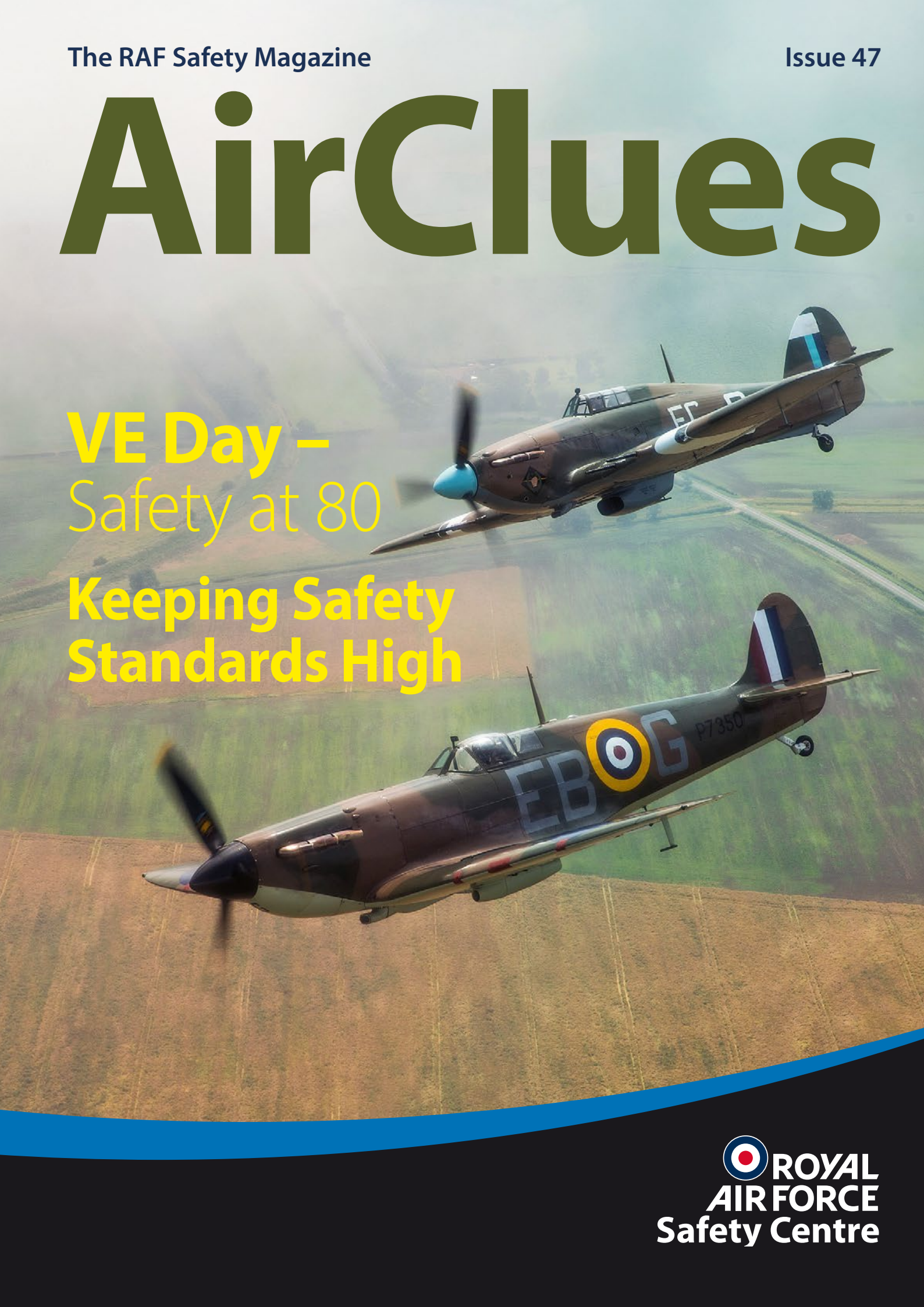
The RAF Safety Magazine

Issue 47

AirClues



VE Day – Safety at 80

Keeping Safety Standards High

ROYAL AIR FORCE Safety Centre

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June 2025
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Foreword

By Air Commodore Sam Sansome, Inspector of Safety (RAF)


Air Commodore Sam Sansome

Welcome to Air Clues 47. Along with the usual mix of safety articles from across the different safety domains this edition also spotlights VE80. Hopefully you will all have enjoyed the celebrations and taken the time to learn about the momentous events of May 1945 – maybe even had the opportunity to meet some of the veterans or speak to members of your own families on their recollections of the day.

It is impossible for us to imagine what it must have felt like for the people of Europe to realise that after years of fighting and of danger that there would be peace. Lots of the things that had become second nature were no longer going to be required and the hard-won lessons could be packed away until the next time. No blackouts, no air raid sirens, no shelters. Eventually even rationing would stop – albeit 9 years later. Some things, I'm sure, would have dropped away immediately, but others would have taken longer as they had become habits – some would require a generation or more; even 'make do and mend' eventually became the exception rather than the norm.

This is as true for safety lessons as it is for anything else. The goal should always be that safety becomes second nature and doesn't require to be 're-learned'. In some respects, the military have the advantage over the civilian population – we are configured to plan for the worst and train to meet it; it wouldn't be wise for us to forget what our predecessors had paid a high price to learn. That doesn't mean though that we are immune to corporate memory loss – sadly we are already relearning what it means to have a war in Europe and are having to unbox what that means both as a military, but also as a country. From a safety perspective it is as ever our underlying safety culture that will determine how fast and at what cost we relearn those lessons.

> "We need your 'I learned about flying/ engineering / air traffic from that' articles. Please write to Wg Cdr Spry with your open and honest stories."

Safety Awards

Following the discovery of a small fragment of metallic material during a 17 Sqn morning FOD walk, Chief Petty Officer Bell proactively worked to identify the originating location. He reverse-engineered the dimensions of the complete piece of metal, successfully identifying that it was a section of a spherical bearing of approximately 8mm in diameter. After identifying the metal fragment, he was able to pinpoint that it had originated from a Convergent Nozzle Segment Connecting Link Arms, located in the exhaust of the F-35B aircraft.

Chief Petty Officer Bell – 17 TES – Edwards AFB – Good Show

On 14 November 2024, at RAF Akrotiri, Corporal Gutteridge prevented a Puma helicopter from overflying essential maintenance, and his conscientious effort to remedy the issue ensured flying output was safely maintained. Maintenance had been carried out on the aircraft which should have prompted an additional check to be forecast within 11 flying hours. This requirement was missed, and the aircraft flew 10:40 hours over the next two days. During handover, Corporal Gutteridge noted the hours flown and highlighted to his trade supervisor that he believed a check should be due soon. Realising that the forecast was incorrect, and the check was in fact due immediately, the aircraft was signed in for maintenance and the check swiftly carried out, ensuring the planned night sortie went ahead with only a small delay.

Corporal Gutteridge – RAF Akrotiri – Well Done

On 19 November 2024, at RAF Leeming, Flying Officer Hazzard had been stood down from controlling duties following an exceptionally busy period during an international Exercise at the station. Whilst travelling home on the A6055 just to the south of the aerodrome, he noticed multiple drones operating within the Flight Restricted Zone. Flying Officer Hazzard immediately perceived a potential threat to the eight F-18s who were recovering straight through the vicinity of the drones. He informed the ATC Supervisor immediately by using 'what3words' and was able to provide the location of two launch sights which were then sent to the RAFP and Civilian Police. He maintained a presence in the area to assist in the location and possible arrest of the individuals.

Flying Officer Hazzard – RAF Leeming – Well Done

Janet MacMillan (Left) and Helen Tindale (Right) – Aramark – RAF Leeming – Well Done

Aramark employees Helen Tindale and Janet MacMillan approached RAF Leeming's DSATCO whilst they were in ATC, to report that they had witnessed multiple drivers not adequately checking their vehicles for Foreign Object Debris (FOD) at the entrance to an airfield manoeuvring area, contrary to airfield operating procedures. As that part of the airfield was not visible from the ATC Tower ATC staff were unable to monitor this; they rely on the integrity of individuals using the area to follow procedure and to maintain a safe operating environment for the fast jets that use that part of the airfield.

Use-Inspection' of the airfield arresting equipment, Mr Evans noticed that the team had been at the Northern Cable for some time and enquired if there was an issue. The Arrestor Team confirmed they had an issue with the Northern Cable and were working to resolve it. The Arrestor Team then reported that they were unable to solve the issue at that time and declared the cable unserviceable in the down position. Mr Evans immediately requested the state of the cable, enquiring if the cable was under tension. The Arrestor Team could not assure that the cable was tensioned and were subsequently instructed to de-rig the cable by Mr Evans. Cables have been known to 'bounce' when trampled and it is unsafe for aircraft to trample a cable with no tension, especially at speed during take-off or landing, potentially leading to the cable damaging the aircraft at a critical stage of flight. Mr Evans' questioning of the SMEs and subsequent actions ensured that an un-tensioned cable was removed from an active runway.

Mr Steven Evans – RAF Leeming – Well Done

On 14 May 24, Mr Steven Evans was the Air and Space Operations Specialist responsible for the open-up and configuration of RAF Leeming airfield. During the 'Before-

On 19 September 2024, at RAF Spadeadam, preparations were undergoing for a Hydrogen detonation – an explosive test that normally requires approval from Air Traffic Control at the DNV Testing site. Five minutes prior to the test, Mrs Tracey Burns telephoned the DNV Control Manager at 14:15 to report that she had heard helicopters in the vicinity. On that day the RAF range was operating night flying and had notified DNV that they were not open until 14:30; consequently, DNV had sole use of the airspace (D510C) to test at any time before 14:30. As a result of Mrs Burns' call, the Control Manager contacted Air Traffic Control to ascertain the status of the airspace. On checking their Radar, it was confirmed that helicopters were in the airspace, and this was the first warning that they had helicopters arriving early on the site. Once confirmed that the helicopters had moved outside of D510C and were safe, permission was granted for the test to proceed.

Mrs Tracey Burns – RAF Spadeadam – Well Done

Air Specialist (Class 1) Turner

Air Specialist Class 1 (Technician) Heath

18(B) Sqn Maintenance Team – RAF Odiham – Team Commendation

Corporal Saint

On 8 July 2024, at RAF Odiham, and during an inspection of a safety critical flying control component, a control valve was found installed in the wrong orientation in contradiction of the removal/installation procedures. On further inspection, a similar and equally critical component, was also found incorrectly installed.

The 18(B) Sqn maintenance team had become aware of the issue during installation of the part when they realised that the technical instructions differed from the fitted orientation observed during removal. They then took it upon themselves to examine adjacent components, at which point the further, similar fault was discovered. This issue is not easily identifiable and could have easily been overlooked as both parts were installed in the incorrect orientation. As a direct result of the DASOR submitted by the team, a second aircraft with the same issue was identified at a depth facility.

Sergeant Baker – RAF Odiham – Well Done

Sgt Baker was the No.1 Crewman on a Crewman Trainer workup sortie, launching from Odiham. During his pre-flight top deck inspection, he discovered a small amount of oil leaking from an area around the Vertical Hinge Pin on one of the aft rotor blades. The Vertical Hinge Pin is a critical component that attaches the blade to the aircraft and allows for aerodynamic forces on the blade in flight. It is a fairly normal occurrence for oil to weep in this location, and one that most Crewman would accept as routine, with a quick fix. However, Sergeant Baker believed he could see that part of the seal inside the Vertical Hinge Pin had become dislodged. On request, several other individuals checked this leak independently and failed to notice the seal protruding above its housing. Sergeant Baker voiced his concerns to the crew, and senior engineering advice was sought. On closer inspection by engineers, it was discovered that this was indeed the case, and the blade would need to be removed and replaced to stop the leak and re-seat the seal.

Sergeant Kenning – RAF Odiham – Commendation

On 21 August 2024, Sergeant Kenning exhibited exemplary initiative and diligence in response to a critical issue involving the Chinook Force's safety-critical engineering software tool, GOLDesp. There were missing engineering task schedules, associated data and no lifing information available for two aircraft. Upon being notified of the compromised data integrity affecting the aircraft of 18(B) Squadron, Sergeant Kenning recognised the severity of the situation and swiftly assessed the potential impact to take immediate, proactive measures to mitigate any Air Safety risks. His decisive actions included coordinating with counterparts from 7 Squadron, 27 Squadron, 28 (AC) Squadron, Chinook Maintenance Flight, and Eng Ops. Extending his efforts, he engaged with the Continuing Airworthiness Management Organisation to ensure that the issue was addressed comprehensively and communicated effectively for a coordinated response. Understanding the broader implications, his foresight extended further as he alerted engineers within the Puma Force, where the GOLDesp system is similarly employed, thereby ensuring that this critical anomaly was actioned across multiple aircraft types. Through his prompt and coordinated response, a total of 15 aircraft were effectively managed.

Flight Sergeant Dean – 3FTS – Distinction

On 8 November 2024, Flight Sergeant Dean had just completed an annual Military Airworthiness Review (MAR) on a Prefect aircraft at RAF Cranwell. This MAR had been unremarkable and there were no findings. Flight Sergeant Dean had signed his section of the MAR report and put this and the various supporting documents in a poly-pocket. However, he felt that something was not right. He sat down and went through some of the documents again. He then went through the documents for the previous year's MAR, and for the year before that. Flight Sergeant Dean discovered that, during the previous year, the aircraft had not been reweighed following a repair (which required a reweigh afterwards). Correct Weight and Balance data is essential for the safe operation of the aircraft, otherwise aircraft limitations may be exceeded during flight. The absence of a reweigh was not at all obvious from the documentation Flight Sergeant Dean had available to him. He engaged with several of the contracted Maintenance Organisation's departments to assist him to investigate further. This ultimately confirmed that there was no evidence that the reweigh had been carried out. This led to the Maintenance Organisation initiating an investigation and raising a DASOR.

On 5 October 2024, at RAF Coningsby, Warrant Officer Fenton was the Air Traffic Controller in Charge. He executed exceptional leadership and quick thinking during a critical situation involving the sighting of an Unmanned Aerial System (UAS) within the RAF Coningsby ATZ immediately prior to the take-off of a BBMF Lancaster aircraft. Warrant Officer Fenton displayed unwavering composure and sound judgment when he was alerted to the sighting of the UAS by a member of the public. Recognising the flight safety threat and the risk to the aircraft, he promptly halted its planned departure, even with known pressure that the Lancaster had a timed take off. His immediate decision to delay the aircraft's departure prevented a possible mid-air collision or near miss between the UAS and the Lancaster.

Warrant Officer Fenton – RAF Coningsby – Well Done

Other Departmental Awards

In the initial stages of his deployment, Flt Lt Talbot had to land twice on runway 23. The first instance occurred when he was airborne and informed that the main runway was unavailable due to damage. Flt Lt Talbot climbed the aircraft to a higher altitude to wait while a further inspection was conducted. As it became evident that the main runway would not be ready in time and with fuel levels reaching a critical point, he executed a flawless approach and landing on the challenging runway. In another scenario just a few sorties later, as Flt Lt Talbot selected the landing gear down, he encountered an aircraft unserviceability that necessitated an approach end cable engagement. Simultaneously, an RAF A400M was on approach, and if Flt Lt Talbot had used the cable on the main runway, the A400M would have had to divert. Consequently, Flt Lt Talbot was directed to use the approach end cable on runway 23. Despite being at emergency fuel levels, Flt Lt Talbot once again executed a faultless approach and successful touchdown, engaging the cable as required. This demanding approach was further complicated by the need to achieve a precise touchdown with the nosewheel lowered before the cable, all while contending with a significant crosswind and operating on minimal fuel.

Flight Lieutenant Talbot – BFSAI Commendation

Upon arrival at MPA, Typhoon pilots undergo an arrival check and must demonstrate consistent safe approaches to overshoot before being authorised to operate from the airfield.

Owing to a shortage of oxygen-qualified engineering personnel in the 905 EAW AOR, Sgt Howgate volunteered to perform a scheduled maintenance activity despite being employed in the JFLU HQ QCIT. While performing the task he identified the contents of the oxygen cylinders had passed their expiry dates; he then expended considerable effort in checking the entirety of the MPA aviation oxygen holdings, identifying that all oxygen on-island was out of date. He quickly elevated this issue, providing clear, accurate and concise briefs to a range of stakeholders, allowing the risk to be communicated and dealt with by the Duty Holder chain within hours of initial discovery.

Sergeant Howgate – RAFCAM – BFSAI Air Safety Award

Preventing Aerodrome Vehicle Incursions

By 2Gp Battlespace Management Safety Team

Photo by Ms Ann Marie Stewart

Aerodrome operating surface incursions pose a significant risk to flight safety and continue to be prevalent across RAF aerodromes. As the levels of vehicles on aerodromes increase, the need for effective safety measures is as important as ever. This article provides information and guidance which will be beneficial for aerodrome operators and drivers in helping reduce the errors that may lead to incursions.

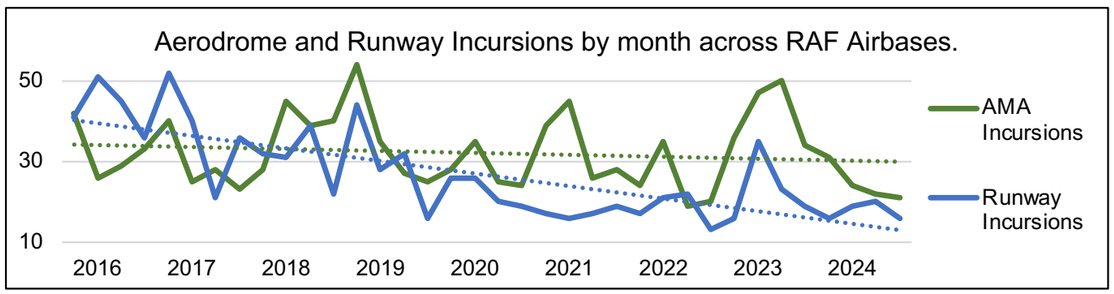
Understanding Aerodrome Vehicle Incursions

An aerodrome vehicle incursion involves unauthorized or improper vehicle movement on areas where aircraft operate. These incursions are classified into two categories:

1. Runway incursions: Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.

2. Aerodrome Movement Area incursions: Encompasses any other unauthorised presence of a vehicle on an aerodrome's manoeuvring area.

Understanding the nature and causes of these incidents is crucial to implementing effective prevention strategies and considerable work has been undertaken by BM HQ, 2 Gp and STRATCOM units in reducing the number of vehicle incursions across RAF Airbases. These efforts have been largely successful as shown below.



Preventing Aerodrome Vehicle Incursions

Whilst there are many organisational factors which contribute to vehicle incursions currently being addressed by unit safety teams, in all incursion events, the driver alone physically manoeuvred the vehicle onto the unauthorised surface. Driver education is one of the key areas we can focus on for improving to prevent aerodrome incursions.

If you are operating a vehicle on an active airfield, you already know that is an important task that demands diligence and respect for safety protocols. By refreshing your knowledge and following the guidelines you can help ensure a safe environment for you and the aircraft operating at the aerodrome.

RAF Benson
Aerodrome Access Permit
Full Aerodrome Access

Name Rank Service
Number

....

Colour Perception Standard .....

AIRCRAFT EMERGENCY
CONTACT AIR TRAFFIC CONTROL
MILITARY EXT 333
CIVILIAN 01491 837766 EXT 7333

This Aerodrome Access Permit is valid for **FULL AERODROME ACCESS** and expires on the date listed below.

This is to certify that the holder of this permit has received an annual

1. Expires ..... /..... /..... Signature .....

Example of Airfield Driving Permit

Vehicle Driver Airside Safety Check List

Pre-Operation Requirements

- Ensure you have completed all necessary training related to airfield driving required by your unit and are in possession of a valid Airfield Driving Permit.
- Understand the airfield layout and be aware of the extent of the airside area which requires prior ATC clearance to proceed. A clear understanding of the airfield design will help you navigate effectively.
- Consider expected routes in advance of requesting an ATC clearance to your destination, taking note of runways which may be in proximity to your route.
- If required, carry an aerodrome map showing all taxiway and runway designations available in any vehicle being driven.

Communicating with ATC

- Use standard aviation communication language when interacting with ATC. This includes clear and concise communication about your location, intentions, and any requests for movement.
- Your transmission should be well thought out. Before using the microphone, know what you want to say and check to make sure you are on the appropriate channel and will not be interrupting another transmission or its response. Acknowledge all clearances and read back required elements of the clearance.
- Focus on what ATC is instructing you to do. Do not perform any non-essential tasks while communicating with ATC.
- Listen to the clearance given, don't assume it is exactly as you ask for. Clarify any misunderstanding or confusion concerning ATC instructions or clearances.

Entering, manoeuvring on and exiting the Airfield

- Use only authorized access points to enter and exit the airfield. Follow all signage and instructions from ATC.
- Monitor ATC instructions to other vehicles and aircraft and mentally 'position' them relative to the actual and projected position of your vehicle.
- It is essential that a vehicle driver always remains positively aware of their location. Keep an eye out for aircraft, other vehicles, and personnel. If position uncertainty occurs, STOP at once and seek assistance from ATC.

Best Practices for Airfield Driving

- Stay focused on operating the vehicle. Avoid using mobile devices or engaging in unnecessary conversations while driving.
- Adhere to posted speed limits. Generally, the maximum speed limit on the airfield is significantly lower than on public roads to ensure safety.
- Understand that aircraft have the right of way. If you encounter an aircraft taxiing, stop your vehicle and wait for it to pass.
- Weather conditions on the airfield can change rapidly. Be prepared for reduced visibility, wet or icy surfaces, and other challenges that may affect driving. Be clear on how the implementation of Low Visibility Procedures (LVP) affects the rules and procedures for airside vehicle driving.
- Always prioritise safety and be aware of your responsibilities as an airfield driver.

The British Horse Society 'Dead Slow' Campaign

Top Tips for Passing Horse Riders Safely

By The British Horse Society

Spry's Comment:

The RAF has a close relationship with the British Horse Society (BHS) in our ongoing effort to minimise the risk of low flying to horse riders. However, many of us are drivers on British roads, and the Society's primary concern is, understandably, the risk to horses and riders from road vehicles. This article asks us to consider our behaviour when driving in the proximity of horses and riders as part of their 'Dead Slow' Campaign.

In 2024, 58 horses were killed on our roads and 97 were injured, a shocking reminder of the dangers that equestrians face on the roads. In total, 3,118 incidents were recorded with The British Horse Society across this twelve-month period. An alarming 81% of these incidents occurred because the driver either passed too quickly or too closely. As these figures reveal, it is very important that we all approach horses safely and pass them with care. Even though horses are large and powerful, they are also gentle giants who can be very nervous.

We can't forget that they are flight animals, meaning if horses perceive a threat or something out of their comfort zone, they will react extremely to escape. Even the most experienced and well-trained horses can be startled by unexpected movements or loud noises, like a car passing at great speed or a large vehicle passing too closely. Because of their size and strength, this can have a devastating impact on members of the public, the rider or carriage driver, vehicles, other animals and the horse itself.

Unfortunately, equestrians often have no choice but to use the roads to reach an off-road route or to connect one bridleway to another. That is why it's so important that we all play our part to ensure everyone remains safe while out and about.

To help keep horses, equestrians, and drivers on our roads safe, the BHS have put together some advice and top tips for motorists to follow when passing horses:

- On seeing a horse on the road (whether ridden, driven or led), please slow down to a maximum of 10mph and allow at least two metres of space, as set out in the Highway Code.
- Heed a rider or carriage driver's signal if they ask you to stop or slow down.
- If a rider or carriage driver is signalling to turn, wait patiently for them to complete their manoeuvre before continuing your journey. If the horse(s) show signs of nervousness as you get closer, please stop and/or turn the engine off and allow them to pass.
- Please don't start your engine or move off again until the horse(s) is clear of the rear end of the vehicle.
- If a road is narrow and there is not enough room to pass safely, please approach slowly, or stop to give them time to find a gateway or other place off the road where there will be enough space between the horse and vehicle to allow you to pass safely.
- Please be patient. Most equestrians will do their best to reassure their horses and will allow you to pass as soon as it's safe to do so.
- The safest place for the rider's hands is on the reins, so they may only be able to nod their thanks to you – but please do be assured that they will be very grateful for your consideration.
- Look out for equestrian road signs – these signs indicate you are likely to encounter a horse on your journey.

The equine charity also offers clear advice for equestrians to follow when out on the roads with their horse, including wearing hi-vis and reflective equipment as well as using the appropriate signals to make other road users aware of their intentions to manoeuvre.

For further information about how to pass equestrians safely, visit: bhs.org.uk/dead-slow
Images Supplied by The British Horse Society – Reproduced by Kind Permission

The Importance of Fire Safety Doors

By the Command Fire Safety Team (Air)

When it comes to fire safety, we often think of alarms, sprinklers, and extinguishers. But behind the scenes, quietly doing their job without fanfare, are fire doors — the unsung heroes of fire protection. Often overlooked, these doors are not just another part of a building's infrastructure; they are critical life-saving devices designed to prevent disaster.

Modern fire doors are specifically designed to resist flames and smoke for a certain duration, often up to 30 or 60 minutes. Even standard internal doors can offer some level of protection if kept shut. This delay can give firefighters more time to reach the scene, limit the spread of damage, and improve the chances of preserving property and lives. In the event of a fire, time is everything. Studies have shown that simply closing a door can reduce toxic smoke exposure and prevent a room from reaching flashover—a deadly phenomenon where everything in a space ignites simultaneously. It is particularly important to close doors when sleeping, as fires that start at night may go unnoticed until they are well advanced. Simple habits, such as closing bedroom and hallway doors before going to bed, can dramatically improve safety. Whether at home or work, ensuring doors are closed could be the difference between life and death in a fire emergency.

Unfortunately, fire doors are often misunderstood or misused. They are wedged open for convenience, obstructed by furniture, or altered in ways that compromise their effectiveness. Even minor damage or missing components can render a fire door useless.

Education and training are vital. Building occupants must understand that a fire door is not just another door. Its position, condition, and function could one day save their life.

Next time you walk past a heavy-looking fire door with a warning sign, pause and appreciate its presence. It may not have a blinking light or a loud siren, but that door is quietly standing guard, ready to protect you when every second counts. In the realm of fire safety, silence is golden — and fire doors are its steadfast guardians.

I Learnt About Pressonitis (and CRM) From That...

By Flt Lt Phil Mobbs RAF (Retd)

It has been a few years since I retired from the regular RAF and these days I do my flying in a Tutor taking air cadets up for air experience. It is over 40 years since I began my flying career and in that time I have flown all over the globe on operations and exercises with inevitably a considerable number of scary moments but my mind is always drawn back to an event that occurred right at the beginning of my operational career when I was a co-pilot on the C-130K Hercules.

I had only been out of the OCU for a few months and was still a D Category, what today is called 'Limited Combat Ready'. I was tasked for a routine trip to Belize to rotate the resident RAF Regiment Rapier crews who were stationed there for the defence of the country against its larger neighbour, Guatemala, who maintained a longstanding territorial claim over it. The crew comprised myself and the (Flight Lieutenant) Captain as the only pilots but with many assorted Navigators, Flight Engineers and Air Loadmasters, including our Squadron Boss who was one of the navigators. Now the Boss was something of a dominant personality, rather opinionated and he did not suffer gladly those he considered fools which broadly speaking included anyone who crossed or disagreed with him. I'm not sure if the term 'cross-cockpit authority gradient' had been coined yet in those pre-CRM days but it might have been written for us.

Departure was scheduled for a Sunday and we were due to fly up to a Scottish airfield to collect the outbound team but when we crewed in the east coast of Scotland was fogged out. Departure slipped to the right until it was obvious that the fog wasn't going to clear today and nor on the forecast was it going to do so tomorrow so the Boss along with ASCOT Operations (our tasking authority) hatched a plan, we would delay 24 hours and pickup the team from Glasgow which was forecast to be blessedly fog-free. Meanwhile the Rapier Team would road-move to Glasgow that day so they would be ready when we arrived early on the Monday morning. It's worth mentioning at this point that the Boss did not like being delayed on route and prided himself on always returning to base on schedule so he was not in the best of moods that we were delayed even before leaving home base.

We crewed in the following day and flew up to Glasgow only to find that our passengers were not there. We hung around waiting for several hours before they eventually turned up and when questioned it was apparent that they had only left that morning despite being instructed by Group to position the previous day. The reason seemed to be that their Station Commander had not wanted any more of his people on duty at the weekend as they'd already only recently worked one for their annual air show which went down rather badly with our Boss. We left Glasgow now around 28 hours behind

schedule with the Boss determined to make up the time. The night stops at Gander in Newfoundland and Pope AFB in North Carolina offered only limited scope to save time beyond spending only the minimum time on the ground allowed by our crew-duty regulations and we were still around 25 hours behind as we departed for Belize. Our route passed north of Cuba across the Gulf of Mexico, crossing the ITCZ – the Inter-tropical Convergence Zone, where the northeast and southeast trade winds converged causing very active thunderstorms. Few aircraft and certainly not the C-130K could climb over these so it was necessary to dodge around them either visually by day or using the radar at night.

As we worked our way past these towering storms it became obvious that something was not right with our weather radar whose picture was breaking up and only showing detail every few sweeps. At least by day we could see the gaps and we made it safely through to land at Belize Airport.

We were scheduled for another night stop in Belize but the Boss was anxious to catch up with the schedule so proposed that we head straight back to Pope now which would make up much of the lost time but would mean a crew duty extension to do so. This wasn't a problem for the multiple other crew members but the limiting factor was we pilots, the Captain had already said he was ok so it was up to me whether I felt too tired or not. Although I would have rather stayed and see Belize the passengers, who were anxious to get home, looked menacing and I didn't want to test the Boss's reputation by crossing him so I said I was fine. I really didn't feel that I could say anything else.

The computerised aircraft trim sheet was still being worked on by the Movements staff but the Boss was keen to go so we started up in expectation of its arrival then sat engines running waiting for it. In the C-130K the engines were prone to overheating on the ground so we had to run them in low speed ground idle while we waited which meant the air-conditioning was inoperative. After sweating in the heat for some time we observed one of the Movements staff sauntering slowly across the pan to us. His arrival coincided with the Flight Engineer's discovery of an electrical problem which forced us to shutdown for investigation. The Captain and the Boss, who was the operating Navigator on this leg, had previously discussed the radar problem and although we at the front had been able to make out little on our screen the Boss was adamant that his was working sufficiently. Nevertheless we had agreed that it was prudent to cross the ITCZ in daylight but now the afternoon was dragging on.

With the Flight Engineer eventually happy that the aircraft was serviceable again we started up once more only to learn from the ALM that there had been an error on the trim sheet and the Movers had gone back to run it again. Once again we sat sweating with the engines running while the sun sank towards the western horizon before the trim sheet made its belated appearance. This would have been a good time for the Captain to say enough was enough and we would delay until the morning. I looked at him and he told me to request taxy clearance. Now was the time I should have spoken up as it was obvious we would not make it across the ITCZ in daylight but I wasn't going to stick my head above the parapet if he wasn't. It was my leg back to Pope and as I rotated to get airborne it was only a short time before sunset with lightning flashes rippling the eastern horizon amongst the clouds.

As we climbed to our cruise altitude it was obvious that there was still plenty of weather ahead which we could not make out on the front radar screen but the Boss was still adamant

that he was getting enough of a picture on his. The Captain expressed his concern with what was ahead in the gathering gloom to which the Boss pointedly said, 'if you're really not happy we can go back to Belize', but the tone of voice was enough to encourage him to press on. Omitting the Belize night stop was not sufficient to make up all our lost time so once we were settled into the cruise the Boss started hectoring the Captain to request a short jetplan from Lyneham Ops via the HF radio with a view to expediting our return home which took him out of the loop for the events that were about to happen. As I could make out little on the radar I was reliant on the Boss for avoiding action on the weather which I could no longer see in the darkness although there were plenty of lightning flashes around us. He started to give me headings to follow as we weaved through the invisible thunderstorms, these heading changes became increasingly larger until he gave me a sudden, 'turn left 60°'!

The aircraft started to buck and bounce in turbulence, speed fluctuating by plus and minus 30kts, I called for maximum continuous power which the Flight Engineer set and briefly considered taking out the autopilot as the aircraft was now pitching up and down wildly but realised that the instrument panel was shaking too much for me to read the instruments properly. Ice was rapidly building-up on the windscreen wipers, which was always the first place it showed but no doubt on the rest of the airframe too and St Elmo's Fire began dancing across the screen followed by a huge plume from the tip of the refuelling probe as the electrical charge built up. Typically this is an indication that you're about to be struck by lightning.

At this point the Captain, realising that things were amiss, came out of his HF bubble and took control but there wasn't anything more he could do. We sat impotently as the aircraft battled its way through the thunderstorm, hail clattering noisily off the windscreen and airframe, I swear I could hear the main spar groaning as the wing flexed through the massive turbulence. Then suddenly the rollercoaster ride was over, we hit smooth air and I could see stars above us. The Captain, finally exerting control over his aircraft asked for a heading north towards the American coast away from the line of thunderstorms and the Navigator meekly complied.

I don't think I have ever experienced a quieter cockpit than ours was during the remainder of the leg to Pope. By the time we reached the hotel and gathered for the post-flight wind down beers I was beginning to think that perhaps I'd exaggerated the seriousness of what had occurred, until the Boss said to me across the room, 'I suppose you're going to go back and tell all the other COs that the Boss tried to kill you?' So maybe not then.

We were still behind the schedule by the time we returned the passengers to their base as the Boss had somewhat mislaid his enthusiasm for making up lost time. As a consequence the passengers were still disgruntled at the delay and blissfully ignorant and unappreciative of the near fatal efforts made to get them home on time.

What did I learn about flying from this? Well, I certainly developed a healthy respect and fear for thunderstorms that has stayed with me ever since and that accidents are rarely the result of a single event, it's the old Swiss cheese model of several actions aligning starting in our case with the Station Commander at the Scottish airbase not wanting to make his people work on a Sunday which put our schedule under extra pressure. The main lesson however was that no task is so important that it's worth the risk of killing everyone on board to achieve it, at least not in peacetime. Back at Belize

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we had agreed a sensible plan to return in daylight and when we were delayed during the start-up so that was no longer possible we should have scrubbed. We should not have allowed the 'can-do' mentality to override good sense and become 'pressonitis'. The Captain should have acted in accordance with his responsibility for the aircraft, crew and passengers and not have allowed the Boss to bully him into an action that he was uncomfortable with. Whilst it is all too easy to lay the blame on them I too should have spoken up as I knew that we were making a serious mistake in getting airborne into the dark, although in mitigation this was a few years before Crew Resource Management was introduced in the RAF and there was very much a prevailing attitude that co-pilots should be seen and not heard.

Of course the advent of CRM did encourage all crew members to feel empowered to speak up if they had a concern. Fast forward many years and I was now an instructor on a tactical transport OCU conducting the end of course simulator check for a new crew, comprising a Wing Commander (destined to be a squadron boss) as captain with a young ab-initio co-pilot. The sortie comprised a route leg each followed by some visual circuits to include any handling elements not covered during those legs. The co-pilot was the Pilot Flying (PF) with the captain as his Pilot Monitoring (PM), and they were performing a touch and go. As the PF selected full thrust I failed one of the engines. Now the SOP guidance in this event was that if the thrust levers were back at Flight Idle you should stop and if they were forward then you should go as there may not be sufficient runway left to abort the take-off safely. The PM incorrectly called 'stop' but the PF said 'no, go' and the aircraft completed a safe take-off and subsequent landing.

I did consider whether the PF had overstepped himself by challenging the authority of the captain, even though he was wrong, but had he complied the aircraft would almost certainly have gone off the end of the runway at speed with at least some damage and perhaps worse in the real event. What impressed me was that the co-pilot had had the courage to correct his captain despite the gulf in rank and experience between them. CRM had achieved what it was meant to do and I wished that I had been similarly empowered all those years before at Belize when I knew we were making a serious error of judgement in getting airborne.

Spry's Comment:

This may be a story that is decades old, but the key lesson remains just as pertinent today. We have evolved considerably in the aviation domain and are more aware of the issues of poor CRM and cockpit gradient. However, this does not mean that such issues no longer occur. The narrative highlights multiple issues concerning the dynamics between Captain and Co-pilot, Squadron Boss and Captain, and Boss and Co-pilot. It is crucial to remember that when we enter the aviation arena, we assume our task role rather than our rank or squadron position. This is not to suggest that the Squadron Boss cannot voice opinions – given their wealth of experience – but one must always be vigilant of the influence you may inadvertently (or intentionally) exert. ☐

Keeping Safety Standards High

By the Defence Accident Investigation Branch

The Defence Accident Investigation Branch takes part in large multi-agency exercises, simulating major incidents.

The Defence Accident Investigation Branch (DAIB), part of the Defence Safety Authority in the Ministry of Defence (MOD), conducts independent, impartial and expert no-blame safety investigations of serious accidents, injuries, loss of life, near misses, and major damage to the environment or equipment across all domains. It provides recommendations for defence to learn from accidents and incidents and prevent them from happening again.

The DAIB recently completed two significant training exercises that demonstrate the MOD's commitment to maintaining the highest standards of accident investigation across defence.

Training the next cohort of investigators: Winterbourne Gunner exercise

In January 2025, the DAIB held a crucial trainee investigator qualification exercise at Winterbourne Gunner in Salisbury.

Nearly 100 personnel from defence and partners across government took part in the collaborative simulation, which formed an essential part of the qualification process for DAIB trainee investigators before they can be deployed to investigate real military accidents.

Set at the Defence Chemical, Biological, Radiological and Nuclear Centre, the exercise provided trainee investigators with a realistic environment to practise their evidence gathering skills, using wreckage supplied by the Joint Aircraft Recovery and Transportation Squadron (JARTS).

Investigators had the opportunity to test essential equipment and try techniques including evidence photography, sampling, logging and Remotely Piloted Aircraft System operations – all critical skills for thorough accident investigations that help prevent future accidents.

Image: Simulated crash of an RAF Hawk

National and international collaboration

The exercise marked a significant evolution in the DAIB's training approach. Beyond qualifying new personnel, it was structured to further develop experienced DAIB investigators while strengthening collaboration with partner organisations, including the Police Disaster Victim Identification (DVI) teams."This exercise was designed to replicate, as closely as possible, the challenges our investigators face at actual crash sites," said Lieutenant Commander (Lt Cdr) Dan Emptage, a DAIB Investigator.

"By working with multiple agencies in a controlled but realistic setting, we can ensure our teams are fully prepared when called to respond to real incidents."

Several defence specialist agencies contributed to the professional development aspects of the exercise. These included representatives from the Royal Air Force Centre of Aerospace Medicine, who provided insights on ejection seats, demonstrations from JARTS on land site survey capability, and the Defence School of Photography advised on evidence photography techniques.

Industry partners also participated, showcasing advanced capabilities such as laser scanning that could enhance the DAIB's evidence collection methods in future investigations. The exercise welcomed international participation, with representatives from the Bureau enquêtes accidents pour la sécurité de l'aéronautique d'État (BEA-É), France's Flight Safety Investigation Bureau for State Aviation, working alongside UK trainee investigators, fostering valuable knowledge exchange between allied nations.

"The collaborative nature of this exercise reflects the reality of our work," added Lt Cdr Emptage.

"When accidents happen, multiple agencies must work together seamlessly. By training together now, we build the relationships and understanding that prove invaluable during actual incidents."

F-35 aircraft crash simulation: HMS Prince of Wales exercise

Weeks after the Winterbourne Gunner exercise, DAIB specialists joined an essential aircraft post-crash management exercise aboard HMS Prince of Wales as it prepared for Carrier Strike Group 25 (Op HIGH MAST). The event highlighted the collaborative efforts of multiple teams, making sure they are all prepared to promptly and professionally respond to air accidents.

The February exercise at Portsmouth Naval Base simulated a 'crash on deck' scenario involving an F-35 aircraft. Using realistic wreckage, the ship's post-crash management team practised emergency response procedures with support from specialists across defence.

Image: Fast jet wreckage onboard the HMS Prince of Wales

Lieutenant Nyathi Mbongisen, an air weapons specialist on HMS Prince of Wales, explained: "The scenario involved an F-35 about to take off when its undercarriage failed, causing it to veer off and crash into the island. Our job was to determine the best possible way of dealing with the accident."

Squadron Leader Peter Pateman, a DAIB investigator, highlighted the exercise's importance: *"Being able to conduct simulated crash exercises is a key part of developing not only DAIB skills but also partner organisations' capabilities."*

The exercise highlights the importance of post-crash management plans, which function like insurance – made with the hope they'll never be needed, but providing confidence that trained personnel and efficient protocols are in place should an emergency arise.

Strengthening operational readiness

The integration of expertise from JARTS, Explosive Ordnance Disposal, Security teams, Hazards Mitigation specialists, and the DAIB demonstrates how cross-departmental cooperation strengthens defence's operational readiness. Such exercises are not merely procedural drills but essential safeguards that ensure defence personnel can respond effectively during critical incidents while preserving crucial evidence.

Importantly, the exercise also gave personnel on board an overview of how the DAIB conducts impartial and expert no-blame safety investigations across defence.

Commitment to safety

Both exercises demonstrate the DAIB's commitment to safety and collaboration, with multiple agencies working together to enhance defence's ability to respond to and learn from incidents.

Training exercises like these help ensure that when accidents do occur, defence has well-rehearsed plans to respond effectively while preserving crucial evidence for safety investigations. These no-blame investigations ultimately provide recommendations that help safeguard lives, operational capability and the environment.

Looking ahead, the DAIB plans to expand the exercise format to include scenarios covering the branch's full multimodal capability. This expansion will extend training benefits to an even wider range of agencies while strengthening the inter-agency cooperation network crucial to effective accident investigation.

To notify the DAIB of serious accidents, injuries, loss of life, near misses, or major damage to the environment or equipment – call 01980 348 622.

DAIB investigator gathers evidence from a crash site using forensic tool kit

Achieving Balance: ‘RED's’ and Perfectionism in Flight

By Dr Prashini Naidoo, SMC RAF Benson

When High Performance Standards Meet Physical Reality
Pilots pride themselves on precision, attention to detail, and unwavering focus—qualities that make them successful in the cockpit. But what happens when these same traits that define their professional excellence begin to undermine their physical health? Maya's story offers valuable insights for all aviation professionals.

Maya, a 25-year-old helicopter pilot and competitive weightlifter, embodied the disciplined approach many pilots bring to both their professional and personal lives. Her commitment to structure, planning, and performance served her well — until it didn't.

The Hidden Danger: Relative Energy Deficiency in Sport (REDs)
When Maya began experiencing persistent fatigue, shin pain, and irregular menstrual cycles, she initially dismissed these as temporary setbacks. However, a tibial stress fracture prompted medical intervention, leading to a diagnosis of Relative Energy Deficiency in Sport (REDs).

REDs occurs when the body doesn't receive enough energy to support both training demands and basic physiological functions. For pilots who maintain rigorous fitness regimens alongside demanding flight schedules, this energy deficit can have serious consequences:

- **Physical Performance:** Chronic fatigue and reduced strength can impact the ability to handle physically demanding aspects of flying.
- **Cognitive Function:** Energy deficits affect concentration and decision-making — critical skills in the cockpit.
- **Long-term Health:** Decreased bone density and hormonal imbalances pose significant risks for long-term health and career longevity.

The Perfectionism Connection
Many qualities that make exceptional pilots — attention to detail, procedural discipline, and high personal standards — can transform from assets into liabilities when applied too rigidly to health and fitness.

For Maya, the structured thinking that made her an excellent pilot created blind spots in her approach to nutrition and training. Her resistance to modifying workout schedules or dietary patterns, even when injured, reflected a rigid perfectionism that ultimately compromised her health. Sound familiar? Many aviation professionals share these tendencies. Pilots excel at creating and following protocols, but may struggle with the flexibility required to maintain physical wellbeing.

Warning Signs Every Pilot Should Recognize
The aviation industry conditions pilots to prioritize vigilance and early problem detection. Apply these same skills to monitor for signs of REDs:

- **Performance Changes:** Unexplained decreases in physical performance or recovery capacity.
- **Physical Symptoms:** Persistent fatigue, recurrent injuries, or hormonal disruptions,
- **Psychological Shifts:** Increased anxiety around food or exercise, irritability, or emotional dysregulation.
- **Behavioural Patterns:** Social withdrawal to maintain training schedules or rigid eating patterns.

Prevention and Recovery: The Flight Plan for Health
Just as pilots wouldn't fly without a thorough preflight check, they shouldn't approach health and fitness without proper planning:

Energy Balance Assessment
Calculate your Total Daily Energy Expenditure (TDEE) based on your flight schedule, training regimen, and basic metabolic needs. For pilots with training routines similar to Maya's 1-2 hours of intense training, daily caloric needs typically range from 2,300 - 2,800 kcal.

Nutrition Strategy

- **Macronutrient Distribution:** Aim for 45-65% carbohydrates (whole grains, fruits), 20-35% fats (avocados, olive oil, nuts), and sufficient protein (1.6-2.0g/kg body weight).
- **Strategic Timing:** Distribute energy intake throughout the day with particular attention to pre- and post-training meals.
- **Micronutrient Focus:** Monitor vitamin D, calcium and iron — especially important for those with dietary restrictions.

Training Modifications
Just as pilots make flight plan adjustments for changing conditions, be prepared to modify training when your body signals distress. Lower-impact activities during recovery periods maintain fitness while allowing healing.

Psychological Approach
The same mental resilience that helps manage cockpit emergencies can be applied to health. Practicing cognitive flexibility — adapting plans based on current conditions rather than rigid adherence to protocols — represents strength, not weakness.

Crew Resource Management for Health
Maya's recovery involved collaboration between healthcare providers, training specialists, and her support network. Similarly, pilots benefit from assembling a team of professionals who understand the unique demands of aviation careers.

The Professional Advantage
Understanding the relationship between perfectionism and physical health doesn't require abandoning high standards. Rather, it means applying the same systematic thinking that pilots display in their jobs to their well-being.

The aviation community values continuous improvement and safety. By recognising potential health vulnerabilities associated with an aviation mindset, pilots can develop practices that sustain performance both in the cockpit and beyond. If you recognise elements of Maya's story in your own approach to health and fitness, consider consulting with healthcare providers who understand the unique demands of aviation careers. The precision that defines aviators can — with the right adjustments — become their greatest asset in maintaining long-term health and career longevity.

VE Day – Safety at 80

By Flt Lt Alex Still, RAF Safety Centre

Historical Context

I think I was only ten the first time I went to an airshow with my dad, when, roaring above our heads, came the unmistakable roar of the Rolls-Royce Merlin engine strapped into a Mk V Spitfire. The aircraft adorned with D-Day black and white stripes, performed a barrel roll at a height that felt close enough to touch the wing. Since then, I have been obsessed with every aspect of aviation in the Second World War, the aircraft of that era were truly impressive – The Spitfire, the Hurricane, the infamous Lancaster, all legends in their own right.

That moment sparked fascination, not just with the aircraft, but with the stunning leaps in technology that made such feats of engineering and bravery possible during the war.

Second World War aircraft presented a stunning leap in aviation technology, especially considering the first military airplanes flew just a few years before the First World War, around 1912. In only three decades, aircraft evolved from fragile wood-and-fabric biplanes to powerful all metal war machines capable of flying over 400mph.

By the Second World War, innovations like radar, pressurised cabins, long range bombers and jet engines emerged. Rapid development driven by intense wartime demand, pushing boundaries of engineering and forever changing the role of aircraft in war. As we remember VE Day and the conclusion of the war in Europe occurring 80 years ago. It is the perfect time to remember the immense contributions the 1940s generation made. Both in terms of physical sacrifice and also the technological development they made. Both were critical to ensuring freedom and peace.

Why it's important to remember

As we commemorate Victory in Europe (VE) turning 80 on May 8th of this year, we paused not only to remember the triumph over tyranny in 1945 but also to reflect on the immense sacrifices made — particularly in the skies — and the safety innovations born of necessity during the Second World War.

The war claimed millions of lives, but it also transformed the world of aviation, introducing new procedures, technologies, and standards that continue to influence modern safety protocol today.

United Kingdom – Total Second World War Casualties
Military Losses (All UK Armed Forces)

- Killed or died from wounds/disease: ~383,700
- Wounded (non-fatal injuries): ~376,000
- Missing or taken as Prisoners of War (PoWs): ~180,000

These figures include all branches: Army, Royal Navy, Royal Air Force and other services such as the Merchant Navy and Auxiliary Forces. (Source: UK Parliament Hansard archives).

A Heavy Toll in the Skies

During the Second World War, the United Kingdom suffered significant losses, our service members our civilians all suffered greatly, this was also felt particularly within the Royal Air Force (RAF) and other aerial divisions. Of the approximately 384,000 UK military personnel who lost their lives in the war, around 70,000 were aircrew. RAF Bomber Command alone lost over 55,000 men — almost half of those who served in it — an astonishing and tragic statistic that underscores the dangers of aerial warfare at the time.

Globally, the Second World War resulted in the deaths of an estimated 70 to 85 million people, including both military personnel and civilians, amounting to roughly 3% of the world's population at that time. The scale of devastation is a sobering reminder of the costs of global conflict.

Aircraft Lost (RAF)

Over 70,000 aircraft of all types lost globally during the war (all Allies). RAF Bomber Command alone lost 55,000 aircrew (out of ~125,000) – an astonishing 44% fatality rate. But with this immense loss came remarkable technological advances aimed at saving lives.

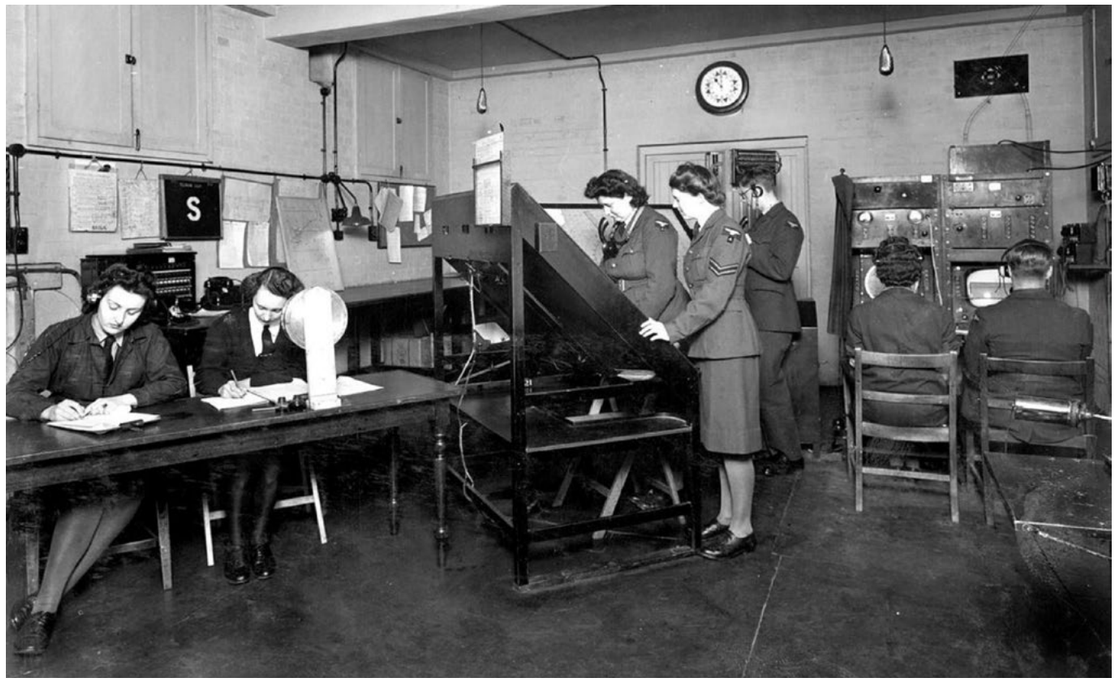
Historical Safety
Radar

Rapid developments in aviation technology were driven by the demands of global conflict, prompting significant improvements in aircraft safety and performance. One of the most transformative developments was the widespread implementation of RADAR (Radio Detection and Ranging) systems. RADAR provided early warning of incoming enemy aircraft and ships, significantly reducing the element of surprise in air attacks. Allied forces, particularly the British during the Battle of Britain, relied heavily on radar to track Luftwaffe bombers, enabling timely fighter interceptions. This not only increased air defence effectiveness but also dramatically improved the safety of pilots and ground forces alike.

Today radar remains a crucial component of aviation, used in everything from air traffic control for managing aircraft to onboard systems that help pilots avoid weather and other aircraft while airborne.

Pressurised Cabins

Another critical advancement was the introduction and refinement of pressurised cabins, which became increasingly



important as aircraft began to fly at higher altitudes. At high altitudes, thinner air made it difficult for crews to breathe, and extreme cold posed severe risks. The development of pressurised fuselages, such as the early Vickers Wellington B.VI, allowed for safer, longer and higher-altitude missions by maintaining liveable environment for the crew. This technology marked a major leap in both the operational ceiling of military aircraft and the overall survivability of long-distance flight missions. Something that went on to develop quickly and become incorporated into todays passenger airline aircraft.

Long range bombers

To support the global scale of the conflict, nations also made significant strides in long range aircraft development. Aircraft such as the Vickers Windsor and the aforementioned Vickers Wellington were designed to carry heavier payloads over extended distances. This was made possible through innovations in engine performance, fuel efficiency and aerodynamic design. Additionally, improvements in navigation systems such as celestial navigation and later radio-based aids, enhanced safety and reliability of long-range bombing and reconnaissance missions. These technological innovations collectively increased strategic flexibility and operational reach, fundamentally reshaping the role of airpower in modern warfare.

Together, these safety and performance advancements – radar, pressurised cabins and long-range capabilities – not only changed the outcome of the war but also laid the groundwork for postwar aviation. Civilian air travel, in particular benefitted from these wartime innovations, as many of the technologies developed for military use were adapted to improve the safety, comfort and efficiency of commercial flight in the decades to follow.

D-Day Invasion Stripes: A Lifesaving Visual Cue

One of the most iconic, simple and practical aviation safety measures from the war was the implementation of "invasion stripes" on Allied aircraft during the D-Day landings on June 6, 1944. These were alternating black and white bands painted on the wings and fuselage of planes to ensure quick identification by friendly forces, minimising the risk of "friendly fire."

In the early hours before dawn, ground crews rushed with brushes, mops and what ever paint they could find to slap black and white stripes onto wings and fuselages. Some lines were crooked, paint still wet as engines roared to life – but the urgency was clear: in the chaos of the largest invasion in

history, anything that could prevent friendly fire was worth the scramble.

With thousands of aircraft in the skies over Normandy, these stripes were essential for preventing accidental shoot-downs and collisions. The concept was simple but effective — a visual identification system that demonstrated how critical visual safety cues are, in chaotic operational environments. A concept we still use today in Search and Rescue (SAR) and many other elements of aircraft design.

Five Other Pioneering Second World War Aviation Safety Innovations

1. Self-Sealing Fuel Tanks.
   To reduce the risk of fires when aircraft were hit, engineers developed tanks lined with rubber layers that swelled to seal holes, preventing fuel leakage and catastrophic explosions. Reducing the risk of aircraft fires after being shot or hit by flak.

2. Armour-Plated Cockpits and Pilot Seats.
   Aircraft designs began incorporating armoured plating around cockpits and pilot seats, greatly increasing survivability during engagements. Protecting aircrew from enemy fire.

3. Radar and Radio Navigation (e.g. GEE system; a radio navigation system.
   Using a time delay between two radio signals to produce a fix).
   Early forms of radar and radio navigation systems allowed for more precise bombing and reduced reliance on visual cues, which helped aircraft avoid poor weather and mid-air collisions.

4. Parachutes and Ejection Seats.
   Although parachutes were already in use, their adoption became more widespread and standardised during the war. Toward the war's end, the first ejection seats were developed for faster emergency escapes.

5. Crew Resource Management (CRM) Foundations.
   Though not formalised until decades later, the Second World War experiences highlighted the importance of coordinated crew communication and decision-making, especially in multi-person bomber crews.

Conclusion: A Legacy That Lives On

VE Day is a day of remembrance, gratitude, and reflection. It reminds us not only of the cost of conflict but also of the progress humanity has made under pressure. The sacrifices of those who served, particularly in aviation, left a legacy that shaped modern safety standards—from visual markings to emergency systems.

As we remember the recent ceremonial flyovers or attend commemorative events, let's remember those who gave their lives in the pursuit of peace — and the critical lessons in safety and innovation their experiences left behind.


1945
80
VE DAY
2025

Insights from the UK Flight Safety Committee

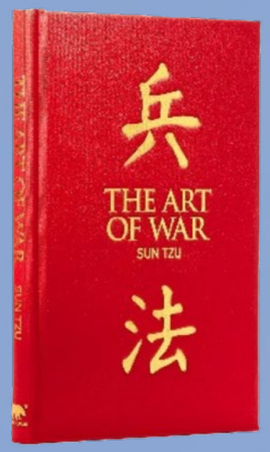
From Ancient Wisdom to Modern Safety: The Evolution of Learning from Success

By Rob Holliday, CEO UKFSC

Safety-II has allowed us to look at safety through fresh eyes, even if it may not be a completely new idea. Safety-II is a modern approach to safety management that shifts the focus from preventing things from going wrong (Safety-I) to ensuring that things go right. The concept of Safety-II was developed by Erik Hollnagel (2014) as a response to the limitations of traditional safety management approaches, often referred to as Safety-I. Safety-I focuses on preventing things from going wrong by identifying and eliminating hazards, errors, and failures. While this approach has been effective in reducing accidents and incidents, it has its limitations, especially in complex and dynamic environments.

In the 5th century BC Sun Tzu, an ancient Chinese military strategist, wrote "The Art of War." One of his key principles is the importance of learning from both victories and defeats. Sun Tzu emphasised the need for continuous learning and adaptation. He advocated a thorough analysis of both successful and unsuccessful outcomes to improve future strategies. This principle is encapsulated in his famous quote, "Know yourself and know your enemy, and you will never be defeated." By understanding the reasons behind victories and defeats, a commander can make informed decisions and adapt strategies to changing circumstances.

Sun Tzu's approach to learning from victories involved analysing the factors that led to success, such as effective use of resources, strategic planning, and psychological manipulation of opponents. Conversely, learning from defeats involves identifying mistakes, understanding the enemy's strengths, and recognizing one's own weaknesses. This dual focus on success and failure ensured a comprehensive understanding of warfare and enhanced the military's ability to achieve victory.



The idea of Safety-II is that safety should not only be about avoiding accidents and incidents but also about understanding and enhancing the everyday performance of systems and individuals. It recognises emphasises the importance of understanding how everyday work is performed successfully. It looks at the adaptations and adjustments that people make to deal with varying conditions and challenges. By studying these successful practices, organisations can learn how to support and enhance them. It acknowledges that variability in performance is a natural and necessary part of complex systems. Therefore, instead of merely trying to eliminate errors and failures, Safety-II aims to understand how and why things usually go right and to reinforce those successful practices.

Abraham Wald, who was a Hungarian mathematician, made a significant contribution to the field of statistical analysis during the Second World War. His work with the US military, particularly in addressing survivor bias, had a profound impact on improving the safety and effectiveness of bomber aircraft.

One of Wald's most notable contributions was his work on survivor bias, a concept that refers to the logical error of concentrating on the people or things that survived a process while overlooking those that did not due to their lack of visibility. This bias can lead to incorrect conclusions and decisions.

During the Second World War, the US military faced the challenge of determining how to strengthen the armour of their bomber aircraft to reduce losses. They collected data on the damage sustained by returning aircraft, noting the areas that were most frequently hit by enemy fire. The initial thought was to reinforce these heavily damaged areas. However, Wald identified a critical flaw in this approach.

Wald realised that the data only included aircraft that had returned safely, not those that had been shot down. The areas with the most damage on the returning aircraft were not necessarily the most critical; rather, they were the areas where damage could be sustained without causing the aircraft to be lost. In other words, the returning aircraft were the survivors, and their damage patterns did not represent the full picture.

It is a powerful attribute when presented with data to be able to question what you are not being shown, to understand what data is missing from the picture. One of the critical issues identified in the Challenger space shuttle disaster was the lack of proper data assessment regarding the O-rings' performance at low temperatures. The night before the launch, there was a teleconference among engineers from Morton Thiokol (the manufacturer of the solid rocket boosters), NASA's Marshall Space Flight Centre, and the Kennedy Space Centre. The discussion focused on the forecasted low temperature of 31°F at launch time and its potential impact on the O-rings. Despite concerns raised by some engineers about the O-rings' ability to seal properly at such low temperatures, the data presented during the teleconference was not conclusive.

It has been postulated that had the data from all the launches been presented then the correlation between effective O-rings in warmer temperatures would have been clear. The statistical analysis conducted after the disaster showed a strong correlation between low temperatures and O-ring failures. If this analysis had been performed before the launch, it would have indicated a high probability of catastrophic failure at the forecasted temperature. In short, the data from both success and from failure should have been considered together.

Wald's work serves as a reminder of the importance of considering all relevant data, not just the visible or surviving subset, to make informed and accurate decisions. His ability to think critically and challenge conventional wisdom exemplified the importance of rigorous analysis and evidence-based decision-making. His insight was to focus on the areas that showed little to no damage on the returning aircraft. He reasoned that these areas were likely critical to the aircraft's survival. If an aircraft was hit in these areas, it probably did not make it back. Therefore, these were the areas that needed additional armour.

Wald's recommendations were counterintuitive but proved to be highly effective. By reinforcing the less damaged areas, the military could significantly improve the survivability of their bombers.

Abraham Wald's work during the Second World War and the theory of Safety-II, introduced by Erik Hollnagel, both represent significant advancements in their respective fields of statistical analysis and safety management. While they emerged from different contexts and disciplines, there are intriguing parallels between Wald's approach to reversing survivor bias and the principles of Safety-II.

Both Wald's approach and Safety-II share a focus on understanding and enhancing successful performance. Wald's recommendations aimed to improve the resilience of bomber aircraft by reinforcing critical areas that were essential for their survival. This aligns with Safety-II's emphasis on building resilient systems. Wald's approach involved learning from the successful return of aircraft and identifying the conditions that allowed them to survive. Safety-II similarly encourages organisations to learn from what goes right and to reinforce successful practices. Wald had the ability to question the apparently logical approach to the problem and in doing so reverse survivor bias. By properly understanding why the successful outcomes occurred, he was able to make effective recommendations. His approach shares some of the fundamentals of Safety-II, including a focus on success, resilience, and learning from successful outcomes. It may be reasonable to consider Wald's work as an early example of Safety-II in action, demonstrating the value of these principles in improving safety and performance in complex and dynamic environments.

Image: Pexels-Pixabay-73871

MAC (Mid Air Collision)
It's The Wrong Kind of Sandwich

SC121
Produced by Air Media Centre, HQ Air Command.

ROYAL AIR FORCE Safety Centre

Mid-Air Collision Risk

Down Low, Lookout Below (and everywhere else!)

By Sqn Ldr Pete Geddes, RAF Safety Centre

On 29 August 1991, an RAF Jaguar T2 collided with a Cessna 152 when flying at 300-400 ft above the ground in Wales. The Cessna pilot was killed on impact. The Jaguar's wings detached, and the pilots ejected from the remaining fuselage; one survived sustaining serious injuries and the other was killed due to being outside the ejection seat flight envelope. Neither aircraft pilot was aware of the others' presence, and 'see and avoid' clearly did not work. The measures to coordinate low flying military and civilian aircraft remain today, and have improved to an extent, but some have not changed. Pilots (both military and civilian) should read this article and aim to improve their understanding of the MAC risk, and how to reduce the risk of such a tragic event happening again.

What's new?

Much has changed in the past 34 years since this accident, but the AAIB report makes interesting reading. There are now fewer fast jets operating in the low flying system. Social media has to an extent advertised great spots to film military aircraft flying at low level. Drone usage is entirely new and may be adding to the list of hazards. The number of commercial aircraft operating from regional airports has increased the volume of Class D airspace, which may be funnelling traffic. That said, the number of military airfields has reduced. Electronic conspicuity devices were introduced to increase awareness of other aircraft, and in part due to regulation, transponder usage has increased. Low level common has provided an avenue for military and civilian aircraft to coordinate on a common VHF frequency. Despite all of this, the stats suggest the risk of mid-air collision (MAC) is increasing.

Where is the greatest risk?

The 2023 UKAB Annual Report stated 93% of Airprox with an assessed a risk of collision (Category A or B) featured General Aviation (GA); a trend seen over many years. The same percentage, 93%, occurred in Class G airspace and 77% occurred below 3,000ft. Clearly these statistics are only as good as the data reported, but it gives us a good indication of where to focus attention. When UKAB process an Airprox, they assess the collision risk and allocate contributory factors in both ground and in flight. Situational Awareness (SA) within the Flight Elements is a consistently a weak area of the contributory factors. SA is fed by multiple sources, and I aim to expand on the more frequent problem areas in this article.

Image created in photoshop

After all, when applying the Rules of the Air, you can only avoid what you can see or what you know about.

Regulation

If we think sub-3,000ft is a riskier area, we should start by discussing regulation of the UK Low Flying System (UKLFS). This is an area of Class G across the UK between the surface and 2,000ft above ground level (AGL). Military pilots learn and practice low flying techniques in this slice of airspace, deemed essential for their tactical proficiency. Fast jets typically operate at 420kt, much more than the 250kt limit for civilian aircraft, reducing the reaction time from visual detection. Regulatory Article 2330 defines the limits and mitigations for these activities, and many of the risks reside with the aircrew. By default, an element of de-confliction is through operating height. Civilian aircraft tend to operate not below 500ft due to Rule 5 and fixed wing military aircraft are permitted to operate down to 250ft. That said these are minima, so an inevitable amount of overlap exists. Military aircraft will avoid known areas of civilian activity such as glider sites when low flying, but gliders operate far from their launch site. As we saw in the 1991 accident, reliance solely on 'see and avoid' can be ineffective. Therein lies a problem where the regulatory framework is unable to provide complete risk mitigation. What else can we do? Additional initiatives have been introduced to reduce risk, which I will highlight.

VHF Low Level Common

Military aircraft operate on a de-confliction frequency aimed at increasing SA between operators in the UKLFS. Until recently this was a UHF frequency, but it's now VHF so civilian aircraft can participate. Detail is available in the UK Military Low Flying Handbook and the AIP. The most important message is that Lower Airspace Radar Service (LARS) should be prioritised. Only the sparsely populated areas of the UK sit outside LARS coverage so we should be utilising radar SA where possible rather than a pilot-pilot frequency. Military operators should also understand the limits of LL Common. Glider pilots operating below 2,000ft will almost never switch to LL Common given they will be capacity-limited when looking for forced landing options. GA may be operating on Safety Common at small aerodromes without any allocated frequency, some of which are not marked on the charts (there are simply too many and clutter becomes a problem). Civilian aircraft will operate on Frequency Monitoring Codes when in proximity with controlled airspace, a measure introduced to try and reduce the number of airspace infringements. Others will take the attitude that operating on these frequencies is not legally binding when VFR in Class G and will ignore all of it. Some aircraft are not even equipped with a radio. The best guidance is to operate on the frequency that gives you the most SA and understand the limits of each.

LARS
LARS should provide you with SA on any aircraft with a transponder. Primary radar will also show contacts of sufficient size and speed, but all radars have their limits. Historically these have been difficult to define, but recent upgrades to military systems have made this easier to understand. Aircraft with a small radar cross-section moving at slow ground speeds will test many ATC systems. Do you know the limits of your unit's radar? If not, discuss it with ATC the next time you meet a controller. Gliders circling in a thermal or microlights flying into a strong headwind might not show up on the ATC display. Vital SA can be built by contacting an ATC LARS unit when within published operating range. Despite modern systems incorporating ADS-B, there is no provision to provide control based on this info due to a lack of data assurance. A controller will have enhanced SA if they can match your reported position with the unassured data provided through ADS-B. They will be able to warn others of your presence on the frequency. Commonly pilots will listen-out on a frequency to try and build SA, but this typically contributes little to SA. To the GA and glider pilots reading this, have courage to speak on the radio regardless of your experience of confidence. LARS is also limited by the operating hours of the provider. Outside of these hours it's beneficial to contact smaller airfields when passing nearby, even if not radar equipped.

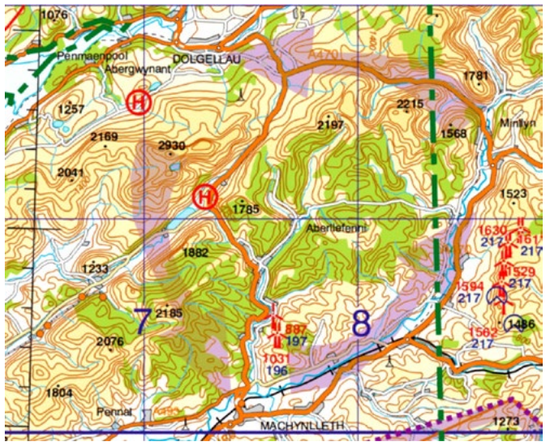
Charts
The Board of Enquiry report in 1991 made a recommendation to mark flow arrows and military fast jet bases on the civilian charts, with the intent of advertising 'hotspots' for civilian aircraft to avoid where possible. I'm unaware if this ever happened. It's a fact that the VFR charts do not have this information on them today, but should they? Arguably this would advertise the location and attract GA to places such as the Machynlleth or 'mach loop.' In a Facebook video (https://www.facebook.com/reel/1266588104333894) you can see a GA aircraft being overtaken by a Hawk trying to fly through the same chokepoint. Fortunately, the GA aircraft had a transponder, and the Hawk had TCAS, so a timely avoidance manoeuvre was possible.

Airprox report 2021193 involved a PA28 and Hawk in the mach loop on a different occasion. Circumstances were similar, but the pilots eventually relied upon 'see and avoid' due to failure of EC and LL Common to provide SA. With over 500kt of closure speed, the reaction time available would have been insufficient if they passed much closer than they did. The CAA's Skyway Code gives a brief summary of the UKLFS on page 78 with links to extra detail in the AIP. It advises that the surface to 1,000ft bracket is where most low flying military aircraft will be encountered and that it's best to avoid if no other methods of coordination have been attempted. Civilian pilots should also note that despite the broad rollout of EC devices in recent years, many military aircraft are not equipped with such technology and some never will (the reasons why are complex and beyond scope of this article). All military aircraft are required to squawk 7001 whilst in the UKLFS and the most reliable method of detecting them is to fit a system which can display this information or obtain a LARS.

Electronic Conspicuity (EC)
As technology evolved, EC devices became cheaper and therefore more accessible. This is a welcome step forward, but pilots should recognise the limits of their devices. Operating a windscreen-mounted ADS-B device will increase SA but will lack the range and coverage of a system with external antennae. The current disparity between systems over different frequencies is another problem the CAA is aware of. Carriage of EC is not mandatory in Class G which is another weakness. A video (www.youtube.com/watch?v=-zVqdQNqbFM) was produced by the General Aviation Safety Council (GASCO) to advise pilots on where to look when conducting the all-important visual lookout scan. There is a risk of over-reliance on EC and breeding a culture of pilots who fly around staring at screens, rather than looking out the window, fulfilling their legal obligation to see and avoid.

Conclusion
Lookout! As I hope you have observed, trying to make pilots avoid each other in an increasingly complex volume of sky is a never-ending challenge. There is no simple answer. I haven't mentioned all measures available to mitigate MAC but have focussed on the less well understood ones. Given the evidence we have from the tragic event on 29th Aug 91, I hope you have taken at least one point away that might reduce the risk of collision. It might be as simple as having the conviction to call up on LARS, but if all else fails, remember to lookout.

If you have any questions about the detail in this article, please contact the RAF Safety Centre at Air-SafetyCtre-WgCdrSpry@mod.gov.uk. Air Clues is available online at https://www.raf.mod.uk/our-organisation/units/raf-safety-centre/air-clues/. This offers access to all the links posted.



Decades On, One Rule Stays the Same: **Respect the Deck**

By the RAF Safety Centre (icw Royal Navy Flight Safety)

Ensuring Safety on the Flight Deck: Lessons from the Invincible Class Carriers
The Royal Navy's Queen Elizabeth Class aircraft carriers, HMS Prince of Wales and HMS Queen Elizabeth II, represent the pinnacle of British maritime power. These formidable ships, with their advanced flight decks, serve as critical platforms for the Royal Air Force's operations. However, the complexities of operating on these flight decks present unique safety challenges that must be meticulously managed to ensure the well-being of all personnel and the integrity of the mission. Drawing from established safety principles, this article outlines best practice for flight deck safety to ensure that Aviation operations on these carriers are conducted efficiently and safely.

The Importance of Flight Deck Safety
Flight deck operations are inherently hazardous due to the convergence of numerous high-risk elements. These include the movement of aircraft, the presence of high-speed jet engines, and the coordination of multiple personnel in a very confined space.

We must emphasise that effective safety protocols are paramount in mitigating these risks. The integration of these protocols into Aviation operations on the HMS Prince of Wales and HMS Queen Elizabeth II is essential for maintaining operational readiness and safeguarding lives.

Always ready – The flight deck of the QE Class carrier is 280m long and 70m wide (roughly 3 football pitches) and can carry up to 40 aircraft which includes a maximum of 36 F-35B aircraft, as well as many of the UK helicopter types.

Straight into Action. Each QE Class ship can enable 72 fast jet sorties per day and its two lifts are capable of lifting four F-35 aircraft from the hangar to the Flight Deck in just 60 seconds. Aircraft are then launched into the air from a 6-metre ramp (known as the "ski ramp" at the end of the deck.

Specific Challenges and Advice from the Invincible Class Aircraft Carriers
The following advice was hard earned through years of deck operations aboard ships such as the HMS Illustrious, HMS Invincible and HMS Ark Royal.

Managing the Size and Scale of Operations
The deck size of the Queen Elizabeth Class carriers presents unique challenges. With a limited flight deck when compared to most military airfields, there is an increased risk of accidents due to the movement of multiple aircraft simultaneously in a confined area. Effective management of this space requires meticulous planning and coordination.

High Intensity Operations
The carriers support rapid and continuous flight operations, including launch and recovery cycles that can be congested and hectic. Managing air traffic and deck operations safely and efficiently needs careful consideration and thought from all personnel.

Harsh Maritime Environment
Deck motion and movement of the ship along with the harsh saltwater environment increases the risk of slips, falls, and creates a dynamic and unpredictable environment for all personnel to work within. Care should be taken in all aspects of operation and meticulous planning for all movements is required.

Communication and Coordination
Seamless communications and coordination between flight deck crew, air traffic controllers, engineers and the ships bridge crew are essential to avoid mishaps and ensure smooth operations.

Limited Space for Storage and Maintenance
Space on the carrier is constrained, necessitating efficient use of hangar space and deck parking. This complicates maintenance activities and aircraft handling. Personnel must be trained in and aware of the complex hazards around them.

Case Study – HMS Invincible
It's 1997, one of the HMS Invincible's mighty 1 Sqn RAF Harrier aircraft (ZD462) is just off the coast of Sardinia and is on recovery from its last sortie of the day. Whilst on approach to the carrier and in the dead of night, the aircraft was subject to an engine issue, severely impacting the performance, right at the most critical moment. In mere seconds the GR7 RAF Harrier had gone from standard recovery to a life threating situation potentially having to ditch into the sea whilst attempting to touch down on the carrier.

Due to this engine issue the aircraft was unable to maintain the hover and whilst on approach to the carrier it overshot the carrier deck and disappeared into the darkness of the night. The aircraft lost all power and sank towards the murky deep waters of the Mediterranean disappearing from view of the crew below the deck and hitting the water.

The ship's company immediately sprang into action deploying their SAR helicopter to recover the pilot and deploying the ship's divers to fit floatation bags under the aircraft for recovery and enable the carrier to crane the stricken aircraft back onto the ship. The quick response of the ship saved the pilot and the aircraft from a very serious life-threatening situation, and highlights just how quicky it can all go wrong.

The incident underscores the importance of rigorous safety protocols and emergency preparedness, as the ships crews quick thinking and training prevented the loss of life to the pilot and loss of the aircraft. This event highlighted the need for continuous safety drills on the carrier and highlights how quickly a standard recovery at the end of the day can turn into a dangerous nightmare.

Conclusion
The successful operation of RAF aircraft on the HMS Prince of Wales and HMS Queen Elizabeth II hinges on the rigorous implementation of flight deck safety protocols. By prioritising comprehensive training, strict adherence to procedures, effective communication, and regular maintenance, all personnel can mitigate the inherent risks of flight deck operations. Drawing from the lessons learned from legacy carriers, such as the HMS Invincible Class aircraft carriers, we can ensure that these new carriers operate safely and efficiently, maintaining their critical role in projecting British airpower across the globe.

Flight deck safety is not just about following rules; it's about creating a culture of vigilance and care that protects lives and enhances mission success. With these principles at the forefront, we can all navigate the complexities of carrier operations and uphold the highest standards of safety and excellence.

Spry's Comment:

For clarification, Royal Navy ships no longer carry SAR divers for personnel rescue, nor are they equipped with cranes to recover ditched aircraft at sea. This case study is from the Invincible Class carriers and the change in capability further highlights the dangers involved. ■

Doc's Corner:
NVG set-up on Hoffman 20/20

By Simon Evans C2, RAF CAM

As someone who delivers AvMed refresher training to UK military aircrew, I am in a good position to get current feedback on various topics. In this case NVG set-up for serviceability, fit, and focus. Chatting to a number of personnel from different services, aircraft types, and roles I thought it might be timely to post some reminders to those aircrew who routinely use NVGs.

Our teaching at CAM is that the Hoffman box provides a number of significant advantages over the 'field focus' alternative. These are that it provides:

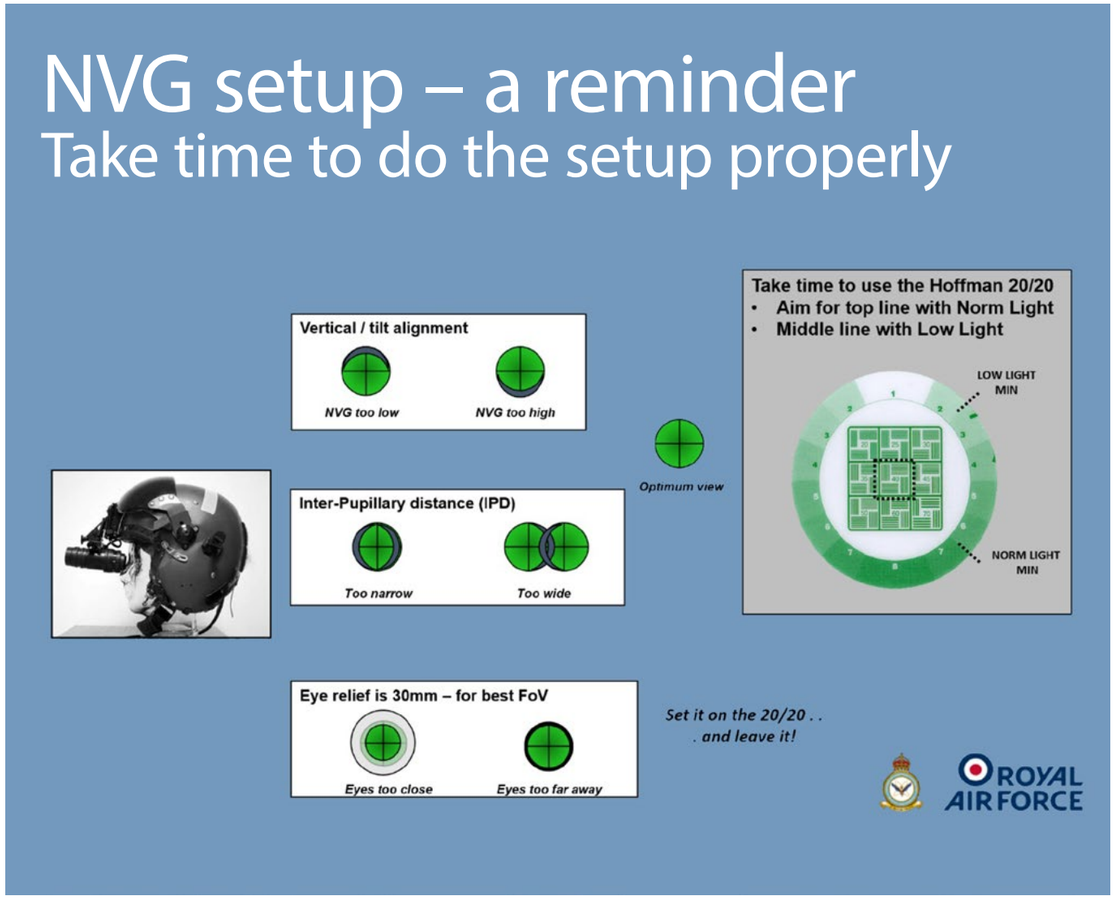
- An objective measure of **visual acuity.**
- An evaluation of NVG performance at both normal and low light levels.
- A check of the ability of the device to detect subtle changes in luminance.
- A check of tube balance.

If the promulgated minima cannot be met, the goggles may be unserviceable.

There are circumstances when the box may not be available:

- Unserviceability of Hoffman box at unit level.
- Short term embarkations in ships. Hoffman is not necessarily ship's fit, so deployments used to take a Hoffman with them for the classic 6mth type deployment. Not so for short term periods embarked.
- Operations from field landing sites.

You should have access to an operating manual in the NVG holdall, if not, ask the safety equipment team for a copy. This should give you a comprehensive guide to setting up the kit if needed.



A slide reminder of some of the NVG essentials that we show briefly to the refresher groups at CAM and cover in detail on the full NVG course:

- The NVGs should be checked for serviceability and the lenses should be cleaned with a specialised cloth in a sweeping not circular motion.
- The helmet must be a stable platform for the goggles.
- The Hoffman box should be sited in a dark room.
- The picture in the box is focused at infinity.
- The focusing on the box should be done one tube at a time, (no more than one visual acuity and luminance unit difference between tubes), then both tubes together. Finally, a low light check.
- **Visual Acuity:** Remember that the point of the grid is that you look for the lowest numbered square in which you can clearly break out the horizontal and vertical lines. Minimum 40 for normal light and 70 for low light.
- **Luminance:** On the outside scale you should look for the highest number where you can see the difference clearly between the shades of luminance. Minimums 1-6 normal light and 1-2 low for light.
- The final statement on the slide, 'set it on the 20/20.. then leave it!' is worthwhile mentioning. Many users state that following a Hoffman set-up, they need to re-focus in the aircraft. There is no reason that this should be the case. Remember, anything closer than 6m is not at infinity and so will be out of focus. Obviously, if the NVGs are knocked about on embarking it is easy to move them out of alignment. A 'buddy check' can help resolve this. Look for the splash of light from the tubes to be directly over the centre of the eye.

If you are unsure of any aspects of NVG use, please feel free to contact me at CAM (simon.evans218@mod.gov.uk) and I will try and help. RA 2309 (8) is also worth reading. Finally, if you are unhappy with local procedures/equipment then raise a DASOR so that the Air Safety community is aware of the problem.

Report Today for a Safer Tomorrow

Mental Health Matters

How can you support others?

DEFENCE SAFETY MATTERS

IDENTIFY

Here are some of the ways you might identify someone who is struggling to cope:

- A normally outgoing person becoming withdrawn
- Missing parades or being late when they are normally punctual
- A loss of personal discipline
- Drinking more than usual or on their own
- Appearing distracted and not present
- Missing group activities or meals
- Having less energy
- Finding it hard to manage day-to-day life
- Using negative statements about themselves

UNDERSTAND

Suicide is complex, there is rarely only one reason why someone might take their own life. This list shows some potential reasons by there are many more:

- Recent loss of a friend or loved one
- The break-up of a relationship
- Losing custody of a child
- Heavy use of alcohol or drugs
- Mental ill-health
- Painful or debilitating injuries or illness
- Financial or legal problems
- Long-term separation
- Feeling isolated or loneliness
- Homesickness

SUPPORT

You do not have to wait until a person is in danger to intervene. You can help someone just by giving them the opportunity to talk. Helping them secure longer-term support can save a life.

- Choose a time and place where you can approach them privately and without interruption.
- Encourage them to talk, focus on listening and be patient.
- If needed, suggest that they seek professional support within your unit such as with the medical officer, welfare staff, chaplain, or a senior individual they trust.

Mental wellbeing at work

DEFENCE SAFETY MATTERS

A mentally healthy workforce is prepared for the present and fit for the future. With half of work-related ill health being down to stress, depression or anxiety, supporting good mental health in the workplace is of high value to Defence.

Below is an overview of available resources:

FOR MILITARY PERSONELL:

Royal Navy Family and People Support
Tel: 0800 145 6088
Email: navynps-peoplesptrnfpsptl@mod.gov.uk

Army Welfare Service
Tel: 01904 882053
Email: RC-AWS-IAT-0Mailbox@mod.gov.uk

RAF SSAFA
Tel: 03000 111 723
Email: sswsRAF@ssafa.org.uk

Combat Stress Helpline
0800 323 4444

FOR CIVILIAN STAFF:

Employee Assistance Programme (EAP)
Tel: 0800 731 8629 (UK)
Further details: Employee Assistance Programme (EAP) (sharepoint.com)

DBS Welfare Services
0800 345 7047

The **Armed Forces Suicide Prevention Strategy and Action Plan** was published in April 2023 and sets out Defence's commitment to the prevention of suicide.

HELP for HEROES

HELP FOR HEROES

The Armed Forces and veteran's' charity can support you with your mental health and provide a listening ear.

Help for Heroes and Zero Suicide Alliance Training is available HERE, This is for partners and friends to complete not those in crisis.

SAMARITANS

If you are in need of urgent support, a Samaritan will face it with you. They are available 24 hours a day, 365 days a year.

Desert Duty: Ensuring Air Safety at Al Minhad Airbase

By Flt Lt Alex Still, RAF Safety Centre (Based on knowledge from a Deployment to Al Minhad)

Operating from the Middle East has always presented unique challenges to safety for the many aviators who pass through and are stationed in the region. From the extremes of temperature to the complexities of regional relationships and dynamics, Al Minhad Airbase has long been on the regular deployment circuit for RAF personnel. In an increasingly complex geopolitical landscape, the MOD's focus on the Middle East will remain a strategic priority for the foreseeable future.

If you are fortunate enough to receive news that you're deploying to the Middle East, don't worry—it's time to dust off those desert boots, say goodbye to rainy mornings, and prepare for a sunny (read: scorching) adventure. But before you get too excited about the tan lines and the terrific Australian DEFAC, let's talk about what it's really like and what you can expect.

Here is an account of my time at Minhad over the summer of 2023. As I reflect on my time overseeing air operations at Al Minhad Airbase, I look back with fond memories. Al Minhad, nestled in the heart of the UAE desert, serves as the main hub for the UK's military operations and exercises across the Middle East.

Arriving at Al Minhad, the intense heat and swirling dust immediately contrast sharply with the cool, damp air of the UK, making the arid environment feel like stepping into another world.

The Heat of the Desert

Operating in the Arabian desert during the summer is an endurance test, both physically and mentally. Temperatures routinely soar above 45°C, creating conditions that push personnel and equipment to their limits. The oppressive heat doesn't just wear down the people; it affects everything from the performance of our aircraft to the integrity of our fuel systems.

Heat-related fatigue is a constant concern. We've had to carefully monitor shift patterns and temperatures, ensuring our teams get adequate rest and hydration. It's easy to underestimate the toll that extreme heat can take, but at Al Minhad, you can't just power through and hope for the best. The heat can have deadly consequences, and it can happen quickly. It's vital you prepare for the heat (heat acclimatisation), and your own kit can make a massive difference.

Packing: Less is More…

Speaking of kit, packing for the Middle East requires a delicate balance. Pack too little, and you'll find yourself off to downtown Dubai with a rather expensive and long shopping list. Pack too much, and you'll be the one everyone talks about—the person whose bags required an extra flight just to get to the base. The A1 Ops joining instruction has a handy kit list, so stick to it, and if in doubt, ask a friend. And remember, that "one for luck" approach doesn't apply to everything.

Operational Tasking

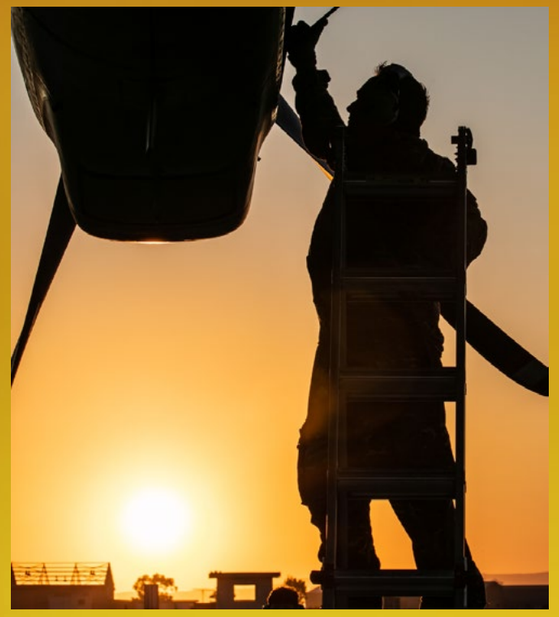
Summer is a particularly demanding time, not just due to the climate, but also because of the level of tasking. Our base, once the epicentre of the UK footprint in the region, has slowed over time. When you arrive at the airbase, you might notice something different if you have ever passed through—considerably fewer aircraft on the tarmac compared to the days of support to Afghanistan.

It's not because the RAF has decided to save on fuel (though that would be impressive, given the current budget constraints). It's part of the strategic shift in how operations are conducted in the region and the changing focus to other areas across the globe.

This doesn't mean there's less to do; it just means that operations have become more focused. But let's face it, fewer aircraft doesn't exactly scream 'thrilling times ahead' does it? And this is where the challenge lies—keeping yourself and your team engaged and focused while supporting wider Defence operations.

The entire existence of the UK detachment, specifically at Al Minhad, is to bolster UK operational resilience and maintain freedom of action in a strategically vital region. This presence is part of the UK's broader strategy for the region, enhancing our global footprint, as highlighted by the newly completed Donnelly Lines, a new purpose-built UK HQ and accommodation facility which was due to open after I returned to the UK and should be up and running when this makes it to print.

Al Minhad is a crucial facility within the broader network of UK Defence operations. Support for UK Defence extends widely across the region, including Royal Navy ships patrolling the Gulf and British Army training exercises in Oman. The importance of having an air mobility hub in the area is substantial.



Routine air mobility operations for the base primarily involve the transportation of personnel, equipment, and supplies to and from various locations in the region, with the base serving as a hub for this.

Supporting the Mission

In addition to routine operations, the team faced a barrage of various support requests tied to exercises and operations across the region. Each request brought with it a unique set of challenges, from ensuring the availability of the airbase to coordinating with ground units spread across the Middle East in multiple countries. The operational tempo to support this was high, but our commitment to safety never wavered.

Throughout the summer, personnel and equipment were sent to Türkiye, Oman, Cyprus, Qatar and Kuwait—all in support of UK Defence tasking and exercises, each presenting its own unique challenges and timelines.

One of the key challenges we faced was the need to adapt to rapidly changing circumstances. In a region as dynamic as the Middle East, flexibility is essential. For instance, there was a day when a severe storm caused extensive flooding and damage to the base, disrupting operations, and requiring immediate and coordinated efforts to manage the impacts.

Who'd have thought a standard "may be some cloud" in the forecast for the morning would turn into a biblical storm that brought a torrent of rain and battered the very dry and dusty base, bringing down and damaging beyond repair half our tented structures, with the team enduring three months of rain in a few hours? A biblical rainstorm really wasn't high on our list of risks, but it is now.

The team worked tirelessly to manage the event and the risks through an internal review, taking the "many hands make light work" approach to get the detachment back up and running. But of all the random events during the tour, it was the unrelenting sun that posed the greatest risk—the one that never let up.

The threat of heat illness looms large over the detachment. The unforgiving climate, characterised by scorching temperatures and relentless sun, poses significant challenges to the health and wellbeing of all. Heat illness is a constant risk; dehydration and heat exhaustion cannot be ignored in any activity you undertake.

The RAF has several DLE courses and literature concerning heat illness, and these will feature heavily in your preparations. Once you arrive, the detachment has a comprehensive RSOI package to ensure you are fully up to speed on the subject, and you can rely on the guidance of the UK personnel when you arrive.

Air Safety and Stress

With a reducing flow of aircraft and tasking, the personnel really start to feel it. While some remember the busier times of providing support to Afghan operations and supporting exercises and real-world operations across the region, the change in pace is both challenging and unwelcome. This ultimately leads to the detachment finding itself seeking additional work streams and working to improve the processes in place; one area that has been prioritised is safety.

But still Minhad trundles on, and while aircraft become less frequent, the complexity in dealing with something that used to be commonplace creeps in. Aircraft become delayed, and the old contracts and systems that were once seamless and worked efficiently start to show their cracks and break down.

Central to fixing these issues was close coordination with the Emirati safety officers. The importance of fostering a strong working relationship with our counterparts cannot be overstated. The fact is, we are guests at the base and have a presence only because the UAE government enables us to be there—a fact the entire detachment is acutely aware of, and its impact on safety.

I want to emphasise that air safety isn't just a box to be checked—it's the foundation upon which all successful operations are built. As we look ahead to future challenges, the lessons we've learned here in the desert will continue, ensuring that safety remains at the forefront of everything we do. The stress you may encounter during your tour may at times be very high, but supporting your team and raising your concerns will lessen the individual stress and should hopefully improve the situation dramatically.

Support Keeping the Home Fires Burning

One aspect of being deployed that rarely gets mentioned is the support you receive from home. The wellbeing of our personnel relies not only on the support they receive whilst at Al Minhad, but also on the support their families receive whilst they are away.

Deploying isn't just tough on you; it's tough on your family too. The good news is that the RAF is quite good at supporting the families of those who deploy. So, before you go, seek out the support available—the Hive and SSAFA should be your first port of call.

The days of waiting weeks for a letter to arrive are long gone (unless you're into that sort of vintage experience). The RAF provides numerous ways to stay in touch with your family, from video calls and WhatsApps to good old emails. Sure, there might be a few connection issues, and yes, you might end up looking like a pixelated potato on the screen, but overall, the communication back home is very good.

The RAF's welfare support services are available to offer your family help with everything from practical advice to just lending a friendly ear. Whether it's sorting out a plumbing disaster (because for some reason it always seems to happen when you're away!), the RAF's support teams are ready to jump in, cape and all. You will feel a lot less stressed knowing your family is supported and ultimately be able to focus on the job at hand.

But why are we covering all this in a safety magazine? The answer is simple: ensuring that personnel are well-supported and work in a positive environment directly impacts their ability to focus on their roles and contributes to enhanced safety. When employees' basic needs are met, and they feel valued, they are more attentive, less stressed, and better equipped to handle their tasks effectively. This not only reduces the risk of accidents and errors but also fosters a culture of safety throughout the unit.

Lessons Learned

So, what did we learn? The team should look back at their summer and be incredibly proud of what they accomplished. The team maintained an impeccable safety record, resulting in full assurance of our safety management system.

This is a hard-fought achievement, considering every role on the detachment faces a handover every 4-6 months. Operating a UK detachment in the Middle East, particularly in the UAE, presents unique safety challenges that require careful management.

The high turnover of staff, common in such deployments, can lead to gaps in experience and knowledge, necessitating continuous training and rigorous handovers to maintain operational safety.

Deploying to the Middle East isn't just about doing your job—it's about doing it safely, smartly, and with a bit of humour. The focus on supporting the wider detachment ensures that you're not just surviving but thriving. Sure, there will be challenges along the way (sand in places you didn't know existed, for one), but overall, you will enjoy your time.

Heat Illness

By the Air Safety Centre

"Heat illness is a serious and potentially life-threatening condition but is preventable. As our personnel continue to live and operate in very demanding conditions and climates across the world we all have a responsibility to understand the causes and effects of heat illness and how it can be prevented." Vice Chief of Defence Staff JSP 375, Vol 1, Ch 41

Introduction
Pending the temperamental British weather, as warm conditions approach, it's worth all commanders thinking about heat illness and how they can prevent it. Listed below are links to resources and a few thoughts and pieces of advice. I would strongly commend the Commander's Guide and Individual Guide to Heat Illness Prevention. They are cracking resources published by the MOD.

Information
Policy Guidance.
JSP 375, Vol 1, Ch 41: Heat Illness Prevention.

Resources.
Commander's Guide to Heat Illness Prevention.
Individuals Guide to Heat Illness.
AP 8000 Leaflet 8023

Detect And Assure
Stn Cdrs, COs and OCs are mandated to ensure their unit has robust detection and assurance mechanisms in place.

- **Primary detection measure.** It is mandatory to report 100% of suspected climatic injury (heat or cold) (including near misses) on MySafety.
- **Secondary detection measure.** 100% of unit personnel compliance with mandatory training requirements (Module 1&2).
- **Assurance.** Ensure that 1LoDA is being conducted covering all areas of activity planning including climatic injury prevention iaw AP 8000.

Prevent And Manage Mandated action. All Commanders are mandated to ensure a positive culture to prevent climatic Injury by:

- Risk assessing and planning iaw JSP 375 Ch 41 and AP 8000.
- Identifying and managing personnel who are at increased risk of heat illness (Eg: Sickle Cell, under 18s etc).
- Following the direction and guidance in JSPs.
- Providing education and health messaging to their people.
- Reviewing climatic injury data at least twice a year.
- Discussing climatic injury cases and lessons at the unit FSSGs.
- Planning for climatic injury in operational plans.
- Ensuring all suspected cases and near misses of climatic injury are reported and investigated by SQEP personnel (UI or OSI) and then if required referred to the Defence Accident Investigation Branch (DAIB).
- Investigation reports must be uploaded to MySafety to improve learning across the RAF.

Methods of enhancing a climatic injury prevention culture.

- Ensure all commanders have access to Commander's Guide to Heat Illness Prevention.
- Ensure all personnel have access to Individuals Guide to Heat Illness.
- Ensure unit physical training instructors and other Service personnel understand risk assessments and mitigation strategies.
- Seeking additional operational and heat prevention planning advice from the relevant RAFSC Inspectors.

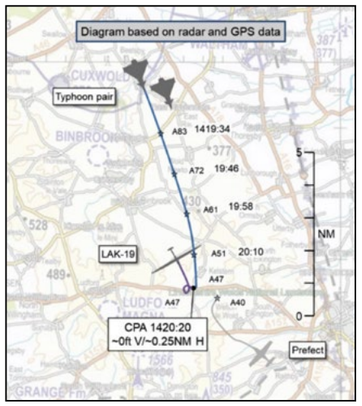
All Commanders are mandated to ensure their unit has robust detection and assurance mechanisms in place

TOP TIPS
From a discussions and analysis of reports, here are a few top tips. Don't forget to include these factors in dynamic risk assessments.

- Stress the importance of conducting Mandatory Heat Illness Prevention Training correctly and at the right level. Stay in date and read and engage with the package; don't just hit 'next' straight away on each screen.
- Conduct arduous training and fitness tests early in the morning. However, give personnel plenty of warning as many will have to deconflict school runs with their partners. And of course, give them an earlier than normal finish.
- When planning and conducting activities remember to look at all activities over a 4-hour period to ensure that work/rest rates are met.
- Conduct more physical training (PT) indoors and in swimming pools.
- On runs and physical training, reduce ambition: reduce the speed, conduct more water stops, reduce the weight load, remove any requirement to wear helmets and body armour.
- Ensure more recovery vehicles, medics and water jerrycans on arduous activity.
- Adjust dress codes when required by the MOMIDS forecast particularly when personnel are working outside for long periods (eg: Flight Line) and make sure that water is available close to the activity location.
- Don't get obsessed with the wet globe bulb temperature, it's just one factor in a risk analysis. Its very important in making a decision but can be mitigated against if there are sufficient heat injury prevention measures available.
- Remember that all personnel based in the UK and North Europe are classed as unacclimatised for the risk assessment, even after a period of prolonged hot weather.
- Consult safety or medical staff for advice when planning activity including BaU.
- As long as they are properly trained, empower junior commanders to make dynamic decisions. Ensure that they know they will be supported if they decide to cancel an activity before or during it.
- Above all: remember that the risk assessment is dynamic when an activity is being conducted. Adapt and change mitigation measures as the activity commences and the weather changes.If there is any doubt over the conditions, cancel the activity. It can always be done another day.

Airprox Highlights

With Comments from Wg Cdr Spry



Typhoon v LAK-19 Glider
29 Aug 2024
Airprox No. 2024227

The Typhoon Formation Pair Lead Pilot reported that, during recovery to Coningsby from the north, as the formation descended through a break in the cloud through approximately altitude 6,000ft, the Coningsby Approach controller called traffic, a Prefect at 3,000ft climbing. [The formation lead pilot] had sensor contact and reported that the formation wouldn't go below 5,000ft. On building further situational awareness and utilising the Helmet Mounted Symbology System (HMSS2) to get visual, the formation continued to descend as the Prefect passed low and to the left. At the same time, [the formation lead pilot] saw a glider, co-altitude, extremely close on the right side of the formation in what appeared to be a hard banked turn towards the formation. [The lead pilot] passed this information to [the No.2 pilot] (who was on the right in arrow) at the same time as [the No.2 pilot] was passing information on the Prefect's location to [the lead pilot]. [The No.2 pilot] was looking left throughout (both to maintain formation and to acquire the Prefect visually). However [the lead pilot] assessed that the glider was likely somewhere around 100-200ft away from [the No.2 aircraft] turning hard towards and likely passed directly behind. Shortly after this, the controller passed information on two further gliders within close proximity. One of these gliders passed low and close to the formation with both the glider pilot and [the lead pilot] acknowledging their presence with a wing rock.

The LAK-19 Pilot reported seeing 2 'jet fighters' at a range of about 1nm. It was difficult to assess their direction initially as their turn to port was indicated by the jet trail and their trajectory seemed to miss to the port. They assumed that they were 'being investigated' as the Typhoons turned towards them to run parallel rather than to their starboard, to avoid at the rear. It looked like they would pass at a lower altitude but they climbed to their level and, they think, veered starboard with little change in altitude. The glider pilot assumed that military pilots kept their eyes open and were 'checking them out' given their proximity to Coningsby airfield. They had received 3 similar proximities near other military airfields that they remembered over the last 30 years. They had the impression the Typhoons slowed down when abeam at their level so they gave them a wave but perhaps they were a little too far away and [too far] past to see; they couldn't identify a pilot. The glider pilot noted that they usually use [a common glider TAS] with ADS-B in but, on this occasion, it was inoperative (it has now been replaced) and they only had ADS-B out. They thought that perhaps they should change their assessment of risk ['None'] to 'High' if the Typhoon pilots hadn't seen them at some distance or even at all. The glider pilot made a slight turn to starboard [to increase separation] but there was very little time to take avoiding action.

The Coningsby Approach Controller reported they were bandboxed Director, Departures and LARS controlling positions. [The Typhoon formation pair] were pre-noted inbound as a visual recovery and were handed over from Swanwick Mil about 2NM southeast of Humberside Airport at FL120 on a south-easterly heading. As SOP, they were identified and placed under a Traffic Service on initial contact and were asked if they were in receipt of the latest [ATIS]. Having been pre-noted as a visual recovery, they were given the Coningsby QNH, own navigation and descent with responsibility for their own terrain separation. This was a standard recovery procedure at Coningsby.

At this point they had noticed there was an aircraft transponding 4272 (NMC) about 10NM southeast, manoeuvring slowly. With the expected turn of [the Typhoon formation pair] onto a southerly heading for recovery they deemed this particular track to be no factor and elected not to call Traffic Information. About 10NM south-southeast of [the Typhoon formation pair] there was an aircraft transponding intermittent Mode A (NMC), barely manoeuvring, and another track again south-southeast of [the Typhoon formation pair] at about 13NM transponding 7001, Mode C indicating 1,100ft, tracking northwest.

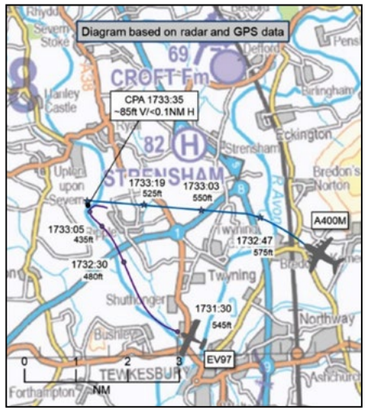
There were a further 2 non-squawking contacts also sighted on radar, about 15NM south-southwest and west-southwest of [the Typhoon formation pair]. During this time the controller was trying to deduce what this activity was with the aid of FLARM (located on the Supervisor's position 2 control consoles away). Moments later [a Prefect pilot] free-called Coningsby Zone with a low-level pull-up for general handling (GH) west of Louth by about 3NM. This aircraft was the aircraft previously squawking 7001, as mentioned before. The aircraft was identified, the pilot placed under a Traffic Service and was requested to confirm the altitude to which they were climbing. The pilot requested the block 3,000-10,000ft for GH. They were given the requested block on the Barnsley RPS, a reminder for own terrain separation and instructed to report 1min prior to completion. During this time [the Typhoon formation pair] had adopted a more southerly heading and were in confliction with [the Prefect] at a range of about 5NM.

At the time Traffic Information was passed to [the Typhoon formation pair] the controller believed their Mode C indicated 6,500ft descending, with the Prefect's Mode C indicating 3,400ft climbing; [the Typhoon formation pair] opted to stop descent at 5,000ft and when Traffic Information was passed to [the Prefect pilot] they stated they were visual with the traffic. Almost simultaneously a radio transmission from [one of the Typhoon formation pair] stated "Glider right". The controller recalled passing Traffic Information on traffic in their 6 o'clock at ½nm. This was believed to be the intermittent track that was previously mentioned. The controller stated that, in hindsight, and having had the opportunity to see a radar playback of the scenario, there was scope to pass Traffic Information on all of the potential conflictions which could have allowed the aircrew to be better situationally aware with them potentially opting not to descend through cloud. The controller believed that their thought process at the time was determined by the fact that the Prefect climbing and the Typhoons descending in close proximity was a higher risk of collision as both Mode C altitudes were known and they were on a converging heading. Whereas the aircraft transponding Mode A (NMC), was intermittent, stagnantly holding position, not manoeuvring aggressively towards and appeared to be a lower risk. Having to ensure that both parties (Typhoon and Prefect) received timely Traffic Information, they believed they cut short the opportunity to pass further Traffic Information to [the Typhoon formation pair] regarding the aircraft transponding Mode A (NMC).

For the full report, see Airprox No. 2024227 on the airprox board website.

Spry's Comment:

Following the introduction of Programme MARSHALL equipment, aircraft transmitting an ADS-B signal can be seen on the controller's screen. The data is not assured sufficiently for controlling purposes, but it could give an indication of gliders operating without transponders if the ADS-B signal is all that's present. Small radar cross-section aircraft such as this can be difficult to see on radar, especially at slow speeds, which is why the CAA encourages them to fit ADS-B devices. In this Airprox it's likely the Typhoon pilots wouldn't have minded a small re-route around the potential conflict, given the expectation of it being a glider and low likelihood of visual sighting, even with traffic information. Controllers should consider offering a vector around suspected aerial activities even if they can't provide lateral and vertical information. □



A400M v EV97
14 Aug 24
Airprox No. 2024207

The A400M Pilot reported that shortly after entering low-level to the north of Gloucester ATZ heading west they had called Gloucester App on 128.555MHz to give an information call of their intention to route north abeam the field at low-level. ATC informed them that there was no traffic in their vicinity and all aircraft under Gloucester control had been inside the Gloucester ATZ. Shortly after heading west at 270kts between 250-300ft AGL the A400M Captain, the non-handling pilot, saw a light civil aircraft pass within 0.5NM, on a reciprocal heading, approximately 100ft below their flight path. The aircraft was spotted passing briefly in their 9 o'clock, before going behind the wing and out of sight. The aircraft was white with blue markings and appeared to be flying 100ft below their flight path. No avoiding action was taken as the aircraft was only spotted as it passed abeam and below. At the time of the incident there had been 5 personnel on the flight deck. 3 pilots and 2 x ALMs. The Captain was the only person to observe the aircraft, because the civil aircraft would have been behind the aircraft instruments for all other crew members. No TCAS indications were observed at any time and no information calls were heard on 130.490MHz. Before walking for the sortie, no CADS conflictions were observed in this area, or late warnings notified. The A400M was on time on its CADS routeing with no known traffic in the area. This report highlights that comprehensive lookout is always required. Although no avoiding action was needed in this instance, there would have been time to react if the aircraft vectors had resulted in a closure.

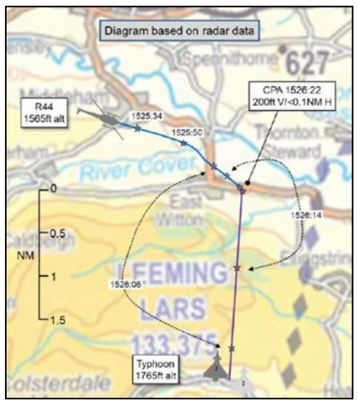
The EV97 Pilot reported that they had been in level final (but low-level at ~580ft) cruise heading northnorthwest from Tewkesbury following (approximately) the river Severn direction with the intention of joining circuit height and landing back at [destination airfield]. They observed a large RAF aircraft on their right (heading west), they believe it passed Bredon Hill on the north side at a similar low-level height although they had been above the horizon so was slightly higher, they appeared potentially to be on a converging path. The aircraft was approximately 3-4km away. The EV97 pilot assessed the situation for a few seconds (probably around 3 sec) and decided to break immediately right and descend to increase separation, they continued turning right so [they] could observe the other aircraft pass well clear. Once verified [that] the other aircraft had been well clear, they adjusted their height back to approximately 580ft and continued north. They did not encounter any wake or turbulence from the other aircraft. At this point they decided not to land straight away (as originally planned), and flew north around the local area for a further approximately 20min before landing back at [destination airfield]. No [specific] planning regarding potential Airprox concerns or hotspots [had been undertaken], but the route the RAF aircraft took was considered not a normal regular route for this type of aircraft. However, the EV97 pilot notes that they are familiar with this type of aircraft very occasionally passing through this area at this type of altitude but from other directions. They had been listening on SafetyCom (135.480MHz) and had been planning to join [destination airfield] circuit for landing. They [recall that] they had made clear and positive avoidance action and believed there was no further concern. The EV97 pilot notes that with respect to their EC equipment they cannot confirm if the [EC equipment] volume was on. They did not have their display screen with them during the flight as they had been on a local flight.

The Gloucester Controller reported that Gloucester ATSU was made aware of this Airprox by the Captain of the A400M the following day. They advised that they had already left the Gloucester frequency at the time of the Airprox. As the aircraft was not on their frequency, it was in Class G airspace and Gloucester did not speak to any aircraft that could potentially have been the other aircraft, they were not intending to file an MOR or carry out an investigation.

For the full report, see Airprox No. 2024207 on the airprox board website.

Spry's Comment:

While the use of LL Common has been promoted across both the military and civilian aviation communities it's important to remember that its use is not ubiquitous. This may be through a lack of knowledge or due to managing competing demands with a limited equipment fit. The Atlas crew were using LL Common but the EV97 pilot was unable to monitor two frequencies and had sensibly selected the in-use frequency at their destination airfield (Safety Common). While there are a variety of ways to improve SA on potentially conflicting traffic, such as CADS, electronic conspicuity and LL Common, none of them represent a silver bullet and an effective lookout remains key to preventing MAC. ■



R44 v Typhoon
17 Oct 24
Airprox No. 2024265

The R44 Pilot reported that they were transiting northbound to Wensleydale and before they descended into it they gained visual with a single [Typhoon]. Being aware of military fast jets, the R44 pilot had asked Leeming if there were any more movements in that area. They had said there was nothing further to report. The descent into Wensleydale had been fine and they had continued the flight. It was not until they were at Middleham that Leeming [notified them of] an aircraft [to their] right. In that split second of processing the R/T transmission the R44 pilot had looked to their right to see two fast jets on an immediate collision course. The R44 pilot's immediate concern was not just the collision it was wake turbulence as they were in a small helicopter that could have been fatal had they not immediately reacted by lowering the collective and [taking] a 90° turn to the south. The pilot reported that they didn't feel any wake turbulence but put that down to their immediate reaction. The rest of the flight had been uneventful. They flew back to [destination airfield] with their passenger highly shaken by the incident.

The Typhoon Pilot reported that [formation C/S] had been in receipt of a Traffic Service from Leeming Approach for their entry to low-level approximately 8 miles southwest of Leeming. Following cloud break with Leeming App, with no reported traffic, [formation C/S] switched to enroute at 1525:00. At 1525:40, the formation leader made a call on low-level common frequency stating that the formation was entering low-level at the Appleby valley at 500ft MSD. At this time the formation was 4-5NM south of the Appleby valley entry. Whilst flying north prior to reaching the Appleby valley, a lead change was made with the No.2 pilot taking over the tactical lead. As the No.2 moved from fighting wing to overtake the leader on the left, at 1526:20, the No.2 pilot saw a small civilian helicopter in their 11 o'clock, around 200ft below. The estimated range was between 1 and 2NM.

The Typhoon formation was between 1,200ft and 1,500ft AGL. The formation No.2 pilot manoeuvred right to increase separation with the helicopter and to signal that they were visual. After the manoeuvre away, the formation then turned left to follow the valley west. This incident occurred mid-afternoon in autumn skies, largely broken/overcast. The helicopter appeared to be a dark blue colour and was not seen whilst the formation was descending and reforming, despite radar sanitisation, no track was detected by either formation member. Against a very dark background below the horizon and with a lower line of sight rate across the ground, [the helicopter] was not visible. It was not until the formation No.2 pilot came closer to the level of the helicopter that it was acquired visually as it moved up toward the horizon line. Whilst the formation No.2 pilot moved to take the lead, their lookout was divided between maintaining separation from the formation No.1 on their right hand side, and clearing ahead and left. The formation No.2 pilot did not assess there to be a collision risk but manoeuvred away to maintain as much separation as possible. The formation No.1 pilot saw the helicopter when the formation No.2 pilot had initiated their wing flash.

The Leeming Zone Controller reported that they had returned to work and had been asked to complete a DASOR because a civilian helicopter that they had been working at the time had filed an Airprox regarding a pair of Typhoons. What [the controller] recalls from the event is as follows: they remember the Approach controller working the Typhoons and sending them enroute once they became VMC below. The controller had been working a civilian helicopter to the west of Leeming. They remember calling the Typhoons to the helicopter pilot once there had been a [potential] risk of collision, as the helicopter pilot had been under a Basic Service. The helicopter pilot had then called visual with the pair of Typhoons and went enroute shortly afterwards. The leeming Approach Controller reported that they were informed that an Airprox had [been reported] on 17 Oct 24 whilst they had been on console as the Radar Approach (RA) controller. They did recollect the incident well as the formation, no longer on their frequency, tracked towards a GA aircraft under the control of Leeming Zone. The Approach controller had taken a handover of the Typhoon formation for low-level to the west of Leeming. At approximately 15NM to the southwest, [formation C/S] stated that they were VMC and happy to go enroute. The Approach controller passed the RPS for the hour, stated that they could either contact [Leeming] or Swanwick(Mil) for their RTB transit and allowed them to change enroute, tracking west (approximately 280°) towards their low-level entry point.

An R44 was due-north of the formation by approximately 7NM tracking 100°. The Approach controller did not pass Traffic Information to the formation as their speed, track and diverging heading indicated that Traffic Information would have been irrelevant. The Approach controller then watched the formation carry out a sharp 90° turn to the north towards the R44 (also being worked by Leeming) now approximately 5NM away. Becoming extremely concerned with the track, level and proximity, the Approach controller transmitted blind, three

times, to re-establish comms with the formation as they had tracked towards it at the same level. The Approach controller pointed out the issue to the Supervisor who instructed the Zone controller to call the Typhoons to the R44 pilot, resulting in them becoming visual with the formation. To [the Approach controller's] recollection, no Airprox was declared on frequency by the R44 pilot.

The Leeming Supervisor reported that the civil aircraft had been working RAF Leeming Zone at the time of the reported Airprox with the pair of Typhoons being worked by Leeming Approach. The Typhoons were performing a low-level let down with the Approach controller. They stated that they were VMC and happy to go enroute. The Leeming Approach controller had then sent them enroute. Shortly after this, the Approach controller witnessed the aircraft make a sharp turn in the direction of the civil aircraft working with Zone. There were a number of blind calls put out [on the Approach frequency] to get in touch with the Typhoons with no luck.

For the full report, see Airprox No. 2024265 on the airprox board website.

Spry's Comment:

LL Common seemed a sensible choice when heading West into LL, but a last-minute heading change to the North after dropping the radar service denied SA on the R44. GA below 3,000' are the most common group of aircraft involved in Airprox, and the speeds at which military aircraft travel can make small GA aircraft very difficult to spot. Lack of SA on the other aircraft is also the most common contributory factor in Airprox. In this case Leeming was well within radar and comms range. The lesson for others here is simple; obtain a LARS where practicable. LL Common is available for when LARS isn't.

Safety Contacts:

Group / Station / Unit	Flight Safety Officers	Health, Safety and Environmental Protection Advisors
1Gp	01494 495454	-
2Gp	01494 495049	-
11Gp	0300 165 7695	-
22Gp	0300 1540 190	-
Air Support	Skype number - S4B +443001516899	-
BM	95760 3230	
JHC	01264 381526	-
Test & Evaluation (ASWC)	01522 727743	-
1 ACC	01522 603359	-
2 FTS	01400 264522	01400 264551
3 FTS	01400 267536	-
4 FTS	01407 762241 6666	-
6 FTS	01400 266944	-
Air Cadets (RAFAC)	-	01400 267817
Boulmer	01665 607325	01665 607282 / 7289
Benson	01491 837766 6666 / 7525	01491 827109 / 7254
MOD Boscombe Down	01980 662087	01980 662312
Brize Norton	01993 895764 / 6666	01993 895525 / 7062
Coningsby	01526 346666	01526 347256 / 7196
Cosford	01902 704037	01903 37472 / 237
Cranwell	01400 266666	01400 267469 / 7498
Defence Geographic Centre	0208 8182816	94641 4816
Fylingdales	-	01751 467216
Halton	01296 656666	01296 656640
Henlow	01462 851515 6150	01462 857604
High Wycombe	01494 494454	01494 496489 / 5094
Honington	01359 236069	01359 237782 / 7516
Swanwick	01489 612082	-
Leeming	01677 456666	01677 457637 / 7231
Leuchars	01334 856666	-
Lossiemouth	01343 816666 / 7714	01343 817796 / 7697
Lynham	-	01189 763532
Marham	01760 337261 6666	01760 337595 / 7199
No1 AIDU	02082 105344	-
Northolt	020 8833 8571	02088 338319 / 38521
Odiham	01256 702134 6666 / 6724	01256 702134 7650 / 7733
Scampton	01522 733053	01522 733325 / 3137
Shawbury	01939 250351 6666	01939 250351 7529 / 7559
Spadeadam	-	01697 749204
St Athan	01446 798394	01446 797426 / 8250
St Mawgan	01637 857380/95423 7380	01637 857162
Syerston	01400 264522	01400 264551
Tactical Supply Wing	95461 7177	-
Valley	01407 762241 6666	01407 767800 / 7685
Waddington	01522 726666	03001684954
Wittering	01780 416377	01780 417611
Woodvale	01704 872287 x 7306	
Wyton	01480 52451 7554 / 7146	-
Overseas Flight Safety Contacts	**Telephone**	**Email**
Al Udeid	9250 060 451 3043	83EAG-DepFSO@mod.gov.uk
Ascension	00247 63307	BFSAI-ASCOpsOC@mod.gov.uk
Akrotiri	94120 6666	BFC-Aki-Safety-AssuranceSFSO@mod.gov.uk
83 EAG	9250 060 451 3050	83EAG-AIROPSFSO@mod.gov.uk
Gibraltar	9231 98531 3365	GIB-RAF-ASM@mod.gov.uk
MPA	00500 75490 or 94130 5490	BFSAI-AirOpsWg-ASM@mod.gov.uk
Tactical Leadership Programme	0034 967 598527	aa3@tlp-info.org
Naval Air Station Jacksonville	001 904 542 4738	-

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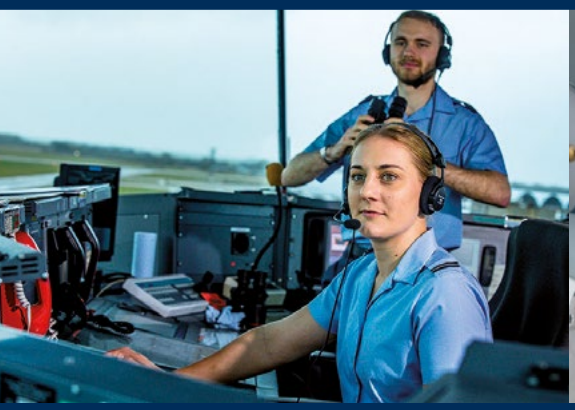

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