



National
Defence

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Flight Comment



ISSUE 1, 2024

CHECK SIX

Tolerated Disobedience?

DOSSIER

Accountability and Flight Safety

LESSONS LEARNED

Dangers of Recency Bias

Canada

Cover – 2023 CAF Imagery Contest Winner for Military Operations – Corporal Connor Bennett.



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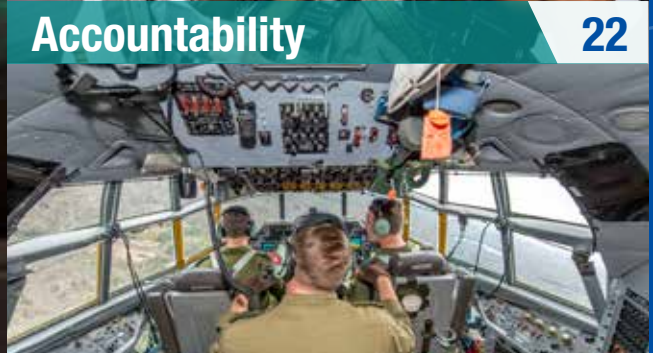
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Photo: Sgt Marc-André Gaudreault



Photo: Avr Annabelle Marcoux

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Views on Flight Safety

by LGen Eric Kenny

LGen Kenny joined the Canadian Armed Forces in 1989. After training, instructing and deploying as a fighter pilot on the CF-188 Hornet, he became Commander of 4 Wing Cold Lake in 2014 and was deployed as Commander of the Air Task Force – Iraq in Kuwait between October 2014 and April 2015. He went on to be Deputy Commander Force Generation at 1 Canadian Air Division in Winnipeg in 2016, Director General of Air Readiness at Headquarters Royal Canadian Air Force in Ottawa in 2018, and Commander of 1 Canadian Air Division/Canadian NORAD Region in July 2020. On 12 August 2022, he became the Commander of the Royal Canadian Air Force.

As we transition into our second century as an RCAF, it is imperative that we evolve our culture to strengthen our alignment with the principles of Just Culture, where accountability for mistakes enables group learning and continual improvement. This commitment to excellence applies to all aspects of our team performance, whether in flight, on the ground, or after hours in our team social settings. It demands a delicate balance between fostering an environment

that encourages open communication, learning, and growth, while holding individuals accountable for their actions.

Aviation is an inherently complex domain where split-second decisions and teamwork are vital for success. Our responsibility as aviators goes beyond mere execution – it extends to creating an atmosphere where individuals feel safe to report errors, share insights, and engage in continuous improvement without fear of retribution.

Accountability is the cornerstone of a Just Culture, and we must hold ourselves to the highest standards. However, we must also recognize that errors and unexpected challenges are inherent to the nature of our work. Embracing a Just Culture acknowledges that not every mistake is a failure, but an opportunity to learn, adapt, and bolster our Flight Safety Program.

In our pursuit of aviation excellence, we must differentiate between honest mistakes, systemic issues, reckless behaviours, and willful negligence. Encouraging a Just Culture means acknowledging the nuances of each situation, fostering an environment where individuals feel comfortable reporting incidents, and focusing on improvements.

As leaders, it is our duty to set the tone. We must actively promote transparency, encourage open communication, and exemplify the principles of a Just Culture in our decision-making processes. When necessary, leaders must also ensure that corrective action or disciplinary measures are taken against people who willfully engage in negligent behaviours and risk harm to the team.

By embracing a Just Culture, we create a framework where individuals are not only responsible for their actions, but are also empowered to actively contribute to the success of our Flight Safety Program. 🔥



The Editor's Corner

by Maj Jill Sicard

Welcome back from the holiday season! Let's strap in and get down to Flight Safety business.

We have and continue to discuss an array of issues in *Flight Comment* because aviation, more specifically, military aviation is such a vast concept, but we try to break it down a bit so as not to unload the firehose of information on our dear readers all at once. This quarter our focus is on the delicate balance of accountability and forward thinking required in Flight Safety.

From the seasoned pilot in the cockpit to the ground crew meticulously maintaining the aircraft, everyone plays a crucial role in fostering a culture of accountability. Acknowledging mistakes, learning from them, and implementing changes to prevent recurrence, while also anticipating and preparing for future challenges, is a vital skill. We must challenge the status quo, question assumptions, and constantly seek ways to enhance safety standards.

As you'll read in our Check Six and Dossier sections, where the skies serve as both a workplace and a battleground, the importance of Flight Safety cannot be overstated. From WW2 to the present day, we examine the RCAF "culture" and how it differs from other military entities. Are we willfully disobedient when it comes to regulations, or is there a good reason behind our actions? Is it time for us to become more accountable for our actions, or does the system work like a well oiled machine?

The Flight Surgeon feature navigates through the complexities of spatial disorientation (reprinted from the RAF "Air Clues" magazine), shedding light on the physiological and psychological factors contributing to this phenomenon. By understanding the challenges posed by disorientation, we aim to underscore the significance of training, technology, and a vigilant mindset to gain insight and education surrounding this experience.

There are three lessons learned articles that discuss distraction and the thankfully minor consequences that ensued. More importantly, every incident, every near-miss, and every

triumph, (including the three awards presented throughout, to our outstanding members) contributes to a collective knowledge bank that propels our culture forward. By learning from the past, we empower ourselves to anticipate challenges and think outside the box to keep safety as our priority while being successful in our missions.

You will notice there is a new section called "a Day in the Life of..." where we will interview fellow Flight Safety enthusiasts around the nation and see what makes them tick, what works and what doesn't in terms of FS. It's a great chance to get to know your fellow members and get to know "our" world a bit better. In this issue, we are interviewing 19 Wg Flight Safety Officer.

Our back page features a fun little crossword to complete, and for the first ten submissions to us (with the correct answers), you will receive a cool piece of new swag from our promotional items! Now sit back and enjoy your Flight Comment! ♠



Photo: cpl Charles Audet

Good Show

For Excellence in Flight Safety

Sergent Jacques Rémillard

During a significant incident in March 2021, Sgt Jacques Rémillard served as the Loadmaster on a trainer conducting a series of proficiency flights, followed by Search and Rescue (SAR) training. As the transition to the SAR phase occurred, a decision was made to perform a touch-and-go check to expedite proceedings, contrary to Aircraft Operating Instructions (AOIs). This decision inadvertently left the pressurization in AUTO during takeoff and climb-out. The consequences were dire—cabin pressure surged during the performance takeoff and climb, leading to the right-hand SAR window being blown out of the aircraft. The rapid decompression resulted in minor injuries to one crew member and a major shock to all. Thankfully, no crew members were near the window as it exited the aircraft.

A subsequent Flight Safety investigation unveiled underreported accidental pressurization incidents during SAR training at lower altitudes, where pressurization is typically not considered, often leading these incidents to go unnoticed.

Fast forward to March 2023, Sgt Rémillard was tasked with a demanding search mission. Amidst crew rotations and high fatigue levels, his drive and attention to detail emerged as crucial assets. Sixteen hours into his shift while en route, Sgt Rémillard conducted additional checks of the cargo compartment to combat fatigue. His determination and professionalism led to an impending catastrophic discovery—as he stood in the SAR window, he noticed the locks had loosened due to pressurization. He immediately alerted the cockpit, preventing the potential for another blowout and averting a dangerous situation.



Photo: MCpl Eric Greico

The vigilance exhibited by Sgt Rémillard not only prevented potential damage and loss of life but also exemplified his commitment to Flight Safety. His acute awareness of aircraft systems, coupled with a thorough understanding of potential risks, showcases his exceptional expertise and dedication. For these reasons, he is highly deserving of the *Good Show* Award. 🏆

For Professionalism

For Commendable Performance in Flight Safety

Corporal Ian Hauser

On the morning of the occurrence, Cpl Hauser was a Flight Engineer Under Training and was preparing CC-130336 for flight. During his pre-flight inspection, he focused on the nose landing gear (NLG) doors, checking for correct rigging as instructed by the AOI's. While examining the aft NLG door, he noticed excessive play and looseness compared to other aircraft.

This was his first time on the aircraft since its return to Trenton, he sought the expertise and advice of both his instructor and AVN Tech subject matter experts. Not satisfied with the answers, he decided to investigate on his own, consulting the maintenance history and illustrated parts diagram to confirm the correct assembly.

Cpl Hauser discovered that the aft NLG door was missing two structural cross braces, crucial for providing lateral support and stiffness to the door and retraction mechanism. It was determined that the door had been removed during contracted maintenance in April 2021. The aircraft underwent several inspections by qualified personnel in September 2021 before delivery to 424 Sqn where it flew until June 2022. It was then transferred to 435 Sqn until early 2023, and subsequently returned to 424 Sqn, when Cpl Hauser finally detected the missing parts.



Photo: unknown

Between Spring 2021 and early 2023, aircraft 336 underwent every level of maintenance inspection. Shockingly, no one discovered the missing braces. Although no actual maintenance was conducted on the aft NLG door, it was regularly inspected visually.

Cpl Hauser's meticulous attention to detail, situational awareness, and extensive technical knowledge as a previously qualified

CC-130H AVN Tech and Flight Engineer not only aided him in discovering this anomaly but also guided him in understanding the root cause. Had the aircraft continued to fly, structural failure of the aft NLG door could have occurred, potentially damaging the aircraft and causing harm to personnel on the ground. For these compelling reasons, Cpl Hauser is very deserving of the *For Professionalism Award*. 🏆



From the
Flight Surgeon

An Insight into Aircrew Disorientation— an analysis of UK military aircrew disorientation incidents 2018–2021

by Tracy Grimshaw at QinetiQ

reprinted with kind approval from Issue 41 of Royal Air Force "Air Clues"

Spatial disorientation in flight is a risk to flight safety. In order to ensure appropriate training and education strategies are in place, it is important to understand the factors that contribute to disorientation in military flight.

What is disorientation?

Occasions in flight where you have become confused about the attitude, height, or position of your aircraft. Or worse, you have suddenly realized that the aircraft attitude, height, or position was not what you had expected it to be.

What is it about the flight environment that makes you susceptible to disorientation?

During flight there are three main factors that contribute to a false sense of perception of aircraft orientation. Misleading or falsely reassuring information from these sources, combined with distraction either inside the cockpit or from events outside the aircraft, can lead to a potentially lethal disorientation:

1. **Visual misinformation:** It is common to see what is expected (or wanted), rather than what is actually there, and

even more so during flight with many competing demands.

2. **The force environment:** during flight, human physiology means that you can "feel" the same sense of gravity whether accelerating, decelerating or in level flight, and your aircraft may feel "pitched up" even when flying straight and level.
3. **The sense of rotation:** slow rates of roll are undetected by the balance organ of the inner ear, or readily disregarded if there is no gravitational sense of being tilted. This can lead to unintentional overbanking.

Understanding UK military aircrew disorientation

The Disorientation Incident Survey (DIS) has been conducted regularly for the MOD since 2004 to collect anonymous military aircrew descriptions of their experiences of disorientation. The purpose of the survey is to help understand the factors contributing to aircrew disorientation in the UK military. The respondents are asked to rate the risk to flight safety of each incident they report, and the incidents are analyzed to assess the factors contributing to disorientation. The survey was conducted most recently in 2021, collecting incidents across the three-year period from 2018.

The results show that SD continues to present a challenge to aircrew. A total of 68 disorientation incidents were reported in the three-year period 2018–2021 (with 528 respondents stating that they had not experienced a relevant incident in the time period requested). Of these, 20 were fast jet, 41 rotary wing and seven multi-engine. Most of these had not been reported as DASORs through ASIMS.

This article shares some of the common factors and circumstances that resulted in a loss of orientation, using descriptions from pilots in their own words (in italics).

Roll attitude uncertainty

Slow rates of roll or turn are not detected by our inner ear. The leans, a sometimes powerful sensation that the bank angle is not as indicated on the Attitude Indicator, were frequently reported, particularly when flying in degraded visual environments such as in cloud, at night or in close formation. For example, a Hawk non-handling pilot described experiencing the leans conducting an approach to an airfield in thick cloud as part of a pairs approach:

"During our descent, I was sure that we were in an accelerating left-hand turn that was tightening. However, we were descending



Photo: Capt Andrew Jakubaitis

straight. We were descending through thick cloud with heavy precipitation". Another report, this time by a Merlin pilot, provides a typical example of how the leans can arise in cloud during turning manoeuvres, then rapidly dissipate once visual references are regained:

"Conducting IF [Instrument Flying] practice with Instructor in IF Actual conditions. Due to loss of the horizon and lack of concentration, I gave myself the 'Leans.' This was due to conducting various turning manoeuvres with no reference to a horizon. I became aware of the problem after a few minutes, alerted the instructor and we then exited IF Actual conditions.

The 'Leans' then dissipated quickly once we were in VMC."

For fast jet aircrew, air-to-air refuelling (AAR) continues to provide a challenging environment for disorientation, with a combination of visual and force conditions creating attitude uncertainty for many aircrew. Many incidents occurred in cloud when few other visual cues were available, sometimes due to the view of

the dihedral wing of the tanker aircraft or cloud structures creating a false sense of horizon, as shown by this report from a Typhoon pilot:

"Intermittent IMC [Instrument Meteorological Conditions] poor horizons AAR, plugged in taking fuel. Misleading visual indications HUD reference vs. Voyager dihedral, cloud structure and AOB [Angle of Bank] during turn. All felt wrong, convinced I was straight and level. Took significant will power to read instruments and confirm AOB."

In another incident, the Typhoon pilot was unable to maintain close echelon formation on the tanker in IMC and degraded visual environment (DVE) and had to break away:

"It was 0.7 millilux, night, IMC at FL240, maintaining echelon right on the Voyager tanker waiting for my wingman to finish tanking. The tanker was in a left-hand turn and called 'rolling out'.

I matched the roll-out rate but did not maintain co-plane, resulting in me being high

on the tanker references. I perceived I was too far away and began to correct towards the tanker. At this point the silhouette of the tanker was barely visible and the lights stood out. The lights did not correct as I anticipated because I was high and unaware of this. I began to feel like the tanker was turning towards me although it was straight and level. I began to climb and roll away from the tanker but this confused me more, I could not make the outside mental model that I had to match what was going on in the real world. Eventually, I felt disorientated to the point that I initiated a break away high and right from the tanker."

This shows how the lights of the tanker against the dark visual environment can lead to confusion around what is expected to be seen, and what is actually there, leading to disorientation.

Continued on next page



Air combat

Combat or missile evasion manoeuvres operate at the limits of the procedural envelope and increase the scope for distraction and disorientation. Some descriptions highlighted the risk of developing an unusual position during such manoeuvres, for example, this Hawk pilot described a perception of being upright whilst actually inverted, due to the visual scene:

"1v1 air combat with altostratus layer of cloud at approx 16,000 ft AMSL, no cloud below. Base height was 10,000 ft. As I pulled up into a vertical merge and was subsequently upside down at approx 15,500 ft, with the cloud layer being ABOVE me, it suddenly felt I was the correct way round at just above base height, even though I could feel I was upside down. The lack of cloud below me, over a blue sea and with the cloud being so high gave the illusion of the aircraft being the correct way up at 10,500 ft with the clear sky above me. I transferred to instruments until my orientation was sorted."

Deck Manoeuvres

There were several reports of disorientation during deck landings and take-off for rotary aircraft, and lessons from these rotary incidents can be learned for future F-35 deck operations. Disorientation often centred around low light levels, lack of horizon and the movement of the ship.

This combination can lead to misinterpretation of the landing area; one Merlin pilot described

landing in low-light conditions, becoming confused around the image of the landing site:

"Very dark night approach to T23. Zero ephemeral lighting, complete cloud cover, nil moonlight or starlight, no horizon, sea state 4. Depth perception reduces massively in this scenario and it is very hard to gauge closing speed or height while looking out at the Ship and the Glide Path Indicator. Approach became very slow and at one point, closing speed was pretty much zero and I was slowly climbing rather than descending. With the Ship rolling about but no references around it to correlate it to, you are looking at a dim light in total darkness. Approach and landing was completed, albeit much slower than normal and was not a comfortable experience at all."

A similar incident, also a Merlin pilot, shows again how it can be easy to misinterpret lights set against a dark background:

"During a Night (Conventional) Deck Re-Famil sortie in very low light conditions, nil discernible horizon. During approach to the ship due to fixating on the wrong green light as a GPI [Glide Path Indicator] I incorrectly interpreted the orientation of the ship and therefore the aircraft's relative attitude and position."

In the final stages of the approach, I discovered by looking in at my instruments that I was disorientated, I re-orientated based on the instruments and landed without incident."

This pilot had based his judgment of his orientation on the image that he expected to see, by focussing on the incorrect light, leading to uncertainty around his aircraft position.

Distraction

Distraction is a factor in 50% of disorientation accidents, this is also reflected in the incident reports from the survey. Distraction was often the result of an in-cockpit task or a preoccupation with something outside the aircraft, such as the lead aircraft or a ground target. Some errors were small (though still critical), others more extreme; distraction combined with visual misperception and manoeuvres can cause severe disorientation. One Typhoon pilot described conducting beyond visual range training at night, and how distraction led to an unusual attitude:

"Conducting a hard turn at night while conducting 4vX A/A BVR training. Very low illum night with no horizon. Fixated on my radar scope while manoeuvring. When I looked up into my HUD, my aircraft attitude was significantly different than what I had



Photo: Sgt Robert Bottrill

initially perceived. I executed my UA drills and recovered the aircraft to level flight."

This was described by the pilot as a significant risk to flight safety (but was not reported as a DASOR) and is an example of how the force environment in flight can be deceptive. The change in the angle of the aircraft was not noticed by the pilot as it was a sub-threshold manoeuvre and, alongside distraction, this can create a high-risk situation.

The following Apache incident shows how quickly attitude errors can occur when distracted by focussing on in-cockpit tasks:

"During IF GH IMC in a turn 'heads' in went 'heads out' and realized the pilot had turned the aircraft 30 degrees AoB without picking it up."

In another description by a C-17 pilot, focussing on an in-cockpit task resulted in the perception that the road was the horizon. The description highlights that low workload and low arousal can also play a role in disorientation:

"Dark, clear night, good visibility. Stars in sky, line of streetlamps on the ground following the main road in a landscape which was otherwise generally dark. Aircraft in cruise, wings level, 25,000 ft, autopilot/throttle engaged. I looked up from a document and

my perception was that the road was the horizon. The road ran approximately 4 o'clock to 11 o'clock in my vision, so the aircraft would have to have been at a significant angle of bank for this to make sense. Looking away, or at the flight instruments, did not immediately clear the illusion—I visually searched for and found a reference on the actual horizon, at which point my brain made sense of the situation again.

Fatigue and monotony could have been factors."

ASIMS (equivalent to FSIMS)

Only four of the 68 incidents reported in the survey had been reported as DASORs through ASIMS. It is unclear why the other 64 DIS incidents were not reported through ASIMS, but it highlights that ASIMS should not be relied upon to accurately reflect the number of disorientation incidents that occur. It also shows the importance of maintaining anonymity in the DIS, as this may encourage free reporting of disorientation incidents.

Key lessons

There are several key takeaway lessons from the results of the surveys;

- » Disorientation is insidious—the most dangerous situations are those in which

the pilot thinks the aircraft attitude has not changed when, in fact, it has.

- » Distraction, either in-cockpit or external to the aircraft, plays a critical role in disorientation incidents. Be aware when focussing heads-in or on a single external point that disorientation can occur quickly.
- » In a degraded visual environment, the pilot's judgment of orientation is less reliable than the aircraft instruments—use them. The instrument cross-check is to confirm that you are working properly, not the instruments.
- » Be alert to manoeuvres in which small errors in aircraft attitude can have significant consequences (e.g., over-banking at low level).
- » In the event of experiencing strong disorientation and struggling to establish control of the aircraft, transfer to instruments and regain safe flight.

Finally—most disorientation is a normal response to the flight environment. It is important that you share your experiences both with colleagues and through reporting systems, so that aircrew can learn from one another and improve flight safety. 🔥

Special Series:

A DAY IN THE LIFE OF...



19 Wing Flight Safety Officer

by Maj Jill Sicard

On 22 Jan, 2024, I sat down (and walked around) with Major Dennis Scharf to discuss Flight Safety at 19 Wg, his role within the base and how Flight Safety plays a role in the day-to day activities at the units. We started the morning off with some interview type questions which you will read below and ended the day with a tour with all the Flight Safety Officers around the base and discussed the modern Flight Safety Culture along with current issues at all levels.

In this installment of our new column, "A Day in the Life of," we delve into the experiences and insights of individuals holding pivotal roles within the Canadian Armed Forces Flight Safety culture. Today, we engage in a conversation with Major Dennis Scharf, the Wing Flight Safety Officer at 19 Wing, as he candidly shares his journey, confronts challenges, and offers perspectives on the intricate world of Flight Safety.

Interviewer (Maj Sicard):
How long have you served as the WFSO at 19 Wg?

Maj Scharf: I've been in this role for approximately 4.5 years, following a 24-year tenure in Winnipeg, where my foray into Flight Safety commenced as the Human Performance Military Aviation (HPMA) flight commander at CFS (Central Flying School).

Maj Sicard: **Did you actively engage in Flight Safety (FS) during your time in Winnipeg, or when did your involvement with FS commence?**

Maj Scharf: No, my initial exposure to Flight Safety occurred at CFS, where I attended the Flight Safety course in 2006. This laid the groundwork for both my work in HPMA (so I could have access to occurrences and trends) and my current position as the Wing Flight Safety Officer.

Maj Sicard: **What educational background would you recommend for a role at the Wing level, such as yours?**

Maj Scharf: It's less about formal education and more about possessing specific personality traits and ambition. Key

attributes include motivation, a genuine interest in Flight Safety, and the ability to communicate effectively while building crucial relationships.

Maj Sicard: **Do you believe the FS course adequately prepared you for your current position?**

Maj Scharf: Yes, it provides a valuable foundation, but there is room for enhancement. The course primarily focuses on high-level investigations and I found personally, it only touches on day-to-day activities at the unit level because we now find those members who have completed the course come back to the units and are a bit lost with how it works at unit levels. To address this gap, we've instituted training and standards sessions.

Maj Sicard: **can you expand on that a bit?**

Maj Scharf: Certainly. Here at 19 Wg we hold training days bi-annually, where we gather all the different unit FS personnel on base, we review all items we observe within the last six months and provide it along with minutes from the training for reference, so we are all on the same page. I have found it normally takes new personnel up to 6 months

to be able to perform the duty by themselves which is quite long considering it a challenge to keep personnel in the position for more than 18 months. At one point WFSO staff were coaching and guiding people more often than performing our tasks, which is why we created this Training and Standards Workshop, it streamlines and speeds up the process.

Maj Sicard: What motivated you to pursue a position in FS?

Maj Scharf: In the current climate of systemic issues in the CAF, Flight Safety offers a tangible avenue to effect positive change. It serves as a platform for personnel encountering roadblocks to voice their concerns through HAZREPS or Occurrence reports.

Maj Sicard: How do you navigate the reporting process, and what challenges exist in preventative measures (PMs)?

Maj Scharf: Challenges arise with PMs being withheld, or they are stagnated somewhere within the levels of review, we have found that we used to keep pushing and holding off in order to help the system a bit but now it is becoming more necessary to allow some to become overdue to accurately reflect the prevailing circumstances. Having said that, through FS, we can put a bit of pressure on the proper authorities and tend to get more results than other avenues.

Maj Sicard: How do you stay well-informed of the latest regulations and practices?

Maj Scharf: Regular meetings and collaboration with units, coupled with active participation in investigations, keep us well-informed. Augmenting at 442 provides valuable firsthand experience which not all WFSOs have the privilege to do so I definitely feel fortunate in that aspect.



Photo: Maj Jill Sicard

Maj Sicard: What would you identify as the best and worst aspects of your role?

Maj Scharf: The most rewarding aspect is engaging with individuals and effecting positive changes. I could spend all day conversing with people, I find it's the best way to learn new things and keep up to date with what's going on around the base. On the flip side, I would say I have not seen a "worst" part of my job, however if I had to pick something, the administrative paperwork, while a necessary component, is time consuming and can be frustrating.

Maj Sicard: Can you recall a FS incident that stands out?

Maj Scharf: I can think of many! We have had propeller and elevator trim issues on the Aurora, while present maintenance challenges and the post-COVID shortage of technicians, are significant concerns today.

Maj Sicard: So, due to the shortage among other things, do you think we have a high potential to see a rising trend in Flight Safety issues concerning maintenance?

Maj Scharf: Absolutely, due to the recent rise, we pulled together both 407 and 442 UFSOs, SAMEOs, and SAMs to discuss issues and potential solutions. For example, the idea of a yearly proficiency test for technicians. I find it strange that aircrew must maintain annual standards but technicians, once they are trained do not require annual testing, especially in a climate like our current one,

this would help with standardization and knowledge retention. Small changes constantly over time become huge issues down the road if not kept in check.

Maj Sicard: What strategies does the base employ to promote a robust safety "Just Culture"?

Maj Scharf: Constant communication with folks. We still hold a Basic Flight Safety Course (BFSC), we are only one of a few bases that still do that, twice a year, April and November. We can offer up to 24 people the BFSC to FS Reps or anyone who wants to develop through professional development. The biggest advantage is that those personnel can now go back and help others within the unit, and they can now go on the deployments as well, so there is always someone with Flight Safety background available, especially since we are a service that is 24hrs a day.

Maj Sicard: Oh, that's great! Oddly enough that was another question I was going to ask, how it would work on deployments or exercises, with you being in a separate location. How does it differ from on base?

Maj Scharf: Normally, I would be the one getting the call in the middle of the night, but now with FS reps, we have two stages, first step is the unit, we are the second. Its definitely nice having those extra people involved, our biggest group of FS reps are

Continued on next page

actually with Mission Support Services and just the other day I received a call, and they reported a missing bolt from one of the trucks, saying that they think they may have lost it between the threshold of Runway 30 and Alpha taxiway. So, I contacted the FOD officer and ATC and within 20 minutes the bolt was found.

Maj Sicard: That's a good point, because if they were not educated on Flight Safety, would they have known to report it at all?

Maj Scharf: Exactly, potentially we could have never known.

Maj Sicard: Can you outline how a typical day unfolds in your capacity as an FSO?

Maj Scharf: I wish my day was spent walking around talking to everyone! I try at least once a week to join a Squadron morning brief, put my face out there. Then usually we try to get through any emails so that those responses go out and personnel can work on those cases during the day. Then we spend the bulk of the work on occurrences, we are involved in all the stages from report submission to final vetting. We hold our own CrashEx annually to validate of all the equipment, checklists, and processes then update as required. We also take some time to walk around and observe maintenance activity as well, it helps determine what the obstacles are, sometimes, we see occurrences happen and start asking questions, then find out that something was deviated because of a certain reason, then we try to figure out what distraction or obstacle, and why or how it was present.

Maj Sicard: Yeah, that's interesting you bring up the deviation and obstacle situation because that is the theme of this Flight Comment Issue – looking at the rising trend of non-compliance and the questions that come with that.

Maj Scharf: There are lots of distractions and not just on the task, besides the fact that they don't have proper supervision, I have watched one supervisor try to practically train 8 students simultaneously – that's impossible, two of the folks are on their cell phones, two more are talking together – very ineffective. Plus, other things like the cost of living here is just atrocious, which plays into personnel levels and stress issues. So, there's many aspects outside of work that contribute as well.

Maj Sicard: Agreed, and I think that goes across the board as well, not just for maintenance.

Do you find there are disagreements during investigations and report findings?

Maj Scharf: Yes, especially in complex situations, which thankfully doesn't happen too often. Clear communication and unifying perspectives play a pivotal role in resolving disagreements. We usually try to get together every few months just to see if we are all on the same page or if we need to discuss issues.

Maj Sicard: What Flight Safety tools do you find most indispensable?

Maj Scharf: FSIMS is valuable for national trends. I watch for aircraft accidents around the world so I can compare with the military. In addition, watching the economy, because if its good, we have more people leaving the military.

Maj Sicard: Have you used the new Flight Safety App? And are you finding others using it and liking it?

Maj Scharf: Yes! I use it extensively; I promote it a lot as well. How we manage it here at this base is when someone uploads their Occurrence or HAZREP, it gets distributed to everyone who is on the email FS distribution list, and then they can take a look and if it applies to their unit, they can put it on FSIMS. I think the only thing that is missing is a quick reference guide, perhaps a quick two liner to state that no names or

confidential information should be included, since that's been a repetitive issue.

Maj Sicard: We are curious about a rising trend in FOD (foreign object debris) found in aircraft and are wondering what you find most here at 19 Wg?

Maj Scharf: Pens are definitely the primary ranking FOD for sure right now (as he points to a FS pen)

Maj Sicard: ouch... I guess its time to update the types of pens we are handing out!

As we tour 407, 442, and 418 Sqn, the paramount role of maintenance in Flight Safety becomes unmistakably apparent, representing a significant risk in both military and contracted operations. Major Scharf's dedication to Flight Safety at 19 Wg serves as an exemplary model. From my perspective, it's a well-organized program that not only identifies potential hazards but also nurtures a culture of transparency and communication among Flight Safety representatives.

In the dynamic landscape of Military aviation, challenges are inevitable. The program under Major Scharf's stewardship not only addresses current issues but stands as a proactive force in shaping a culture where safety is at the fore front. I can plainly see that the regular training, effective communication, and the integration of innovative tools positions this base as a forward-thinking hub in the realm of Flight Safety.

With all that said, the skies above 19 Wg remain a safer space for all who traverse them thanks to all the Unit Flight Safety Officers, NCMs, and Reps and the constant work for advancement. That's it for now folks, join us next time on our "A Day in the Life of" segment. If you would like to promote your section, unit or base on the subject of Flight Safety please contact us through the Flight Safety email! 📧

For Professionalism

For Commendable Performance in Flight Safety

Mr. Kyle Young



On August 28, 2023, a CT-156 Harvard II canopy was sent to the shop for scheduled maintenance. While rotating the canopy stand to properly position the canopy for pressure and weather seal replacement, Mr. Kyle Young heard an odd noise emanating from the latching side of the canopy frame. Sensing that something was amiss, Mr. Young opted to remove the latching mechanism rail for a closer inspection. The

removal revealed a worn backing block loose inside the rail area, which had been overlooked during final closeout and inadvertently left behind as Foreign Object Debris (FOD) from a prior repair.

Mr. Young's professionalism, keen attention to detail, and willingness to delve deeper during routine canopy maintenance uncovered a serious issue within the

canopy latching mechanism assembly. If left undetected, this condition could have led to jamming of the canopy latch mechanism, jeopardizing a safe ground emergency egress.

Mr. Young exemplifies the "See Something/Say Something" attitude instilled by the Flight Safety Program among aircraft technicians, making him highly deserving of the *For Professionalism* Award. 🔧



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The Air Force and Flight Safety:

A Culture of Tolerated Disobedience?

by Col (ret'd) Randall Wakelam

Col (ret'd) Randall Wakelam's military service was divided equally between flying helicopters for the army and educating senior officers at the Canadian Forces College in Toronto. Wakelam completed the Land Forces Command and Staff Course in 1979 and the CF Command and Staff Course in 1988. He has a BA and MA from RMC, the latter in War Studies, and a PhD in History from Wilfrid Laurier. After retirement, he then served as a civilian academic, teaching military and air power history at RMC.

Wakelam's publications include: *The Science of Bombing: Operational Research in RAF Bomber Command*, *The Report of the Officer Development Board: Maj-Gen Roger Rowley and the Education of the Canadian Forces*, *Cold War Fighters: Canadian Aircraft Procurement, 1945-54*, *Educating Air Forces: Global Perspectives on Air Power Education*, and *On the Wings of War and Peace: the RCAF in the Early Cold War*.



DFS comment: When contemplating the idea of the military, we often automatically associate it with discipline and compliance. However, as you read an excerpt (edited for length) from a paper by Mr. Wakelam, you will discover that in the Royal Canadian Air Force, at least, this may not always be the case. If you would like to delve into the entire chapter and/or book, you can find it under the title "The Insubordinate and the Noncompliant. Case Studies of Canadian Mutiny and Disobedience, 1920 to Present" Edited by Howard G. Coombs.

Aviators in Canada during the 1970s and 1980s, did not tend to think in terms of discipline and disobedience when they paused to consider how they went about their daily tasks working around aircraft. This was undoubtedly because air operations, whether flying the aircraft, conducting maintenance, or providing other types of support, were and remain highly structured activities based largely on rules and regulations.

And yet these rules and regulations were regularly breached either by acts of omission

or commission. Contraventions did not tend to lead to disciplinary action — the culture of the Air Force was one of tolerance. It was thought better to learn from the mistakes of peers than to punish the transgressions of those who had broken the rules.

This approach would seem a far cry from that taken in the Army and Navy, where, if the rumor mills of the day were to be believed, soldiers and sailors could be and were disciplined for such minor malfeasances as having a dirty weapon during a barracks



inspection or not having heaving lines properly coiled. Surely, if these failures in discipline, with clearly potentially dire consequences for individuals and organizations, could result in punishment then the same should have been the case for the Air Force where the failure to follow procedures for the safe operation of aircraft could have catastrophic results.

How is it then that the Air Force appears during these decades to have taken what leadership theory would describe as a *laissez-faire* approach to discipline? There would seem to be some explanations rooted in the air service's culture. First, as suggested above, leaders have been more interested in finding out about problems and using the results of systematic "Flight Safety" investigations to educate the rank on file on the sorts of problems that could lead to damage, destruction, injury or death. Second, there has been perhaps a degree of willful disobedience to flying by the rules. Terms like pressing and "pushing the envelope" suggested to flyers, both young and old, that there was a degree of heroism in getting the machine to go just a bit further, faster or lower. Infractions resulting from these acts generally resulted not in disciplinary action but in grist for the Flight Safety system and in new tales to be told and retold at the bar. Indeed, inseparable from the mythology of brave exploits was the presence of strong drink, a holdover from those who flew during the Second World War and the generation that followed.

This article, written in the 2005-6 time period, will explore the Canadian Air Force culture of the later Cold War period, the 1970s and 1980s, and attempt to explain the apparent dichotomy between a highly rule-based operation and an apparent disregard for those rules among some aircrew. There is very little literature on flying discipline or disobedience, so the chapter will draw largely on official documents and reports of the period that described the concept and suggest the influence that the Flight Safety system would seem to have had. It will be

necessary, too, to make use of the memories of contemporary Canadian aviators.

It should be clearly understood from the outset that this article is not intended as any sort of criticism of the Air Force, aviators, or the Flight Safety system. Rather, it is a partial glimpse of a culture that seemed to prevail during those decades; a culture which, while less than perfect, was not unlike that of most human endeavor.

Origins

The Flight Safety program that evolved in Canada during the 1950s and 1960s was based largely on the need to protect scarce resources. By the 1970s a new aviator's first exposure to the notion of Flight Safety was usually prefaced with the statement that during the Second World War more allied aircraft had been lost to accidents than to enemy action. The basis of the program was to understand what could and did happen by mischance to aviators and to aircraft. To do this, trends had to be captured through statistical study and education programs had to be devised that would show aviators what could befall them in the air and on the ground if they were not focused on the task at hand and on operating by the book. To capture the best possible data, it was necessary to have full disclosure of safety "occurrences" and to do this it became necessary to formally separate Flight Safety reporting and investigation from any disciplinary process; otherwise, who would want to implicate themselves in a low flying stunt, a dodgy repair, or a less than precise vectoring of an aircraft around a busy airport? This separation remained in place throughout the Cold War. The 1995 version of the CF Flight Safety Manual stated that in terms of Flight Safety investigations and reports: "Except as required by QR&O 21.47 [Queen's Regulations and Orders — dealing with injury or death], it is not the purpose of these reports to assign blame." Further, "Investigations do not seek to establish fault or assign blame in the legal sense or to recommend punishment as this is not in keeping with the principles of accident

prevention." Indeed, the policy specifically precluded the use of Flight Safety reports in the preparation of charges, in the conduct of any disciplinary proceedings, or in assigning sanctions. This said, the system did not preclude "collateral" investigations for such purposes should these be deemed necessary by the chain of command.

What the concept of Flight Safety was supposed to engender was clear: one had to be constantly vigilant when working around aircraft; while at the same time learning from the mistakes of others was the best way to protect the lives and equipment that the Air Force used to conduct operations. The Flight Safety program that began in Canada as early as 1949 was therefore based largely on collecting and disseminating information about aircraft accidents and incidents and not on holding people to account for their actions.

In his message in the first issue of *Crash Comment* (now *Flight Comment*), an internal magazine concerned with *Flight Safety*, Chief of the Air Staff, Air Marshal W.A. Curtis, put forward that: "the limited number of personnel and aircraft available to carry out our task, combined with the problems of supply, manufacture and finance, increase the relative importance of each accident. We cannot afford flying accidents. Every effort must be made to eliminate them. I am therefore pleased to introduce the periodical, "Crash Comment," which in replacing the more detailed "Quarterly Accident Summary" will help you, through the experiences of others, to avoid similar accidents." The editors explained that: "each issue will contain... under the heading 'Of Special Mention,' reference to accidents that have brought to light instances of carelessness, disregard of orders or thoughtlessness which have caused or contributed to the accident in question, or while not contributing to are potential causes of accidents." Nowhere in Curtis's comments or the Introduction was the concept of accountability mentioned.

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This did not mean that those who were involved in flying incidents and accidents were routinely let off, and some errors did lead to disciplinary actions, although there seemed no consistent application of sanctions. In the first issue of *Crash Comment*, it was reported that a pilot had conducted a wheels-up landing in a Vampire jet: "It appears the pilot was unable to keep his mind on the immediate problem, which was flying the aircraft. He subsequently received a severe reprimand." Yet in a following issue it was reported that a pilot had committed a similar mistake by raising the landing gear (instead of the flaps) after landing. This "pilot was severely criticized [but not, apparently, disciplined], not only for selecting the wrong lever but also for attempting to raise the flaps" contrary to operating procedures. In another case, a Lancaster was completely written off when, on takeoff, a crew member raised the landing gear before the aircraft was airborne. The conclusion was simply presented to readers: "This accident is an excellent example of what happens when a high standard of flying discipline is not maintained." Three similar accidents — three apparently different correctives. That not all flying mishaps were judged to be acts requiring disciplinary action, or even similar disciplinary action, may well have been akin to leaving the obedience barn door ajar.

There may well have been some culpability in flying operations according to Major-General (Retired) Bob Chisholm whose career began in flying fighters in the 1950s, later shifted to helicopters, and included command up to the group level before finally serving as deputy commander of Air Command. He also had an appointment as Director of Flight Safety in the late 1970s. In speaking with the author, he recalled that fighter pilots were deemed to be "the most likely culprits since they are the ones who are operating in an environment where 'fast and low' is an opportunity." More broadly, Chisholm felt that mixed messages were being sent to aviators:

From my experience during the period 1956 to 1990, there has been a remarkable change in the nature and environment of Air Force operations. At the beginning, it was apparent that, with a combination of WW II veterans and young short-service pilots, it was an unsafe environment. Leadership from a different era and the lack of experienced pilots contributed to an unsafe and poorly disciplined environment. Alcohol was certainly abused, in part because the officers' messes were the centre of social activities.

As a result of the influence of the RCAF cultural environment on the next generation of air force leaders, they had received some varied, but frequently laissez-faire, messages about how to act and about how to deal with transgressions. The result, debatably, was a culture of passive disobedience where malefactors could go beyond the line of prescribed standards without much consideration for whether they were disobeying the rules.

Some of the contents of *Flight Comment* must have been equally perplexing to aviators. A 1975 article entitled "How Sierra Hotel are you?" offered a number of stunts that were indicative of a "hot dog," or S-H, flyer. In one case, a flyer earned "5 points for a low pass by the tower; add five if you were lower than the controllers; 10 points if you were so low that nobody knew you did it." Coincidentally, perhaps, in about the same year, the retiring commander of a pilot training base would have won those 10 points had not many staff and students witnessed his ultra-low-level retirement pass. In fairness, the article did point to the fact that these sorts of manoeuvres were in no way appropriate and that a truly S-H pilot or flyer of any stripe was one who flew well and flew by the rules.

Two years later the newly appointed Director of Flight Safety, then Colonel Chisholm, pointed out that fully 70 percent of accidents were the result of human error. "The underlying

causes can be traced to problems such as poor motivation, inadequate supervision, lack of concern, lack of knowledge and over commitment." The 1977 Aircraft Accident Analysis report concluded with a review of trends, focusing specifically on the issue of personnel error. Observers noted that two ways existed to deal with the problem. The first was to accept that "to err is human" and try to make the equipment fail-safe. The second, "and to us the only truly valid possibility," was "to begin to mount a serious attack on the problem of human error... Leadership," the piece continued, "at all levels will be severely tested; motivation [presumably of both leaders and followers] will be required in tremendous quantities."

The opposite was still seen in both *Flight Comment* submissions and at the unit level. For example, it was in the same period that a flyer on my base "flamed out" his aircraft (in other words, ran out of fuel) just after landing despite the fact that he had passed a suitable refuelling stop only about an hour earlier. It seemed pretty obvious that the Flight Safety officer would be called upon to prepare the necessary incident report, yet nothing was ever said or done about the matter — a matter that was well known along the flight line considering that technicians had to tow the empty aircraft about a kilometer back to the hangar. In another instance, a pilot who had been working in the Operations room overnight went flying the next morning despite being reminded of the prescribed requirement for eight hours of uninterrupted rest. Within an hour of takeoff, he had been involved in an accident. In this case, an investigation was conducted, but I do not recall any formal disciplinary action.

These then were the sorts of events that were captured either in print or seen in the day-to-day workings of a flying unit. Some, as had been recounted in *Crash Comment* and *Flight Comment*, seemed like legitimate errors;



some seemed to be the result of flyers pushing the envelope of their capabilities, and still others, the clear result of noncompliance with orders or, more simply put, disobedience. But who could fault those who lived in a relatively permissive environment where the chain of command did not seem to take serious disciplinary action against culprits and even Flight Safety personnel who skewed the avowed neutrality of Flight Safety material with statements with inferences of culpability.

The mid-1980s saw another round of editorial statements from high-ranking flyers. Major-General Larry Ashley, soon to be the commander of Air Command, wrote not about safe and responsible flying, focusing instead on mastering the new aircraft and equipment then coming into service: "Today, the Air Force supervisor must keep himself fully informed of the latest advances in his personal area of expertise, while at the same time instilling in the younger airmen the basic principles and tricks of the trade that have served us so well for more than 60 years." What those principles and tricks might be were left unstated.

Perhaps the ambiguity existed because, as Major-General (Retired) Fraser Holman, a fighter pilot who commanded at the squadron and wing level before taking on senior appointments at NORAD, described, it was commonly viewed that flying policy and directives were more guidance than strict orders and that if regulations were disregarded "they were likely thought of little consequence, and probably impediments on mission accomplishment. When balanced with safe accomplishment of a time-sensitive mission, perhaps they could be deliberately overlooked." It was, for example, a common practice in Europe to climb into cloud (and potentially into other aircraft) without an air traffic control clearance should the weather deteriorate to the point where it was unsafe to continue the flight under visual flight rules. Holman believed, however, that safe effective operations were at the core of Air Force thinking: "We had reasonably wide latitude within the



regulations as to how to accomplish [a mission], and we encouraged initiative while retaining a safe operating environment."

Except for gross violations like a case of illegal formation flying which led to a crash and subsequently to a court-martial, Holman related that where discipline was needed "for lesser offences/breaches, other measures could be invoked — verbal warnings, debriefings, review rides with senior pilots and similar less formal methods." But could not these "less formal methods" be misconstrued as an unstated acceptance of day-to-day disobedience? If so, this might help explain another call, by another Director of Flight Safety for a renewed emphasis on dealing with personnel factors, which were the cause of 70 percent of accidents and incidents. Colonel Hugh Rose described a new initiative to expand the range of personnel cause factors. He said that: "Troubleshooting personnel cause factors has always been much more difficult [compared to material or environmental problems]." He went on to say that only by doing these in-depth investigations could the Air Force hope to "understand and correct those conditions which lead to a breakdown in performance..." He wanted investigators to start looking at more than just what had happened, but also why. If one reviews his words with some cynicism, it could perhaps be concluded that Rose was

seeking a way to avoid dealing with disobedience. On the other hand, he was calling for "a harder look inside the operation," which could well have revealed examples of disobedience. In fact, the range of personnel cause factors had expanded significantly since the early 1970s and would continue to do so into the 1990s.

A Common Air Force Culture?

Much of the literature on the RCAF of the Cold War suggests that it took its doctrine, organizations, and equipment from American examples. While that may be true, the RCAF's post-war culture was firmly rooted in the RAF experience of the Second World War. The U.S. and British air forces clearly influenced Canada's aviators, so it is of some value to look at recent experiences of those two nations.

An example from the United States Air Force (USAF) is drawn from the 1990s. In 1997, a B-52 crashed during an air show practice. The pilot and crew, composed of that pilot's supervisors, were killed. The crash was widely talked about at the time, and it was suggested in the press and by officers well versed with the B-52 community that the pilot was well known for his

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aggressive flying. Subsequently, DFS in Ottawa produced a short education video entitled "A Darker Shade of Blue." The tape includes a short review of the crash and then extensive comments by the USAF Accident Board president as well as the general officer commanding the base and its flying units. Colonel Michael McConnell, the board president, outlined four cause factors. The first was pilot error in that the pilot flew the aircraft "in a manner that violated regulatory provisions and flight maneuver guidance" specifically "by exceeding bank angle, speed, and altitude restrictions for maneuvering the aircraft..."

The second was crew error, in that the crew allowed the pilot to enter into a stalled flight condition.

The third factor was supervision wherein his supervisors had allowed him to continue to fly in spite of poor airmanship.

Last came leadership, in that despite earlier direction he had continued to fly overly aggressively. Indeed, even having three of his superiors on the aircraft with him had not prevented him from killing himself and them. The comments by the commanding general of the 12th Air Force, Lieutenant-General Thomas Griffith, centered on the notion that "violations of air discipline are aberrations." An aberration this crash might have been, but it was still significant enough for Canada's aviators to distribute the facts to the rank and file and to signal through a rather evocative title that this was a "dark" episode. Once again, however, there was no commentary by Canadian Air Force leaders to underscore what was clearly a disobedience problem; perhaps they too believed that such acts were aberrations. Perhaps it was indeed an aberration, but in addition to the video DFS produced a written account of the B-52 accident in the fall of 1998 along with a fairly pointed editorial on leadership. The editor, Captain Jay. Medves, indicated that bootleg copies of the accident report had generated hot debate when first circulated: "Rarely have I seen one document

provoke so much discussion amongst the leadership. One remark I heard was 'interesting, but it couldn't happen here.' Not true. A similar scenario is less likely to occur because we are a much smaller air force; not because we are in any way different, better, less susceptible, or less human."

A full edition of *Flight Comment* dealing with discipline followed the next year. With the words "Focus on Discipline" on the front cover, the issue included articles from the USAF, U.S. Army, and Royal Australian Air Force. Brigadier-General Charles Burke, the director of U.S. Army Safety, stated bluntly: "Safe aviation operations require the elimination of undisciplined actions before they cause an accident. But many times, in the name of 'protecting' an aviator's career, we hesitate to hold aviators accountable for breaches of flight discipline, disregard of procedures, and failures to perform to standard. Undisciplined behavior rarely corrects itself. It's the commander's job to deal appropriately with violations as they occur." The issue also contained a commentary by Chief Warrant Officer Bert Lapointe, the formation Chief Warrant Officer for 1 Canadian Air Division. Lapointe observed: "In my career I have seen a lot of great things ... but also a lot of bad habits related directly to a lack of self-discipline which required education and corrective action in the operating procedures. Discipline doesn't have to be authoritative to be effective. It just needs to be incorporated as an integral part of our daily activities." Here, as had been the case over the years, was the Flight Safety voice pointing the matter squarely towards the leadership of the Air Force.

More recently, the British services had been in a period of integration and in 2002 a joint Flight Safety organization, the Defence Aviation Safety Centre, was established and began the publication of a new safety magazine *Aviate*. The second issue included a short piece that identified flying as a high-risk environment populated by professionals

"whose background indicates intelligence, integrity, stability and those who exhibit highly skilled and responsible attitudes."

That said, the article reported that a recent survey of co-pilots "found them describing their captains as over-confident, arrogant, unpredictable and aggressive, which is classified as exhibiting an 'active-masculine' personality trait." Of interest, the author noted, this trait was equally apparent in female flyers and evident throughout all flying communities. One wonders if there might also be a link to embedded disobedience, for the same author considered the question of conforming and deviating from standards in an article published the following year. Although recognizing the value of non-conformity and adaptability, he concluded that something was "dangerously wrong... when you find that the culture of your organization is accepting non-standard activities or you find that corners are being cut. Do not intentionally break the rules; get the system changed."

The British Flight Safety community seemed to be zeroing in on disobedience, and another early issue of *Aviate* offered some editorial commentary in a piece describing an unauthorized training flight from the early 1950s that had resulted in disciplinary action: "We are more professional than this. Unauthorized flying activities are a thing of the past. Indiscipline is no longer a concern and therefore unregulated flying activities — like those that led to the Wellington accident — are unlikely to happen. Or are they...?" Here once again, a Flight Safety system seemed clearly to be signaling a need for discipline.

What to Make of This?

Although it seems likely that disobedience, whether explicit or conditioned, has and continues to exist in flying operations and that there have been some at least implicit links to the RCAF's philosophy of Flight Safety, this article provides some reflection on the subject



but also leaves many questions. Little research has been done in Canada on the subject of Air Force culture, so we do not know if the sort of discipline attributed to the Army or the Navy would work or even if it would be desirable in the Air Force. It would, for example, be hard to imagine a young soldier stopping a vehicle from heading out on a mission because they felt there was something wrong with it, and yet that sort of technical responsibility is deeply internalized by all members of the Air Force. Equally, we do not know if the Air Force's seemingly laissez-faire approach to disobedience is just that or is rather a product of risk-taking tolerated by leaders that is designed to allow those fighting in the air to have the flexibility and adaptability to ensure mission accomplishment as suggested by Admiral Falls and Major-General Holman. Finding out more about how aviators function and developing an understanding of Air Force culture are essential if leaders are going to ask young aviators, whether flyers or support personnel, to conduct effective and efficient air operations with limited resources in today's complex tactical and operational circumstances.

Finally, because this commentary has generated debate among those who have reviewed it, I would like to indicate that the opinion shared by many, myself included, is that accountability and with it obedience to regulations has improved in recent years. As Major-General Chisholm said:

"My perception is that we now have a much more professional air force than we did 20 years ago. So, the question is: what has changed? One might argue that the Flight Safety system has been effective, and that aircrew and their leaders are now conditioned to be more professional than their predecessors."

A note on sources: for an in depth look at citations and sources, please refer to: "The Air Force and Flight Safety: A Culture of Tolerated Disobedience?" In *Volume 3: Historical Perspectives of Mutiny and Disobedience, 1920 to Present*. Howard Coombs, ed. Kingston: Dundurn Press, 2008.

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There has been a growing acceptance of the philosophy that the first and foremost step to realistic and effective accident prevention is to candidly identify our mistakes. This is a healthy attitude but, in the process, we must not overlook the fact that more often than not, personnel causes involve the failure of someone to discharge his responsibilities properly.

—
Colonel R.D. "Joe" Schultz, Director of Flight Safety 1973

DOSSIER



Photo: ST Alexandra

Thinking Outside the Box: A Paradigm Shift in Aviation Safety

by 2Lt Hardy and Bob McIntyre with additions from Maj Jill Sicard

Editor's Note: The ideas in the following article are solely those of the authors and are intended to inspire discussion as well as showcase a different view on accountability and Just Culture within the realm of FS.

The realm of aviation safety is a dynamic one, demanding a mindset that goes beyond conventional training and procedures. The journey towards achieving safety in aviation, dating back to the 1950s, paints a fascinating picture of adaptability and innovation in the face of constant challenges.

During this period, the Royal Canadian Air Force (RCAF) boasted an impressive fleet of jet aircraft, including Comets, Vampires, T-33s, CF-100s, and F-86 Sabres, accompanied by numerous squadrons. The transition to jet aircraft introduced a steep learning curve, resulting in numerous crashes and fatalities. Over the decades, several factors contributed

to a decline in such losses. These factors included a decrease in the number of aircraft, improved aircraft reliability, enhanced training facilitated by sophisticated simulators, the introduction of Standard Operating Procedures (SOPs) manuals, and Cockpit Resource Management (CRM) training. These advancements were the result of lessons learned from past incidents and accidents.

The message is clear: regardless of one's experience or rank, the ability to adapt to unforeseen challenges is crucial. A culture of safety has evolved where the expectation is that every crew member actively participates in ensuring safety. Blindly following the

Aircraft Commander is no longer acceptable, as we are all responsible. If something appears unsafe or unexplained, it is the duty of any crew member to speak up, regardless of their experience.

One compelling story of adaptability comes from "Jammer," a pilot on the CF-18 at Baden in the late 1980s. With a background in computer games, he devised an efficient method of programming the Hornet that impressed senior pilots, leading to changes in SOPs. This illustrates the value of embracing new ideas and respecting the perspectives of younger generations who have grown up in the computer age.

However, thinking outside the box is not just about embracing new ideas; it's also about adapting to challenging situations where established procedures might not apply. Several real-world examples highlight this necessity:

1. **DC-10 Crash at O'Hare (1979):** This incident demonstrated the importance of adapting to the situation. The crew, following SOPs, reduced their speed after an engine failure, not realizing that the damaged leading edge had changed the minimum control speed (Vmc) and led to the crash. A rule of thumb for some pilots is a bit more speed in an emergency is never a bad thing.
2. **Resolute Bay Boeing 737 Crash (2011):** In this case, the crew's failure to adapt to an unstable approach led to a tragic accident. There were several issues at play, including break down of effective communication, accidental change in flight mode and confusion over location. The Captain thought he was on an intercept heading to get back on the localizer but due to the compass being set improperly, and the change in flight mode, the aircraft was never going to intercept. The First Officer advised the Captain he was not sure of their position, and to go around no less than five times but was not assertive enough until it was too late. The Captain chose to continue until the terrain warnings and they hit a hill 1 mile east of the airport. The lesson here is to prioritize safety, even if it means challenging the hierarchy.

3. **B-52H Turbulence Test Flight:** The creative problem-solving of a crew facing a higher load than expected and severe turbulence, included the use of landing gear and spoilers to regain control, highlights the importance of adaptability and critical thinking in dangerous situations.
4. **Boeing 747 Freighter Crash:** This incident emphasizes the need to think creatively and consider alternatives when facing unexpected challenges. The crew lost both #3 and 4 engines and although they were initially able to control the aircraft, when flaps were selected, they lost control and unable to regain, ended up crashing. An unorthodox procedure such as retracting flaps to a previous configuration despite checklist requirements, could have helped them.
5. **Boeing 737 Max Crashes:** These tragedies underscore the critical nature of adaptability in modern aviation. The absence of information on the Maneuvering Characteristics Augmentation System (MCAS) in the operating manuals, combined with unforeseen issues, would have required unconventional thinking to potentially survive.

In the aviation world, as in other fields, "thinking outside the box" is a necessity. It's not just about embracing new ideas but also about challenging established norms when the situation demands it. The story of the Statistical Research Group during World War II provides a valuable lesson on survivorship bias, reminding us to consider what lies beyond the immediate surface. In their multiple studies of returning bombers riddled with bullet holes, the experts focused on the most frequently hit areas and concluded that these spots needed reinforcement. However, they failed to realize that these areas were actually among the strongest, enabling the aircraft to return despite sustaining damage. It was only when one individual proposed examining bullet hole damage in aircraft that didn't make it back to base that a more effective approach became evident.

In the realm of aviation safety, Flight Safety Investigation embodies this principle by dissecting causal factors into specific sub-factors. This process encourages innovative perspectives and fosters a broader understanding of potential flaws.

A paradigm shift in aviation safety demands a willingness to question assumptions and embrace diverse viewpoints. The simplest explanations may be based on flawed assumptions, and by seeking outside perspectives, we can achieve a more comprehensive and robust understanding.



Photo: Cpl Hugo Montpetit

Fostering a Just Culture in Aviation by Col J.-F. Gauvin (DFS)

Military aviation operates in a complex and dynamic environment, relying on the professionalism and collaboration of everyone to ensure mission success safely and efficiently. In such a high-stakes space, fostering a "Just Culture" is vital. The CAF is tasked with carrying-out mission-critical operations, often involving high-performance aircraft, highly technical equipment, and complex systems. Accountability is essential to ensure that all personnel adhere to established procedures and safety protocols. Any lapses in professionalism can have serious consequences for both personnel safety and mission success.

Understanding Just Culture

A Just Culture in aviation emphasizes fairness, accountability, and learning from mistakes rather than punishing individuals for honest errors. This approach recognizes the inevitability of human error and aims to create an environment where individuals feel comfortable reporting mistakes and contributing to a continuous improvement cycle. Central to the success of a Just Culture is the need for accountability – a key driver that ensures responsible behavior and cultivates a safety-oriented mindset.

A Just Culture does not seek to excuse negligence or intentional misconduct but rather distinguishes between honest mistakes and reckless behavior. It encourages an open and transparent reporting culture, recognizing that individuals are more likely to come

forward with information about errors or near misses when they are confident they will be treated fairly. In a Just Culture, the focus shifts from blaming individuals to understanding the human, environmental, and systemic factors that contribute to occurrences, allowing organizations to address root causes, develop preventive measures (PM) and prevent recurrence.

The Need for Accountability

The Chain of Command, not Flight Safety, is solely responsible for assessing accountability and applying discipline or corrective measures when the situation dictates.

The CAF operates on a foundation of discipline and order. Accountability plays a fundamental role in military discipline, and it reinforces the importance of adhering to rules and regulations.

Accountability is the linchpin of a Just Culture it involves acknowledging mistakes, learning from them, and actively participating in efforts to prevent similar occurrences in the future. It ensures that individuals take responsibility for their actions while promoting a collective commitment to safety. When individuals are held accountable, it sends a powerful message throughout the organization that Flight Safety is a shared duty.

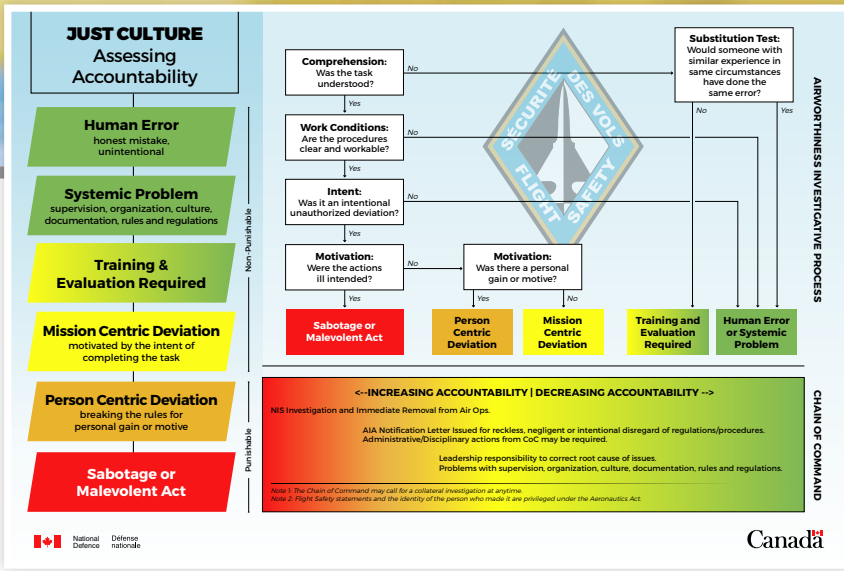
Therefore, in a Just Culture, there exists the ability for an organization to correct the conduct of individuals who have intentionally been negligent or have displayed reckless

behaviour. DFS developed a Just Culture Matrix (figure on page 23) to help the Chain of Command (CoC) assess accountability, clearly indicating when the CoC should be informed for a possible collateral investigation. The model is quite clear when it comes to person-centric deviations or malevolent acts and sabotage. Remember that these are not honest mistakes but deliberate actions and conscious decisions to act against regulations.

Triggering Multiple Investigations

An occurrence may lead to various outcomes. Normally, a FS investigation is initiated upon knowledge of an occurrence; however, commanding officers may also order an investigation regardless of whether a FS investigation has been initiated or is ongoing. It is necessary to emphasize that the goal of discipline within a Just Culture is not punishment but rather corrective action, understanding that corrective actions can be in the form of remedial training if it has been found lacking. The measures taken should be proportionate to the severity of the behaviour, ultimately with





the focus being on fostering a culture of accountability and continuous improvement and preventing future occurrences. Also consider that if we don't rectify the erroneous behaviours, we are accepting them as the norm.

Leadership in Flight Safety

Leadership plays a crucial role in setting the tone for the organization, directly influencing the Flight Safety culture. Leaders at every level should exemplify ethical behavior, emphasize the importance of professionalism, and demonstrate a commitment to responsible decision-making. By taking a comprehensive and proactive approach that addresses both individual and systemic factors, leaders can

effectively manage situations where individuals may be tempted to cut corners to meet deadlines. When members are questioned about cutting corners, one of the main contributory factors is the perceived pressure related to deadlines, be it maintenance tasks, flying operations, or administrative in nature. CAF members typically have a can-do-attitude; therefore, leaders have the responsibility to control such pressures, so they don't negatively affect the great work being done.

Conclusion

A Just Culture is a foundational component for ensuring safety and continuous improvement. At its core, a Just Culture hinges on accountability – the willingness of individuals to take responsibility for their actions, but also the need to have appropriate consequences for people disobeying orders, engaging in reckless conduct or unsafe practices. Accountability ensures that individuals are responsible for their actions and decisions.

Leaders at all levels play a pivotal role in establishing a Just Culture and are encouraged to cultivate an environment that promotes continuous improvement and open communication, ultimately contributing to the enhancement of Flight Safety and accident prevention.

The Chain of Command, not Flight Safety, is solely responsible for assessing accountability and applying discipline or corrective measures when the situation dictates.

Photo: S1 Zach Barr

LESSONS LEARNED



Photo: MqJ Jonathan Barrett

Falling To Recency Bias

by Capt Samuel Hung

The outcome of this Higher Headquarter (HHQ) surveillance mission could have ended differently. This instance, I was part of an E-3 augmented flight deck, being the least experienced out of four pilots. The Aircraft Commander (AC) drafted a fuel plan that I thought was too optimistic due to the forecasted weather in the region. But since the AC and the other pilots had recently executed a similar mission in comparable weather with remarkable success, I conceded to my inexperience and didn't mention anything. Besides, the AC was also a senior instructor pilot, and the others were also senior ACs at the squadron. Surely, they would have already considered my misgivings and mitigated the risk, right?

On execution, things progressed as intended until HHQ tasked us to shift our area of responsibility (AOR). The senior ranking mission crew commander along with leadership were extremely supportive of the

change since this new AOR was where they recently caught drug smugglers. The AC accepted the amendments since the weather radar returned nil indications and the only adjustment was to change our planned alternate aerodrome.

The new AOR eventually became very turbulent and made our coordinated aerial refueling challenging. Under these harsher conditions, we took longer to get the committed offload, ended up farther southeast, and resulted in a slight net negative fuel state than originally planned. Upon fuel calculations, AC determined we still had the capability and wanted to operate for an additional 45 min in the AOR prior to Return[ing] to Base (RTB). Given our fuel state, I felt uncomfortable with the plan before finally expressing my concerns to RTB instead. Upon deliberation, we elected to RTB where we experienced 100 kt headwinds and discovered our alternate aerodrome was closed. We landed slightly above our minimum required landing fuel.

As professional aviators, we take pride in our skills and abilities to get the mission done. But sometimes, we let our pride and recent experiences get the best of us into accepting more risk than necessary. From this experience, I've learned that "recency bias" is real. Situations change, and it is essential to not get complacent into believing what worked before will work again. Regardless of the pressures applied, even if the directive comes from a higher rank or authority – if you know something is unsafe, speak up and act before it snowballs into something bigger. 🚀

Editor's Note: This lesson learned is also a great example of authority bias and what can happen when we place too much confidence in a higher authority and tend to be influenced by their experience. Here we can see the experience of the instructor and pilot, as well as the eagerness to complete the mission affected the decision process. Thankfully communication helped everyone end up on the same page.

Trust Me, It's Done

by Cpl Jordan Tavares

It was just another day completing the early morning snags routine in the Tactical Helicopter world. I was still an apprentice at the time and was helping my Level A work on one aircraft, while a Performance of Maintenance (POM) technician worked on another. Both aircraft had mission requirements to be on the ramp as soon as possible – a pretty normal day in Edmonton. As my supervisor and I worked together to resolve the more complex issue, the other technician was assigned to do "just a simple box change in the nose", which the Level A would then verify and sign for.

Our task ended up running longer than expected for our Griffon helicopter, so we used almost every moment working until launch time. After rectifying the snag, my Level A and I went on to complete the necessary end for all tasks: paperwork. The countdown to launch kept ticking and the POM working on the other aircraft walked in to report they were all done their work. The tech verifying it proceeded to ask if it was "ready to fly". After being assured it was, the Level A signed for all the work without physically verifying "just this one time", because it was such a routine job and they felt like they had a deadline to hit.

Naturally, after signing both aircraft as serviceable and ready to fly, next came towing; upon seeing the Griffon the POM had been working on independently, it was noticed that the nose was still completely open from when it had been in maintenance, obviously a little bit out of flying condition.

Trusting your troops is important, but airworthiness always takes priority. As I watched the chain of corrective action come down from missing the critical juncture, and after observing the final close out, I learned a lesson that I have tried to carry with me as I've gained airworthiness signatures. There is never too urgent a scenario to short track the key moments and checks that keep these birds in the sky; at the end of the day, it's your signature on the line. 🛩️



Photo: Mcpl Jennifer Kusche

LESSONS LEARNED

You Have One Job

by Cpl Dakota Crosby

Photo: Cpl J.W.S. Houck

Have you ever had that feeling of excitement when returning home from a long deployment or operation? One of those events where your Unit and Wing are there to welcome you back and you've been looking forward to getting home for weeks? Where there is a large crowd of loved ones and reporters and it's really quite a spectacle? If you have, then you'll understand that little thrill you get when stepping off the aircraft and just how much of a distraction it can be and if you're not careful, how it can lead to mistakes you'd otherwise not make, and in my case, a little bit of embarrassment also.

Our crew was flying home from Op Impact where the CP-140 Aurora was doing overland surveillance in Iraq and Syria, it was still a big operation in the media at the time, the fight against ISIS, so it wasn't surprising that our return had drawn some attention. As we came into land, the pilot did a low overhead break as a show for those on the ground and a bit of a celebration for the crew which added to the atmosphere of excitement.

We landed and began to taxi – not over towards our hangar where we normally park, but towards the Air Movements Unit where the crowd was gathered. I was new to the crew, only just finishing my type course a few months before. I was working my way through my OJT (On the Job Training) and my task for this flight was 4th crewman. That meant that upon landing, I would be the first and only one off the aircraft to install all the pins and make the aircraft safe before the remainder of the crew would step off.

I was sitting there with all the pins in my hand, three landing gear pins and one for the bomb bay, looking out at the crowd waiting for the engine props to stop spinning before opening the main cabin door and lowering the ladder down. Looking out, I could spot the WComd and WCWO as well as the Sqd CO and CWO all there to welcome us home. I was feeling very eager to get off the plane and a little proud of not only what we'd accomplished but also that I would be the first on the ground in front of the eyes of everyone.

I had done this task at least three dozen times before, I knew what I had to do, wait for the prop to stop, open the door, move the ladder into place and lower it down, open the sonobuoy disable door, install the bomb bay safety pin and then finally secure all the landing gear with pins. I ran the mental check through my head and then it was show time! Door opens, ladder down, the cameras start to flash, and the crowd starts to clap and cheer, there must be at least 100 people on the ramp. I see the WComd and the other higher ups start to approach closer, but I have a job to do. As confidently as I can, I move forward make eye contact with the pilot, give the hand signals to move up to secure the bomb bay then install all the gear pins.

Once complete, the command teams have moved forward and start shaking hands and congratulating me, as the rest of my crew start stepping off the plane. The next person off was my lead and he was just giving me this look. My ear-to-ear smile faded as his gaze turned to the sonobuoy disable door, which was still closed and locked, meaning the system wasn't made safe. He walked behind the ladder and popped the door open as I made my way over

and he said to me in his sarcastic sense of humor "You had one job, and in front of everybody too."

"Do you think anyone noticed?" I asked embarrassed, "Oh the Sqd CWO definitely noticed!" Which didn't bode well for me, I thought it was my chance to stand out a little from the crowd, which I did achieve, just not in the way I had intended. The feeling was akin to that stereotypical dream of being a young kid at school standing in front of a crowd in your underwear. All eyes are on you, and you've made a huge mistake. I let the crowd and excitement distract me from my task. I was suitably embarrassed and could not believe I had forgotten such a simple thing that I had done dozens of times before. This is when you begin to realize that sometimes it is easy to get distracted, lose focus, skip steps, and do things out of sequence. All it takes is something as non-standard as someone waiting to greet you as you are coming off the plane to draw your attention away.

We will all make mistakes, there will be times we forget things, it is impossible to be perfect 100% of the time. The most important thing is that we learn from our mistakes, we improve, we try not to let it happen again. The Flight Safety Program is vital to highlighting these types of events so that we can educate and learn from the mistakes of others. The "Just Culture" approach is there to show us errors so we can learn and although may be a little embarrassed at our mistakes we learn from them and aren't punished.

Almost a decade down the road, I always remember this event every single time I am acting as the 4th Crewman, "You have one job" and I've never forgotten to open the sonobuoy disable door since. Stay focused and stay safe! 🛩️

Epilogue

TYPE: CT-114 Tutor
(CT114051)

LOCATION: Fort St. John, BC (CYXJ)

DATE: 02 August 2022

The accident aircraft was one of eleven Snowbirds stationed in Fort St. John, BC, at the North Peace Regional Airport in support of the Fort St. John International Air Show, held July 30-31st 2022. Two days after the airshow, the aircraft was to be ferried from Fort St. John back to 15 Wing Moose Jaw, SK.

On the morning of the accident, the pilot proceeded to the active runway for a standard departure. Shortly after liftoff, the pilot confirmed a positive rate of climb and raised the landing gear. Immediately after, the pilot heard a loud noise and the engine failed. The aircraft rapidly started decelerating and descending back to the runway. The pilot immediately lowered the landing gear and landed the aircraft straight ahead; however, the landing gear did not have sufficient time to fully cycle back to the down and locked position. The aircraft touched down with only approximately 480 feet of runway remaining. The unlocked landing gear collapsed, the aircraft skidded off the departure end, and impacted the airport perimeter fence at low



speed before coming to rest. The pilot secured the engine and immediately egressed the aircraft. The pilot was the sole occupant of the aircraft. The day prior to the accident, the oil filter was changed as part of an out-of-sequence inspection on the engine.

The aircraft sustained very serious damage, but the pilot sustained no injuries.

The investigation determined that the oil filter was incorrectly assembled and restricted the flow of oil to the engine resulting in an engine failure. The main preventive measures recommended are to modify the engine maintenance publication and to test the oil filter for correct assembly and functionality prior to installation on the aircraft. 🔥



Photos: QETE

Epilogue

TYPE: Cessna 150 C-GSWM
LOCATION: Regina International Airport (CYQR), SK
DATE: 26 July 2022

On 26 July 2022 at the Regina International Airport, SK, a Cessna 150 (C-GSWM) was being flown as part of the Power Pilot Training Course contracted to the Regina Flying Club. The purpose of the flight was to conduct solo training with emphasis on takeoff, circuit, approach, and landing procedures.

The first two touch-and-go evolutions were uneventful. During the third touch-and-go landing, the pilot bounced the aircraft off the runway, progressively porpoising the aircraft in an accentuating manner, bouncing it on the runway for a total of six times until the

repeated loads broke the nose landing gear and the aircraft came to rest on Runway 31.

The aircraft sustained very serious damage and the pilot was not injured.

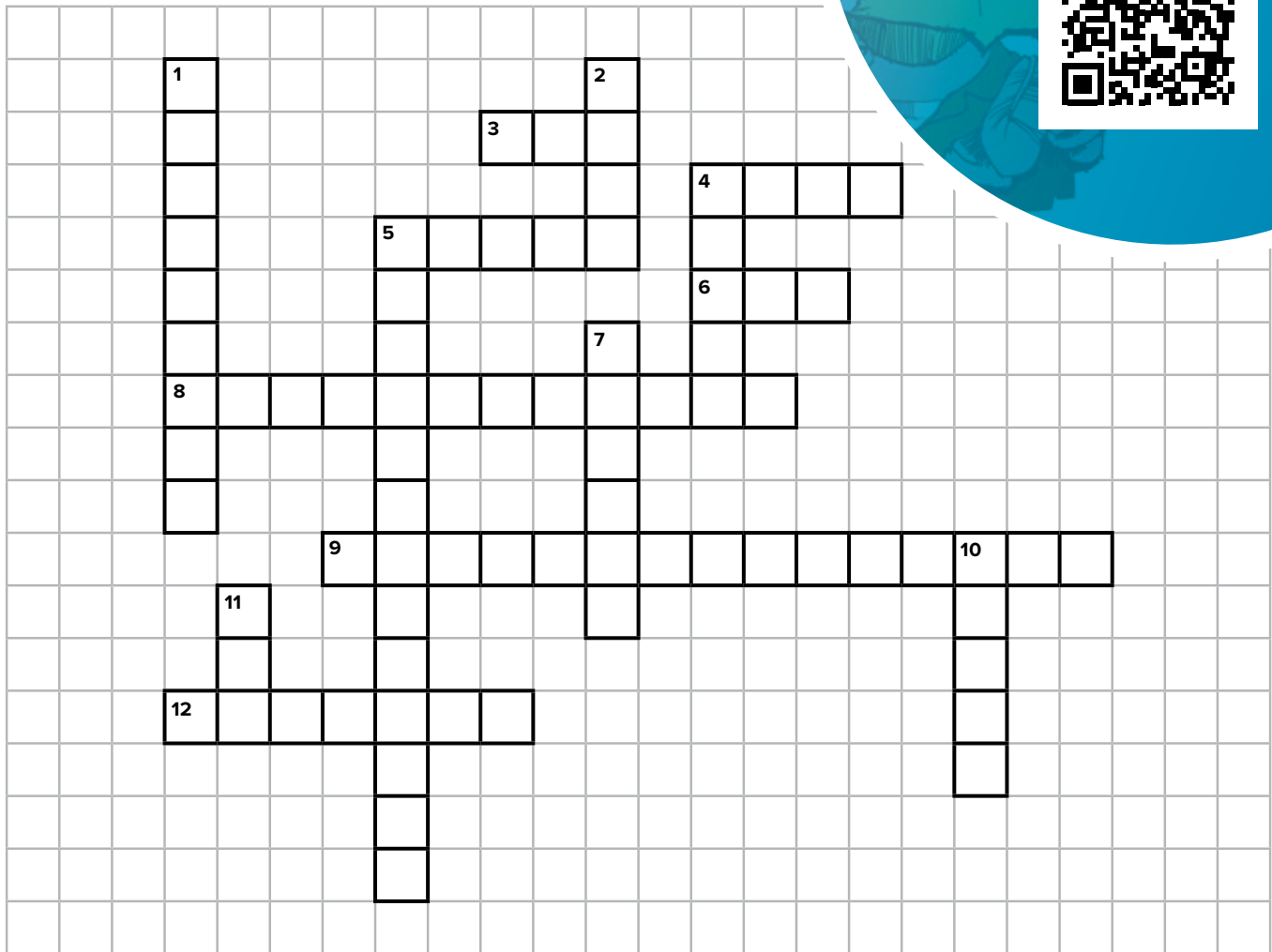
The investigation determined that Pilot Induced Oscillations were inadvertently introduced while attempting to land, after the bounced landing. The preventive measures focus on providing more comprehensive instruction on avoiding, recognizing, and recovering from Pilot Induced Oscillations. It is also recommended to conduct a review of the Power Pilot Training Course program. ✈



Photo: Regina Airport Authority



Photo: DFS



ACROSS

- 3. The Canadian squadron that became the first Allied unit to land in France on D-Day
- 4. The RCAF's contribution to the NATO mission during the Cold War, stationed in Europe
- 5. The Canadian military's strategic reconnaissance aircraft during the Cold War
- 6. The RCAF's strategic bomber during the early years of the Cold War
- 8. The iconic Canadian World War I fighter aircraft
- 9. The World War II operation in which Canadian airmen played a crucial role
- 12. The Cold War-era radar system built in Canada to detect potential Soviet bomber attacks

DOWN

- 1. The Canadian pilot famously known for his role in the "Dam Busters" raid during World War II
- 2. Year in which the Royal Canadian Air Force (RCAF) was established
- 4. The RCAF's involvement in the Korean War, where Canadian pilots flew this jet fighter
- 5. The Canadian pilot and astronaut who became the first Canadian to fly in space
- 7. The first Canadian to become an ace in World War II, known for his achievements in the Battle of Britain
- 10. The iconic World War II British Commonwealth Air Training Plan (BCATP) aircraft
- 11. The title given to Canadian fighter pilots in World War I