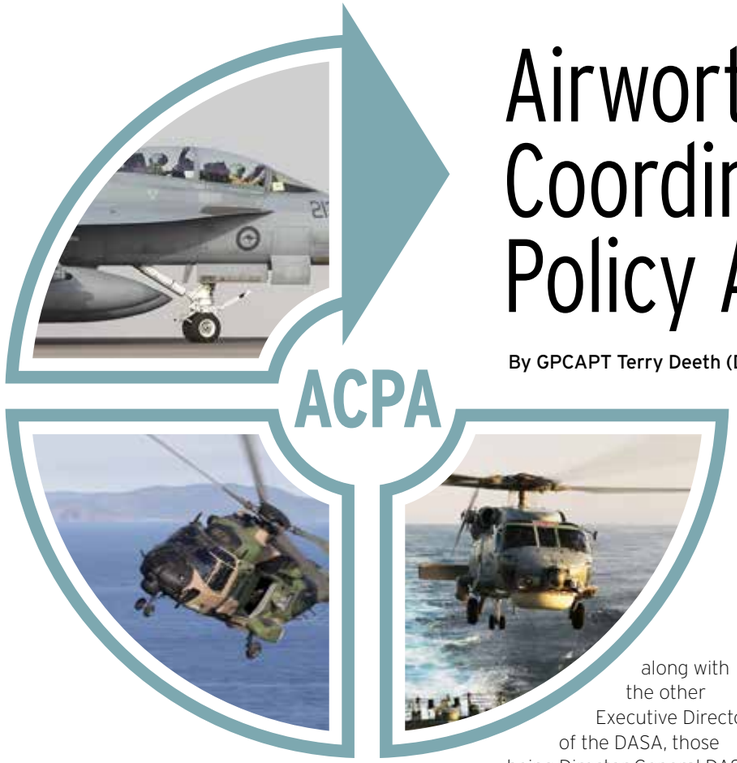
The subsequent detailed investigation revealed:

- The saw cuts had fully penetrated through the bitumen layer on each affected taxiway and the resulting reduction in pavement stability presented a hazard to taxiing aircraft. The subsequent hazard treatment required extensive monitoring and considerable repair effort.
- The unsecured triangle shape and fragile deviation cut into one of the taxiways were assessed as significant FOD hazards and the taxiway remained unavailable for two weeks.
- The time-limited works on the three affected taxiways had not been approved.
- The WSO did not carry out the correct safety inspection.
- The aircraft had recovered via the taxiway presenting the greatest safety risk – the unsecured triangle shape and the fragile deviated cut.
- Another, larger, aircraft had also recovered via the most-affected taxiway before discovery of the hazards.

Several actions and lessons were generated by this occurrence; however, I noted the importance of two key safety behaviours:

- If something doesn't seem quite right, investigate immediately.
- Understand and contribute to the aviation safety culture within key stakeholder organisations. For example, regularly participate in contractor toolbox briefings and WSO worksite safety briefings.

I conducted an immediate risk assessment and determined the level of risk to keep the affected taxiways available was unacceptable, and I quickly directed the lead WSO accompanying me to inform ATC that each of the three affected taxiways were immediately unavailable.



Airworthiness Coordination and Policy Agency

By GPCAPT Terry Deeth (DACPA)

When the subject of ACPA is discussed, many people might think simply of Airworthiness Boards (AwB). However, facilitating AwBs is just one of the key functions performed by the agency. Before detailing the others, it is important to understand what ACPA is and where it fits into the broader aviation safety system.

ACPA is a small AFHQ agency of just over 20 dedicated personnel consisting of operators, engineers and support staff, representing the three ADF services and APS. Although an AFHQ agency, ACPA has tri-service responsibilities and is one of seven directorates and agencies within the Defence Aviation Safety Authority (DASA) that are responsible for enhancing and promoting the safety of military aviation via the implementation and maintenance of an effective Defence Aviation Safety Program (DASP).

The Director of ACPA (DACPA) along with the other Executive Directors of the DASA, those being Director General DASA and Director Defence Aviation and Air Force Safety (DDAAFS) are directly responsible to the Chief of Air Force in his role as the Defence Aviation Authority (Defence AA), for a number of key deliverables. These include the formulation and interpretation of safety regulations, the establishment and certification of initial safety requirements and standards for aviation organisations and systems, as well as the oversight and enforcement of the ongoing certification of aviation organisations.

What do we do?

Airworthiness Board (AwB). An Airworthiness Board (AwB) is the Defence AA's independent review of the certification basis and safe operation for Defence aviation assets being introduced into service, undergoing major modifications, or continuing in service. An AwB Report (ABR) is produced for each AwB detailing any observations, notes and/or concerns. The report provides a recommendation on the issue of an instrument for a project platform, or the continuation of type certification and flying operations for an in-service platform. An AwB can recommend conditions and/or limitations for each aircraft type, which could include Operational Specification limitations.

In addition to the aircraft, AwBs also provide an independent review of support systems such as Air Traffic Management (ATM), Air Battle Management (ABM) and Aeronautical Information Services (AIS). In the case of the support systems where the instruments are not issued by the Defence AA, the ABR provides recommendations for the issuance, or continuation, of the appropriate instrument and may recommend conditions or limitations upon those instruments. Not all support systems have AwBs and it is the Defence AA who decides which AvSS require independent review.

In addition to the permanent staff at ACPA, there are 14 AwB members who are retired one- and two-star operators and engineers. These experienced campaigners are Reserve members who understand the aviation systems within the ADF and, by virtue of their independence of the chain of command, provide the Defence AA with critical assessments of ADF aviation systems' safety.

The ACPA teams

Projects and Aviation In-Service Review. Due to the differences between the requirements of initial certification and the continued certification of platforms and support systems, ACPA has a Projects team and an Aviation In-Service Review team. Between these two teams, ACPA manages and supports up to 40 AwBs each year. Each AwB has an assigned desk officer who is responsible for the collection and collation of AwB submissions and production of the AwB pack that is sent to the Board members. As there is a large amount of data included in an AwB pack, (sometimes in excess of 2000 pages of data) the timeliness of AwB submissions to ACPA is paramount to allow sufficient time for the Board members to review the information provided. The desk officer also provides secretariat support to the AwB and drafts the ABR on behalf of the AwB.

Safety Assurance. The Safety Assurance (SA) team is specifically responsible for the oversight of Military Air Operators and Service Providers, including the collection and analysis of operations safety performance data. The SA oversight program includes conducting compliance assurance audits, preparing the annual Defence Aviation Safety Health Assessment (DASHA), and supporting the development of the future Safety Information & Intelligence System (SIIS). On request, the team can provide discrete aviation safety analysis reports to inform command risk assessments of non-ADF aviation operations. Since the introduction of Defence Aviation Safety Regulation (DASR) in late 2016, the SA team has been focussed on education and assistance to the Military Air Operator and Service Provider in order to enable organisational transition to full DASR compliance.

Regulations. The DASA is supported by regulatory framework in the form of DASR. ACPA has a Regulations team that is responsible for the development and review of DASR that pertain to Operations Personnel, Air Operations, Rules of the Air, Air Navigation Services and Aerodromes. The Regulations team also provides specialist advice and support DACPA in providing formal advice on interpretation of DASR. During 2015 and 2016 the main focus of the team was the development of the initial DASR, which were taken from the now superseded Operational Airworthiness Regulation (OAREG) and Military Aviation Regulation (MILAVREG). In 2017 and 2018 the focus will be continued review of the operational regulations with a focus on achieving contemporary regulation outcomes aligned with international best practice, balanced with meeting the requirements of ADF aviation operations.

Airworthiness Coordination. Although the Airworthiness Coordination (AC) team has minimal interaction with the regulated community they perform a vital role in governing and enabling the performance of ACPA's core business. As such, AC staff conducts financial management, human resource management, business management, administrative, education support and quality management functions, and coordinates ACPA's efforts supporting the achievement of the DASA Strategy. A primary objective for the AC team during FY17/18 is to contribute to the establishment and oversee ACPA's transition into a DASA-wide integrated business management system.

Defence Aviation Safety Regulation (DASR)

By far the most significant change to aviation safety systems in the last two decades (since the introduction of AwBs in 1991, and the introduction of Tech Regs in 1994) has been the introduction of the DASR, which have adopted the framework of the European Aviation Safety Agency (EASA) regulations. DASR Initial and Continuing Airworthiness regulations, although not an ACPA responsibility, have been derived from the European Military Aviation Regulations (EMAR), which are about
95 per cent identical to the EASA Initial and Continuing Airworthiness Regulations. The DASR for which ACPA is responsible (Operations Personnel, Air Operations, Rules of the Air, Air Navigation Services and Aerodrome), apart from the format, have generally not changed in the transition from OAREG and MILAVREG. This is largely due to the fact Defence aviation operations do not always reflect civil aviation practices. One notable exception is the introduction of the Military Air Operator (MAO) concept into the ADF, which is based on the internationally recognised civil aviation Air Operator construct.

Why the change to DASR?

At the strategic level, the introduction of DASR is directly aligned with the Plan Jericho tenets of innovation, integration and jointness.

Additionally, moving to a regulatory environment and using a framework that has commonality both within Australia and internationally, directly supports the Air Force Strategy vectors by potentially increasing operating effectiveness with other Services, Groups and Government agencies, and providing opportunity for international interoperability.

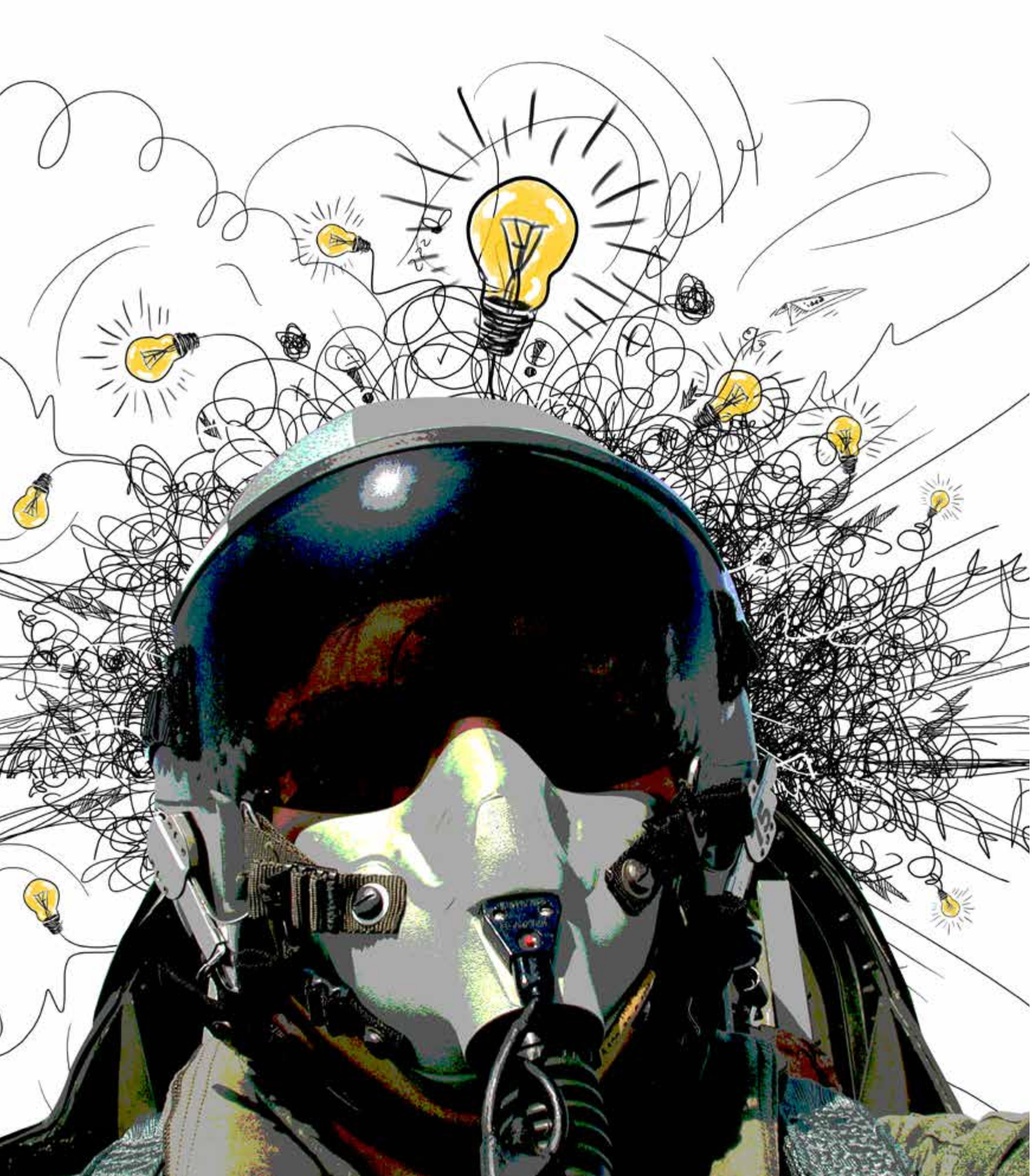
At a more tactical level DASR offers two elements that are potentially advantageous in future operations. Firstly the operation and the associated maintenance of aircraft in a global pool means that component or aircraft maintenance, by organisations other than the ADF is far easier to authorise, via a mutual recognition process, when they are operating under similar regulatory systems. This could also apply to aircraft design changes and modifications developed by a mutually recognised organisation, where the ADF may choose to adopt that design as developed.

Equally the ADF has the potential to share its maintenance and design services with countries that share a common regulatory basis. Secondly, the ability to operate aircraft and aviation support systems with other civil and military agencies, again through mutual recognition of a closely aligned regulatory framework, offers excellent potential for operations both within Australia and overseas.

Conclusion

ACPA's priorities over the next 12 months will be to continue to conduct the core business of Airworthiness Boards, the further development and release of DASR, education and assistance to Military Air Operators and Service Providers with DASR compliance, and the implementation of the DASR oversight program.

Through its various activities ACPA supports tri-service Commands, and the Defence AA, in promoting the safety of aviation-related operations, and ultimately enhancing the ADF's combat capability.



Dialogue within

By SQNLDR Shannon Kennedy

What a nice dream I was having... I was in the front seat of a multi-role fighter over a sun-swept valley on a bright sunny autumn day. Everything was serene and quiet, and a warm feeling of satisfaction pervaded my every pore...

That's when things started to get uncomfortable – very uncomfortable. As my dream started to fade, reality began to force its way in, slowly at first and then it became a torrent that hauled me into reality. It was very disturbing, the most disturbing sensation I have ever experienced in my many years of aviation.

My brain was rebooting like a computer, coming on-line in-series, and the first question my consciousness answered was a big affirm to, "Am I actually in an F/A-18F Strike Fighter?" My mind was racing ahead asking questions that my logic was still unable to process. The inner monologue would have sounded something like this:

Conscious mind: "What do you mean I'm flying in a jet? Why am I flying this aircraft and how did I get here?"

Brain: "A fatal exception error has occurred in the cerebrum, the current program will be terminated. Hit any key to continue."

Conscious mind: "Where am I in space? Am I pointing at the ground?"

Brain: "A fatal exception error has occurred in the cerebrum, the current program will be terminated. Hit any key to continue."

Unconscious mind: "Awoogah Awoogah, fight or flight go! Hypothalamus, activate the sympathetic nervous and the adrenal-cortical systems."

Conscious mind: "Who the hell is actually flying this aircraft? Is it supposed to be me? Where are my hands at the moment? I'm sitting in the front seat, right?"

Brain: "Cerebrum back online. Yep, you are in the front seat of an F/A-18. You are not holding any controls. Control of your hands is now reconnected."

Conscious mind: "TAKE CONTROL OF THE AIRCRAFT NOW! Any update on aircraft attitude? I'm feeling wired, I think I can feel every nerve connection in my body and I'm feeling flushed; think my heart might burst!"

Brain: "Aircraft appears straight and level on a clear vector, hands are on controls, no immediate control inputs required. Calm down, the immediate danger has passed".

Unconscious mind: "Stand-down the fight or flight response".

At this stage many more answers were being provided, and as I tried to make full sense of my situation, I heard a voice with an American accent say, "You have control".

Conscious mind: "Who said that?"

It was right at that moment, all my memory files became accessible and my reality was present and correct. I knew where I was, who I was, what I was doing, and what had just occurred.

In July 2010 I was posted to undergo F/A-18 Super Hornet training with VFA-122 at Lemoore California. I had just completed a tour at 6SQN flying the venerable F-111 and was embarking on a new journey to transition from being a Strike pilot to a Strike Fighter pilot. VFA-122 is the United States Navy (USN) Strike Fighter west coast Fleet Replenishment Squadron (FRS) and had more than 90 aircraft on the books and flew an 80-to-100 sortie-a-day program. To say it was an immense and impressive operation would not do it justice. Hundreds of instructors and students were posted to the unit. So many aircrew in fact, that sharing life-support gear was a common occurrence at the squadron.

The day I had my G-induced loss of consciousness (GLOC) event was Tuesday 19 October 2010, I had been at VFA-122 for four months and had completed the Super Hornet conversion and strike phases of the course. The sortie conducted on the day was a USN 1v0 mission prior to commencing the Basic Fighter Manoeuvres (BFM) phase of the course. A 1v0 sortie conduct is what RAAF aircrew know as Maximum Performance Handling (MPH). The weather was suitable, there were no limiting NOTAMs, myself and my USN Instructor Pilot (IP), Donnie, had briefed the conduct and were given an up-jet that was in a trainer configuration (the aft cockpit was configured with flight controls; this was standard procedure for the first two flights in BFM phase of the USN operational conversion course). As the IP, Donnie was the Aircraft Commander flying in the rear seat.

After I heard and processed Donnie's voice command, "You have control". I immediately replied, "Negative, you have control Donnie, I GLOC'd". Donnie took control and we commenced the RTB. He was not aware that I had taken a nap until I told him. I was groggy and definitely not running on all cylinders during the recovery, but we were close to base and on deck in 10 minutes.

I handed over, he did a textbook 7.5 G breakturn and put me to sleep where I had the lovely dream, that turned out to be brief nightmare.

So, what had happened? We had completed the 1v0 sortie conduct and with remaining fuel in the tanks I decided to practice more break turns. The Super Hornet is limited to 7.5G at the lighter fuel weights we were at, but I was unable to reach the full G load before beginning to grey-out, so I came off the G early at about 6.5. After two not-so impressive break-turns Donnie requested to take control and practice a break turn from the backseat. I handed over, he did a textbook 7.5 G breakturn and put me to sleep where I had the lovely dream, that turned out to be a brief nightmare.

I learnt some valuable aviation lessons that day. Firstly, just because you have aviation experience doesn't mean it can't happen to you. I had more than 1000 hours on the F-111, but this type of high-G flying was completely new to me. I was a novice at it and should have given it more respect. I was complacent about the physiological effects of flying high-performance fast jets.

Secondly, always, always, always practice good and effective CRM in the cockpit. If I had spoken up and told Donnie that my G tolerance was not good before he took the aircraft, we wouldn't have conducted the last break turn and I would not have GLOC'd. As it turns out, I had GLOC'd the 'safe way', with Donnie always in control of the aircraft while I was off with the fairies, but I didn't know that for a period of time airborne and that was sheer terror.

Directly following my GLOC event I presented to the VFA-122 Flight Surgeon. We went through my 72-hour history, AGSM technique and flying clothing. My AGSM technique was fine, but I attended the vomitron for the second time to refine my technique and get back on the high-G horse. As per my first training in the centrifuge, I had no issues, but to say that I had to be coaxed to get in the thing the following day was an understatement! The USN personnel were excellent, very helpful and obliging, and they got me done and ready to fly again in a short period of time.

The GLOC flight was an early morning takeoff, the same as my flight the day before. I was up at 0430 to make the takeoff at 0730; these flights directly followed some late nights on the weekend. Both mornings I had eaten a banana and had a glass of water, a little better than the '80s fighter-pilot breakfast of a Mars Bar and a can of Coke, but still not great. My G-suit was not nearly as tight as it should have been, which had not been a factor during the conversion and strike phases. With gear sharing at the squadron, the G-suit had loosened and I hadn't requested it be refitted and tightened by the USN parachute riggers (PRs; USN ALS types). All up, the GLOC was a combination of fatigue (both from the sortie conduct on the day and insufficient rest), poor G-suit fitment, poor breakfast choices and a poor decision not to tell Donnie my G tolerance was low.

So here are my GLOC lessons that I have applied to all high-G sorties since the event:

- Understand your personal G tolerance will vary from day to day given external and internal factors; note your tolerance during the G-warm and fly the remainder of the sortie according to that tolerance.
- Practice good CRM in the cockpit; always tell your crew-buddy if you have an issue, or you think you have an issue with your G tolerance.
- Ensure your life-support gear is correctly fitted and is functioning correctly both on the ground and in the air.
- Eat a proper meal and drink lots water to increase blood volume.
- Periodically re-hack the correct AGSM technique on the ground.
- Exercise.
- Attempt to track your own fatigue level the best you can. Tell your crew-buddy, flight lead or flight authoriser if you think it might affect your performance.

It's not rocket science; the above lessons are taught to RAAF aircrew on all high-performance aircraft courses and during AVMED. Don't learn them airborne the hard way as there is not always someone in the back providing a safety net.

I had no further issues on the USN course with G tolerance, nor have I had any since flying at 1SQN on Super Hornets and now at 6SQN on Growlers. I do take a small amount of comfort from the fact that I didn't GLOC by my own hand, but that potential still exists if I become complacent and don't continue to abide by the lessons I learnt that day.

Many good and talented pilots have died by CFIT stemming from GLOC and ALOC. This is not an area in high-performance aviation to pay lip service to – heed the rules and your training, learn from my experience and poor decisions, and if there is any doubt up there, there is no doubt, just terminate the flow and return to fly another day.

AT FACE VALUE

Name supplied

It was a day like any other – I don't recall there being anything strange or different about it – no weather considerations, no pressure, no time constraints.

Night shift had changed a hydraulic line just behind the right-hand main landing gear and we were required to carry out the subsequent engine runs, leak checks and functionals as one of the first jobs of the day.

Although I was a relatively new trade supervisor at the time (12 months give or take), I understood the task at hand and gathered my troops and engine runner, worded up a sergeant to do the independent inspections and began setting up.

We planned that I would be on the headset initially, in direct communications with the engine runner during start and up to idle. Once at idle the troop and independent would carry out their inspections, then I'd swap out with the troop so I could do mine. This was standard practice; it was safe and the approved method.

During launch and recovery we were required to walk up beside a running engine and conduct a quick visual check for leaks and anything that shouldn't be happening. When doing so the safest route was to walk in and out along the flap line, that is, the trailing edge of the wing – there are no other possible safe routes.

This case was no exception nor should it have been more dangerous provided you complied with the general safety precautions and warnings.

To this day I can still see clearly, the troop and his intended path towards me after he had finished his checks. This path wasn't back out along the flap line as it should have been. He walked directly towards me from behind the RH MLG. His intended route was parallel along the running engine and its intake, towards the nose of the aircraft to where I was standing.

Anyone who has ever worked on a busy flightline can relate; you keep your wits about you and keep a lookout for things that just aren't right. So I can only assume that something inside me clicked when I saw his face turn towards me and he started walking.

It's hard to say exactly how close this 'close call' was. Perhaps another half a step from where he was and his ear muffs would have disappeared down the intake. If he was walking a little faster, or I hadn't stopped him, the potential for something far worse to occur was high.

Needless to say in those seconds I was waving my arms and yelling at the top of my lungs, (not that he could have heard me), and grabbing the headset mouthpiece to get the runner to shut down the engine, all the while in the back of my head thinking I should get ready to turn around and close my eyes...

I asked one of the extra troops to escort the member safely off the flightline and wait for myself and the sergeant in the section.

When maintenance was finalised, I asked the troop to come into the office to chat about the situation.

I asked a few pertinent questions attempting to get to the bottom of his actions; after all he was experienced enough to know better. His answers were not what I had expected.

In essence, a build-up of personal circumstances were consuming his thoughts and actions. None of which he mentioned or let on about before stepping onto the flightline that morning.

Human factors are real and effect even the most experienced and reliable of our people.

I have carried this close call with me to this day. The people around you are human; they have lives and are affected every minute of the day or night by what they carry around with them. It may not always be obvious, or easy to evaluate but it's there, and it changes constantly.

Caught napping

By Brian Woodard-Knight

Many years ago, I was a radio technician (Air), working out of ARDU at what was then RAAF Base Laverton. At that time we operated a range of aircraft including CT4, Macchi, Iroquois, DC3 and the ubiquitous Canberra Bomber.

It was an exciting time – working on such a range of aircraft was a huge opportunity for a young bloke. A side benefit was the ARDU role of calibrating all military airfield landing systems, TACAN, ILS et cetera, which involved travelling around Australia in a day-glo-painted DC3. For many, the pace of work and frequency of travel was somewhat of a challenge.

One particular young man (not me) succumbed to the need for rest and took up a space in the rear radar compartment of a Canberra that was on the line. The compartment is used to store various blanks and remove-before-flight items as well as housing the radar unit. It's quite a spacious area. This individual fell into a deep sleep and was very comfortable in his tarmac jacket and ear muffs.

The aircraft was scheduled for a flight later in the day; however, this was of no concern to him at the time.

Needless to say the aircraft was BF'd, the radar compartment was closed, the aircraft started and commenced taxying to the runway. I don't know if you've ever witnessed a Canberra start-up, but the firing of the 20 mm cartridges to start the blades turning would wake the dead in a hurry. It doesn't matter how many times you've done it, you will always jump.

The airman certainly woke up when the cartridges fired, but the hatch was closed and he had no way of exiting the aircraft. Then the aircraft started to move and he became more desperate.

The Canberra's control cables run down the centre of the aircraft and through the top of the radar compartment. So the only logical thing the airman could do was to start swinging off the cables to get the pilot's attention.

In the flight line we witnessed the rudder slamming side to side just before a call from the tower to get a maintenance crew to the aircraft, "something is terribly wrong here".

Ultimately the airman was retrieved from his self-imposed prison and the aircraft completed its assigned task.

While humorous in hindsight, this event highlights the significant safety issue of fatigue. There could easily have been a death if the pilot had remained unaware of the airman in an un-pressurised bay.

Following this incident there were a number of initiatives implemented at all levels of the squadron including:

- A significant focus on fatigue management for all staff. This training included recognising fatigue warning signs in yourself and others, as well as establishing and managing improved requirements around work/rest ratios.
- Refresher training on the responsibilities of tradsepersons with regard to aircraft safety and security (this consisted of a CT session led by the imprisoned airman).
- Refresher training for all supervisory staff on the responsibilities of personnel management. This included a requirement to know when and where people were and to be aware and manage fatigue levels.
- Aircrew were required to review the incident and recognise the importance of a comprehensive walkaround.

It is important to note that this incident occurred in the early 1970s, well before fatigue management was a commonly understood issue. The ARDU management team from that era should be recognised for their response. The individual was reprimanded, but the bigger issue was identified and addressed with the best information that was available at the time.

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, an introduction to human factors and the organisational accident model, incident 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, advanced human factors and risk management, and base emergency response. Includes a practical CRASHEX 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 organisational accident model; incident-level investigation and hazard reporting and tracking. Interested personnel should contact their ASO.

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

AVIATION SAFETY Spotlight

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www.defence.gov.au/DASP/Media/DASAPublications.asp

NEW TRAINING

Aviation non-technical skills courses NTS

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.

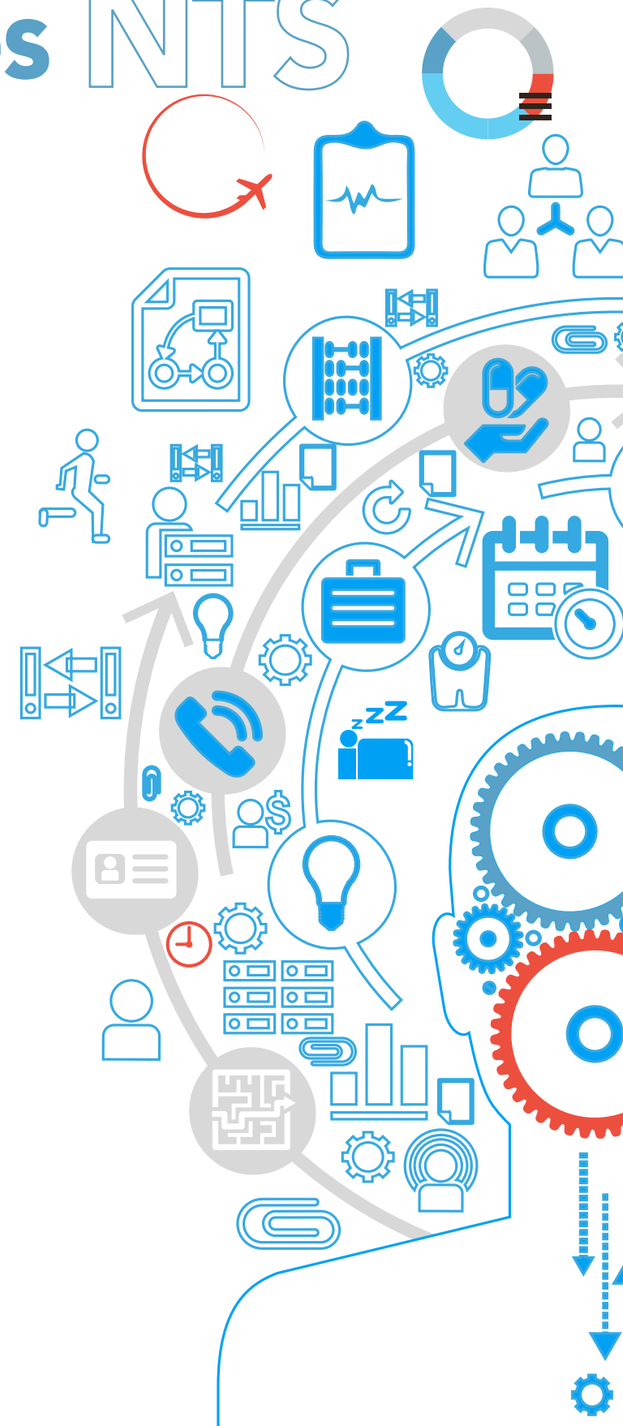
Aviation NTS Trainer Course replaces SFAC and prepares participants to deliver NTS Foundation and Continuation and awareness training.

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



Are you aware?

The Defence Aviation Hazard Reporting and Tracking System (DAHRTS) **will be replaced in February 2018**.

The Aviation Safety Management Information System (ASMIS) Project is delivering a better aviation safety reporting system that will enhance Defence's ability to learn and take action to improve safety.

Information packs and training opportunities are on the way.

Get ready for 2018

For more information visit the DDAAFS intranet