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Flight Comment

ISSUE 2, 2025

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Canada

Cover – HMCS Charlottetown's embarked CH148 Cyclone helicopter conducts hoist training near the ship while transiting the Mediterranean Sea during Operation REASSURANCE on 25 June 2024.

Photo: Avr Gregory Cole

Photo: Cpl François Charest

Photo: Avr Nicholas Zahari

Flight Comment

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Photo: OS Sterritt

Views on Flight Safety

by Major Dennis Scharf, 19 WFSO

In the Flight Safety world one aspect that determines the health of a unit or wing is culture, but sometimes we can't put a finger on what it really means. Many accept the term as a means of assurance that we are working well together toward a common goal. This is true but there are many underlying variables or traits that help define our culture. Our base values of ethics, beliefs and attitudes encompass our group behaviour and contribute to our defined culture.

As military members, we have been molded and guided toward a deliberate discipline and standard through ethics and harassment prevention training ensuring we all maintain a "Canadian way of life". As a military organization, we rely on a myriad of regulations and standard operating procedures (SOPs) that keep us focused and on the straight and narrow. This is all well and good in theory but in the Flight Safety Program we must be vigilant that intentional non-compliance doesn't creep in and affect our aviation culture. The well-being of all aviation activities truly depends on people complying with and following procedures and regulations.

Intentional Non-Compliance is a behaviour that is a constant threat to Flight Safety. These intentional acts of non-compliance whether repetitive or isolated are insidious in nature because they creep into our daily routines and go unnoticed. In our society there are a multitude of unspoken or unwritten rules that we routinely ignore, and which become commonplace such as driving over the speed limit, failing to yield at a stop sign or distracting driving, to name a few. There is a deceptive aspect to intentional non-compliance, whether consciously or unconsciously we tend to convince or justify our own behaviours. There is an extensive list of Flight Safety occurrences that, at their roots, involve someone using short cuts, pushing weather limits, modifying procedures to meet deadlines, or perceived pressures of "no-fail missions" that has nullified a layer(s) of defence and put our personnel and resources at increased and unauthorized risk. In the aviation discipline it is essential for the safety of flight that intentional non-compliance is not an option.

So why is intentional non-compliance so dangerous? Some of these time savers appear to be a more efficient way of doing things and deteriorate the margin of safety that has been implemented into our operations. It is apparent that today's Air Force has demographically transitioned to a very young and inexperienced cadre and any intentional non-compliance observed by others has a viral effect, stemming from the exception to an unsafe routine practice. Procedures and regulations have been institutionalized as lines of defence for the safety of our operations and any act of intentional non-compliance can circumvent all our systems defences and lead to disaster. As we have learned in harassment prevention, our best defence for dealing with intentional non-compliance must also be considered zero tolerance, to ensure a robust Flight Safety Culture.

The Editor's Corner

by Major James Feagan, CD

As we turn the page on another edition of Flight Comment, I want to begin by acknowledging a concern that many of our readers have brought to our attention. Our Spring edition experienced significant distribution delays, and in some cases, subscribers did not receive their copies at all. These issues stemmed from staffing shortages and organizational changes within our distribution partner. We understand the frustration this has caused and want to assure you that we are actively working on a long-term solution to restore reliable delivery of the magazine.

To improve communication and better serve our readership, we are also introducing a new dedicated email address for Flight Comment. If you have any concerns, feedback, or suggestions, please don't hesitate to reach out to us at:

Flight_Comment-Propos_de_vol@ecn.forces.gc.ca

On a more somber note, we mark the passing of a giant in the field of Flight Safety, Professor James Reason, who died on February 4, 2025, at the age of 86. Professor Reason was a pioneer in human factors and organizational safety, best known for developing the Swiss Cheese Model of accident causation. His work fundamentally reshaped how we understand and manage risk in complex systems, not only in aviation but across healthcare, nuclear energy, and other high-consequence industries.

The Swiss Cheese Model illustrated how accidents occur when multiple layers of defense—each with their own vulnerabilities—align to allow a trajectory of failure. This simple yet powerful metaphor helped shift the focus from individual blame to systemic improvement. Professor Reason was also a strong advocate for Just Culture, emphasizing learning and accountability over punishment. His legacy will continue to influence generations of safety professionals.

Looking ahead, I'm pleased to share some exciting developments within the Directorate of Flight Safety (DFS). The Flight Data Analysis (FDA) trial has concluded with great success. This initiative has demonstrated the value of proactive data monitoring in identifying trends and enhancing operational safety. As a result, FDA has been formally endorsed by RCAF senior leadership, paving the way for broader implementation across the Air Force.

Additionally, the Human Factors Analysis and Classification System (HFACS) has undergone a significant update. The category previously labeled as "Deviation" has been replaced with "Intentional Non-Compliance", reflecting a more precise understanding of human behaviour in operational contexts. This change has also led to a revised Just Culture Assessment Matrix, ensuring that our approach to accountability remains fair, consistent, and aligned with current thinking in safety science.

Finally, I want to share some personal news. This will be my last edition as Editor-in-Chief of Flight Comment. As is often the case in the military, I will be transitioning to new responsibilities within the DFS. It has been an honour to serve in this role and to contribute to a publication that plays such a vital role in promoting a culture of safety across the RCAF.

I leave you in excellent hands. Major Courtney Douglass will be stepping in as the new Editor-in-Chief. With her extensive experience and deep commitment to Flight Safety, I have no doubt she will continue to elevate the magazine and its mission.

Thank you for your continued readership, your feedback, and your dedication to making military aviation safer for all.

Blue skies and safe flying!

Answer Key for Match the Marshall on back page:

1. A-41 Take- Off/ Decollez
2. A-31 Lower Wing Flaps/ Abaisser les volets
3. A-56 Floss/ Floss
4. B-20 Winch Down/ Deroulez le treuil
5. A-10 Stop/ Arretez
6. B-15 Engage Rotor(s)/ Embrayez le(s) rotor(s)
7. A-28 Fire/ Feu
8. A-50 Fuel Spill/ Debordement de carburant
9. A-5 Slow down/ Ralentissez
10. A-7 Turn Right/ virez a droite
11. A-3 This way/ Par ici
12. A-27 Cut Engines/ Coupez le(s) moteur(s)

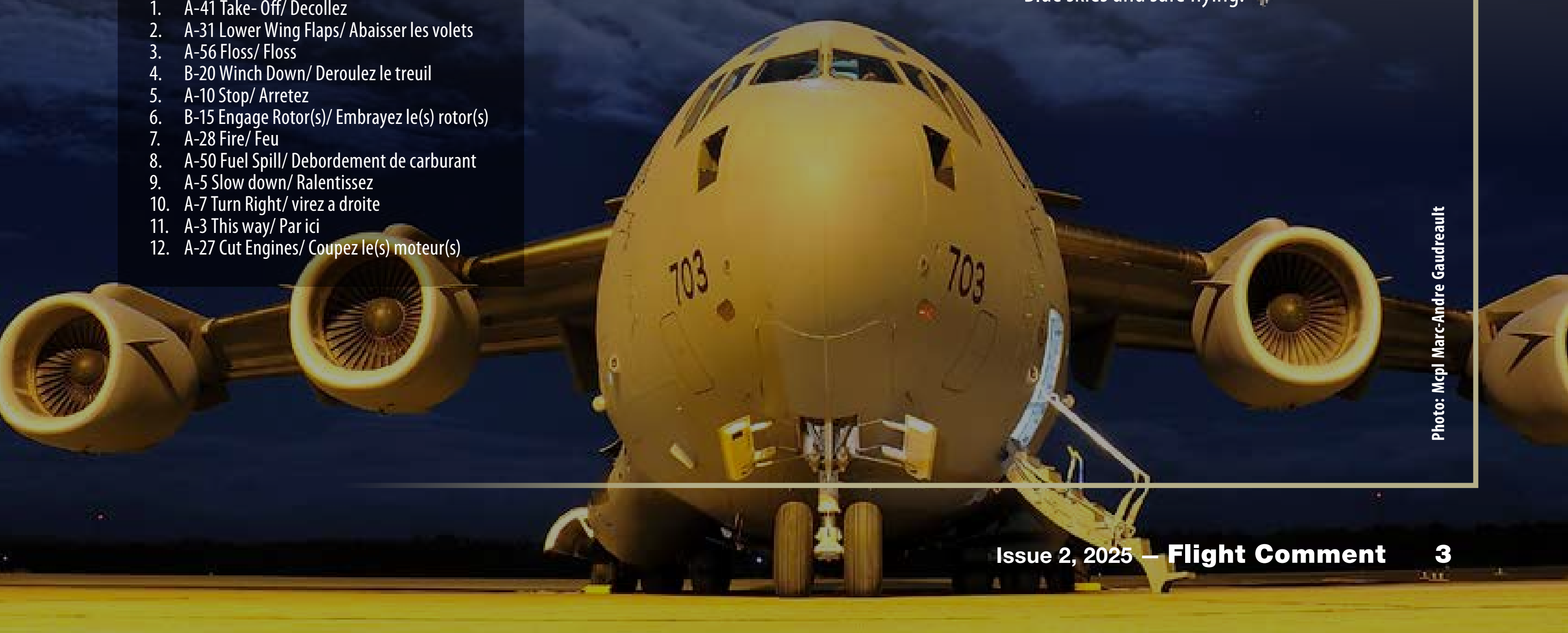


Photo: Mcpl Marc-Andre Gaudreault

Good Show

For Excellence in Flight Safety

Captain Jesse Herbolic

On the evening of Friday March 1st, 2024, Captain (Capt) Jesse Herbolic, a pilot from 423 Maritime Helicopter Squadron, was in a CH148 Cyclone flying off the deck of HMCS Charlottetown. Capt Herbolic was monitoring the night deck landing sequences being performed by the co-pilot for proficiency training of the Helicopter Air Detachment personnel. The process involved numerous landings and takeoffs to allow the co-pilot to get comfortable with flying over a moving ship deck. During one such landing, as the helicopter approached the ship's deck, the landing signals officer determined it would be a wave off due to the relative ships motion. The rear tire of the CH148 contacted the deck before the crew could respond to the wave off call. The force from the contact caused the co-pilot's sun-visor to flip down from the stowed location and rest upon the top of the night vision goggles attached to their helmet. This pinned their head in a downward position, greatly reducing their ability to see outside the helicopter and maintain visual references with the ship.

Not initially realizing that they were stuck facing downward, the co-pilot attempted to move their head up so that they could see out, all while still controlling the helicopter. Due to the disorientation caused by the lack of visual cues, the helicopter drifted left, down, and forward towards the hangar, causing the left main gear to drag and skip across the deck in the process. In a fraction of a second the helicopter went from a stable regime of flight to one where there was a real chance of a dynamic rollover or impact with the hangar face.

Upon realizing that the situation was rapidly deteriorating, Capt Herbolic quickly took control from the co-pilot, and maneuvered the helicopter back to safety. Freed from the controls, the co-pilot stowed the sun-visor and regained visual references. Capt Herbolic then executed a landing, averting a potential disaster.

Capt Herbolic's lightning-fast response to this rapidly escalating dangerous situation not only prevented a potential catastrophe but also safeguarded the lives of the crew and the aircraft. His actions are truly deserving of the *Good Show* Award.

Good Show

For Excellence in Flight Safety

Lieutenant Cameron Cleveland

On 16 December 2024, at approximately 1902Z, a Piper Twin Comanche (PA-30), departed Greenwood Airport (14 Wing) with the intent to conduct VFR circuits followed by upper air work south of the Greenwood control zone. The aircraft was operated by the Annapolis Valley Flight Training Centre, a civilian flight school based at 14 Wing Greenwood.

Upon departure, Lt Cleveland cleared the PA-30 for a left-hand circuit for runway 26. During the turn for final approach, as the aircraft was cleared for a touch-and-go, Lt Cleveland noticed an anomaly—the aircraft's landing gear appeared to be retracted. Recognizing the potential danger, Lt Cleveland immediately instructed the pilot to "check gear." The pilot responded, stating that the gear was "down and locked."

Not satisfied with the response, Lt Cleveland used binoculars to re-check the landing gear position and confirmed that the gear remained up. At this point, Lt Cleveland took decisive action, instructing the PA-30 to pull-up and initiate a go-around. The aircraft, estimated to be 100-200 feet above ground level, executed the go-around as directed.

After the go-around, the PA-30 departed the circuit to the south to troubleshoot the landing gear issue. The crew was able to manually lower the landing gear and subsequently made a safe landing on runway 26 in Greenwood at approximately 1934Z, without further incident.


Photo: Cpl Brolly

Lt Cleveland's quick thinking and vigilance in identifying the gear issue, along with their prompt and accurate decision-making, played a critical role in preventing a potentially catastrophic outcome. Had the aircraft landed with the gear up, it could have resulted in significant damage to the aircraft and endangered the lives of the occupants. Thanks to Lt Cleveland's professionalism and situational awareness, the incident was resolved safely, and no injuries or damage occurred.

This exemplary display of airmanship, attention to detail, and decisive action undoubtedly prevented a serious incident. Lt Cleveland is highly deserving of this *Good Show* award.

Maintenance IN FOCUS

Inside QETE: The role of Filter Debris Analysis in preserving defence system integrity

by Andrea Eid, Communications Officer, Department of National Defence

February 11, 2025

When assessing the reliability of defence materiel, understanding the impact of contamination or wear of complex systems and their associated fluids is crucial for ensuring performance and safety. At the Quality Engineering Test Establishment (QETE), Lead Technologist Stephen Kopil plays a pivotal role in this effort within the QETE 3-3 Petroleum Products Laboratory. Specializing in applied microscopy, Stephen ensures that contamination found in fuels, oils, lubricants, hydraulic fluids, and related systems is well understood, safeguarding the integrity of defence systems and equipment.

"If you don't know what's contaminating the system, you can't solve the problem," Stephen explains. "My role is to identify the contaminants, trace their source, and understand how they're impacting the system. It's about diagnosing the problem thoroughly to prevent future failures."

The QETE 3-3 Group tests and analyzes a wide range of fluids used in critical defence systems, such as aircraft, military vehicles, and high-performance machinery. They check both the physical and chemical properties of these fluids to ensure they meet safety and performance standards.

A specialized part of Stephen's work is Filter Debris Analysis. This process isolates debris from filters or fluid samples and identifies the foreign particles. Using various types of microscopes, including optical, polarized, ultraviolet fluorescence, and scanning electron microscopy, he analyzes fluid cleanliness during failure and accident investigations. “By examining the particles’ size, shape, and surface features, we can learn about the contaminant, help shed light on what’s happening inside the system and address potential performance issues,” Stephen explains.

A key part of Filter Debris Analysis is differentiating between two types of contamination: **wear debris** (from mechanical actions within the system) and **environmental contaminants** (from external sources). Wear debris such as metal particles from bearings or sliding wear particles from sliding surfaces (Figure 1) may indicate potential degradation within the system, while environmental contaminants, like synthetic fibers or insects, may obstruct filters or valves. Environmental contamination in the form of sand grains may cause abrasion of fluid wetted systems, especially hydraulic systems.

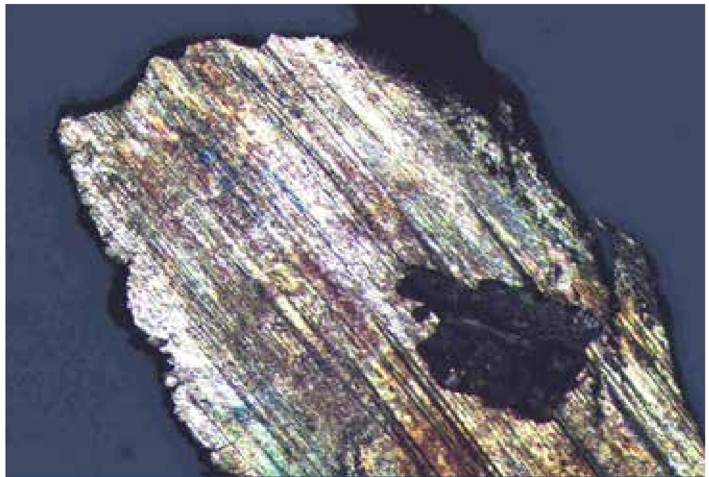


Figure 1.

Figure 2.

One of Stephen’s most memorable investigations involved an aircraft hydraulic system contaminated by gritty, brown particles, which were initially thought to be sand. However, after conducting a thorough analysis, Stephen discovered the true source: walnut shell blasting media.

“Walnut shell blasting media is an abrasive material made from crushed walnut shells. It’s often used for cleaning out aircraft exteriors,” Stephen explains. “Once I found out the client had used this materiel around the same time the contamination was observed, I replicated the walnut shell blasting media production process using a coffee grinder to grind walnut shells. I isolated the particle size range to replicate the product the client had using sieves. Then, I compared the particles to those found in the system (Figure 2),” he added.

Stephen used microscopes and X-ray tools to examine the color, texture, and cell structure of the particles, noticing they contained calcium oxalate crystals, which showed a distinctive octahedral crystal structure and blue fluorescence under UV light. This confirmed the contamination was from walnut shell blasting media, not sand. Based on his findings, Stephen advised the client on better protective measures during cleaning to prevent future issues.

Stephen’s work highlights how science and technology can solve complex problems by examining even the smallest details to maintain safety and performance in high-stakes environments. “Every particle has a story to tell—and that story can make all the difference between smooth operation and catastrophic failure.”

For more information about Filter Debris Analysis and the work accomplished within the QETE 3-3 Petroleum Products Laboratory contact qete@forces.gc.ca.

Good Show

For Excellence in Flight Safety

Corporal Karl Remillard

Photo: MCpl Beaudin

On 24 September 2024, Corporal (Cpl) Remillard, an Air Weapons System technician at 407 Long Range Patrol Squadron in Comox BC, was conducting post-flight inspections when he identified a critical hazard on a CP140 Aurora aircraft. While inspecting the bomb bay, he observed unusual discoloration of the white paint on the forward bulkhead. Upon closer inspection, he felt excessive heat radiating from the area. Despite this not being part of his routine checks, he made note of it and continued his inspection.

Inside the aircraft, Cpl Remillard noticed that the floorboards and carpet in the forward bunk area, located directly above the bomb bay, were unusually hot. Upon opening the emergency hydraulic reservoir compartment, he confirmed the presence of significant heat. With the Auxiliary Power Unit (APU) turned off for approximately 15 minutes and the aircraft parked outside with its bomb-bay doors open, any amount of heat typically generated in the area would have normally dissipated. Concerned about the excessive heat, he reported the issue to the servicing desk.

Cpl Remillard then led a service desk sergeant and a flight engineer to the affected area. Independent confirmation from a subject matter expert revealed that a catastrophic failure in the APU combustion chamber had caused a 5-inch hole in the fire blanket between the APU compartment and the bomb bay. This failure led to the destruction of the fire blanket and excessive heating in the bomb bay and forward bulkhead, posing a serious fire risk in an area typically used to store explosives.

Cpl Remillard demonstrated exceptional judgment, situational awareness, and perseverance in identifying an anomaly well outside of his area of expertise. His actions in identifying and reporting the hazard directly reduced the potential severity of damage to the aircraft, preventing a fire, further damage, or the potential loss of the aircraft. Without his timely intervention, the aircraft and crew could have faced a catastrophic incident.

Cpl Remillard's initiative, professionalism and determination to act on what he identified as an abnormal situation went above and beyond his assigned duties. His actions were critical in preventing further damage to the aircraft and potentially saving lives, making him a deserving recipient of the *Good Show* Award.

DFS Commendation

Outstanding professional long-term performance and dedication in the field of Flight Safety.

Tammy Kohorst

Tammy Kohorst has been a cornerstone of CAE's Flight Safety Program, demonstrating unparalleled dedication and expertise throughout her tenure. Her rapport with maintenance technicians and approachable nature were crucial to the program's success by fostering open discussions on Flight Safety concerns. Known for her tireless dedication, Tammy often worked long hours to ensure that every aspect of Flight Safety was meticulously managed, significantly contributing to the overall safety and reliability of CAE's operations. Throughout her tenure, she consistently upheld the ethics and integrity of the Flight Safety Program, leaving an indelible mark on the organization and inspiring her colleagues to strive for excellence. As Tammy retires from CAE, her legacy of dedication, integrity, and excellence in Flight Safety will continue to inspire and guide future Flight Safety professionals and is highly deserving of DFS recognition.

ON TRACK

Missed Approaches: A Misunderstood Procedure?

by Major Corey Smith

If you are a RCAF pilot, chances are that you have flown quite a few missed approaches in training, usually as part of a round-robin flight. If you fly fixed wing you probably do this routinely, and if you are rotary wing you probably do two per year, one a week prior to your IRT and one on your IRT (maybe one on your re-IRT). In any case, we fly very few missed approach procedures out of necessity, which means that we usually have the luxury of knowing they are coming. In the training environment in Canada we nearly always receive our enroute clearance to the next destination along with our approach clearance. Additionally, we usually conduct missed approaches at aerodromes with which we are quite familiar. These realities disguise misunderstandings about missed approaches which might otherwise cause problems either related to clearance infractions or obstacle clearance.

First, let's discuss a relatively recent development pertaining to missed approaches. Until recently, all missed approach procedures published in the GPH 200/CAP had climb gradients of 200'/NM (400'/NM for Copter-only). However, there are now some missed approach procedures requiring steeper climb gradients published in the GPH 200/CAP. Note the example from the Kelowna LOC Y RWY 16 below (Figure 1).

Suffice it to say that if your aircraft is not capable of 330'/NM, it would be unwise to accept a clearance to conduct this approach, and you should fly the LOC Z instead which has higher approach minima and a 200'/NM missed approach climb gradient (Figure 2).

Figure 1

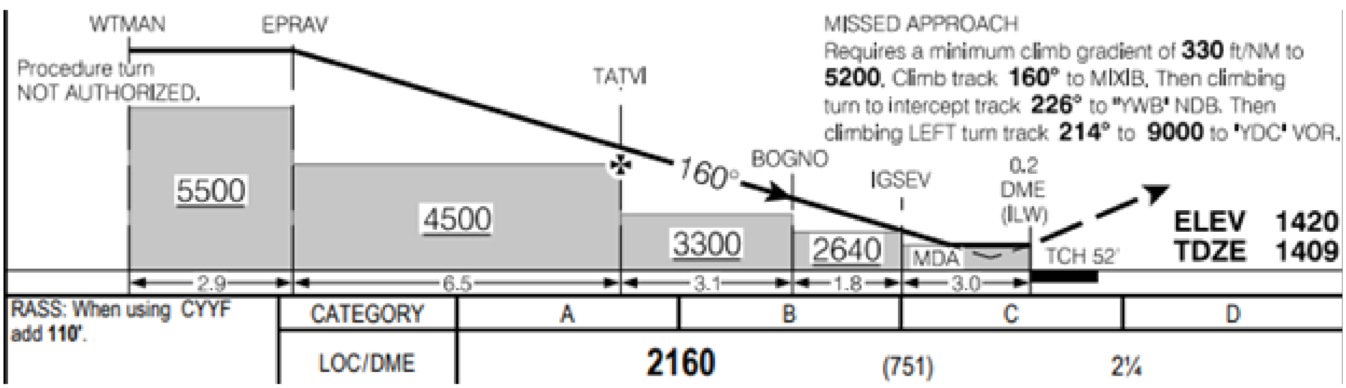
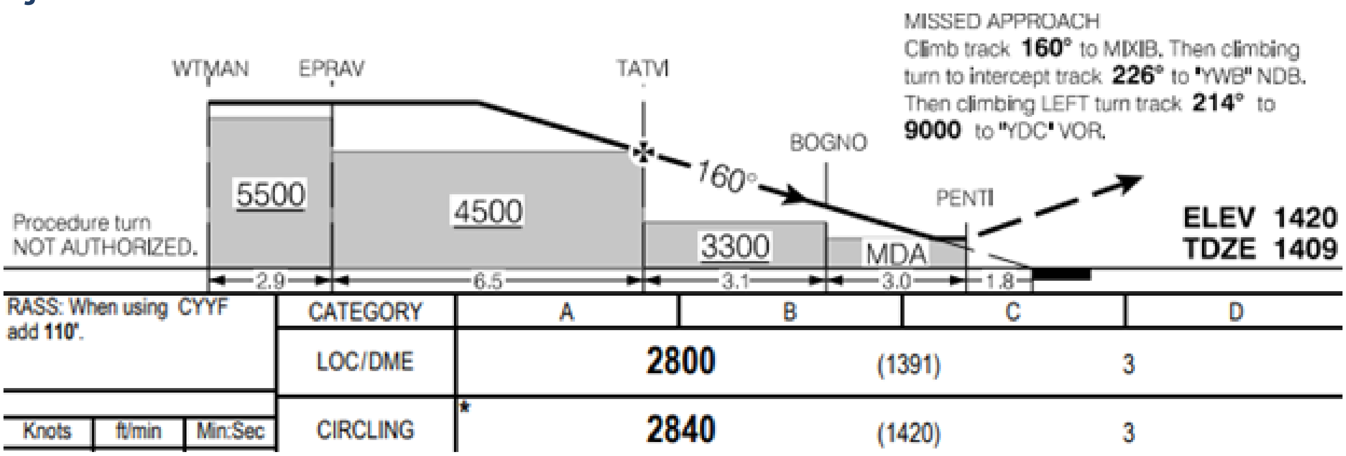


Figure 2



Clearly, the implications of not recognising the difference between these two procedures could be catastrophic, depending on your aircraft's performance.

Next let's discuss clearance limits using the RNAV Rwy 11 in Tofino as our example (Figure 3).

If you are conducting a round-robin flight with an enroute approach in Canada, a typical IFR training or IRT scenario, when you receive your approach clearance, normally ATC will issue a missed approach clearance to your destination.

"ATC clears Matrix 17 to the Tofino airport for the RNAV Runway 11, TEXEC transition, on the missed approach Matrix 17 is cleared to Comox via GOVAD T769 flight planned route, climb and maintain 9000', call me on 132.9 climbing through 7000"

In this case, the geographical clearance limit is Comox.

But what if the clearance sounded like this (Figure 4)?

"ATC clears Matrix 17 to the Tofino airport for the RNAV Runway 11, TEXEC transition. Call me 132.9 in the missed approach"

Continued on next page

Figure 3

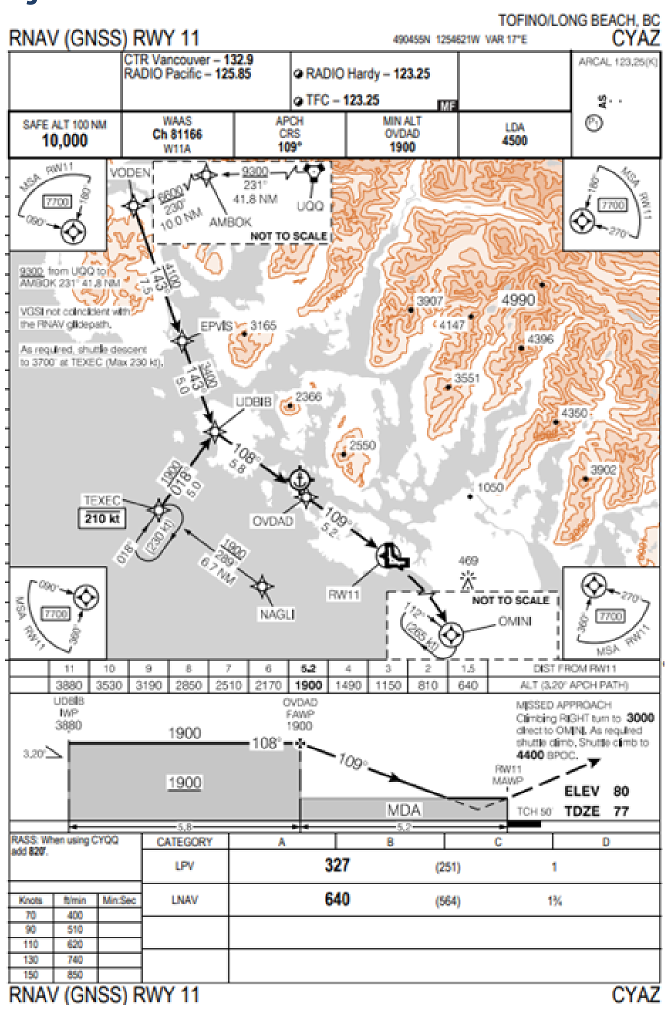
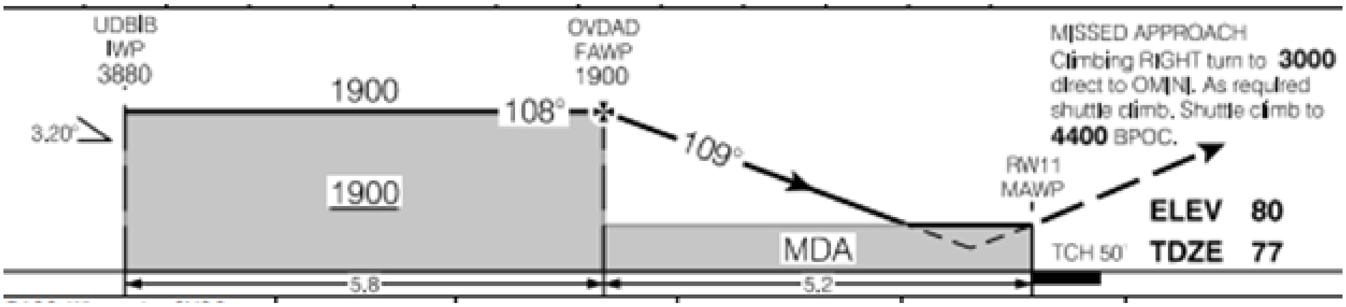


Figure 4



So now our geographical clearance limit is OMINI, the missed approach holding waypoint, but what about vertically?

In this case, the missed approach altitude is 3000', and this is our vertical clearance limit. The 4400 BPOC is only applicable when we are cleared beyond OMINI, i.e. cleared enroute or for another approach. The GPH 200 Vol 10 defines Before Proceeding On Course (BPOC) as *"A term used to indicate that a specified procedure must be completed prior to taking action to intercept the desired course."* Thus, we would be expected to climb to 3000', fly to OMINI and hold as published until we received further clearance.

Let's go back to the scenario where we have been cleared to Comox at 9000'. The next question is when could we initiate our turn to proceed enroute. There are a couple of obvious answers. First, the MSA of 7700'. Reaching this altitude is always safe provided we continue to climb to and reach another safe altitude such as the 100NM safe altitude or an MEA with 25NM of the aerodrome. But we probably wouldn't reach 7700' before reaching OMINI. We would, however, likely reach the BPOC altitude of 4400' by OMINI, perhaps sooner. So, when could we turn enroute?

The answer is reaching at least 4400' or higher **AND** reaching OMINI, and continuing to climb at 200'/nm or more. We cannot depart the missed approach procedure climbing through 4400' until we reach OMINI, or reach another safe altitude like the MSA. The reason for this is that the procedure has been assessed and the BPOC altitude selected to allow for a 200'/NM climb from OMINI and its corresponding shuttle hold pattern. If you reach 4400' before OMINI and turn off the procedure, your climb geometry would fall outside of what has been assessed and you may not have the required obstacle clearance. (ref GPH 209 Vol 1, 2.7.9)

So what about where no BPOC is published. Let's look at Brandon, Municipal, MB for an example (Figure 5).

You can see from this chart that the missed approach altitude is 3000', and the MSA is 4300'. So, when could we turn off the missed approach procedure to proceed enroute, assuming we have clearance? In this case, the procedure has been assessed in the same manner as Tofino was except that a BPOC altitude was not required to assure that a 200'/NM climb from the missed approach holding waypoint (UKMON) provided obstacle clearance. But just like Tofino, that obstacle clearance is assessed from UKMON. If you reach 3000' before UKMON and turn, obstacle clearance is not assured. So when could we turn? Climbing through 3000' AND reaching UKMON, and climbing at least 200'/NM until reaching another safe altitude. Alternatively, if you reached 4300' (MSA) before UKMON you could also turn.

So why does the missed approach procedure say *"as required shuttle climb"*? Answer: This shuttle climb is to reach 3000' (Figure 6).

Using the MDA of 1720', and a distance from the missed approach point to the missed approach holding point of 5.2 NM, if you only climbed at the minimum rate of 200'/NM you would arrive at UKMON at (5.2 x 200) + 1720 = 2760'. Therefore you would need to shuttle climb the remaining 240' to reach 3000' before you could proceed on course from UKMON provided you were cleared to do so.

Missed approach procedures can be nuanced and complex. The worst possible time to be deciphering them is immediately after hearing the words "go-around". Any time you conduct an approach, spend some time reviewing the missed approach, brief it thoroughly, and ensure you understand its navigational and obstacle clearance requirements. This material is covered in extensive detail on the Instrument Check Pilot (ICP) course, so if after reading this you still have questions, speak to an ICP at your unit. Understanding missed approaches may save you from a call from the Division Instrument Check Pilot (DICP), and more importantly may save your life.

Figure 5

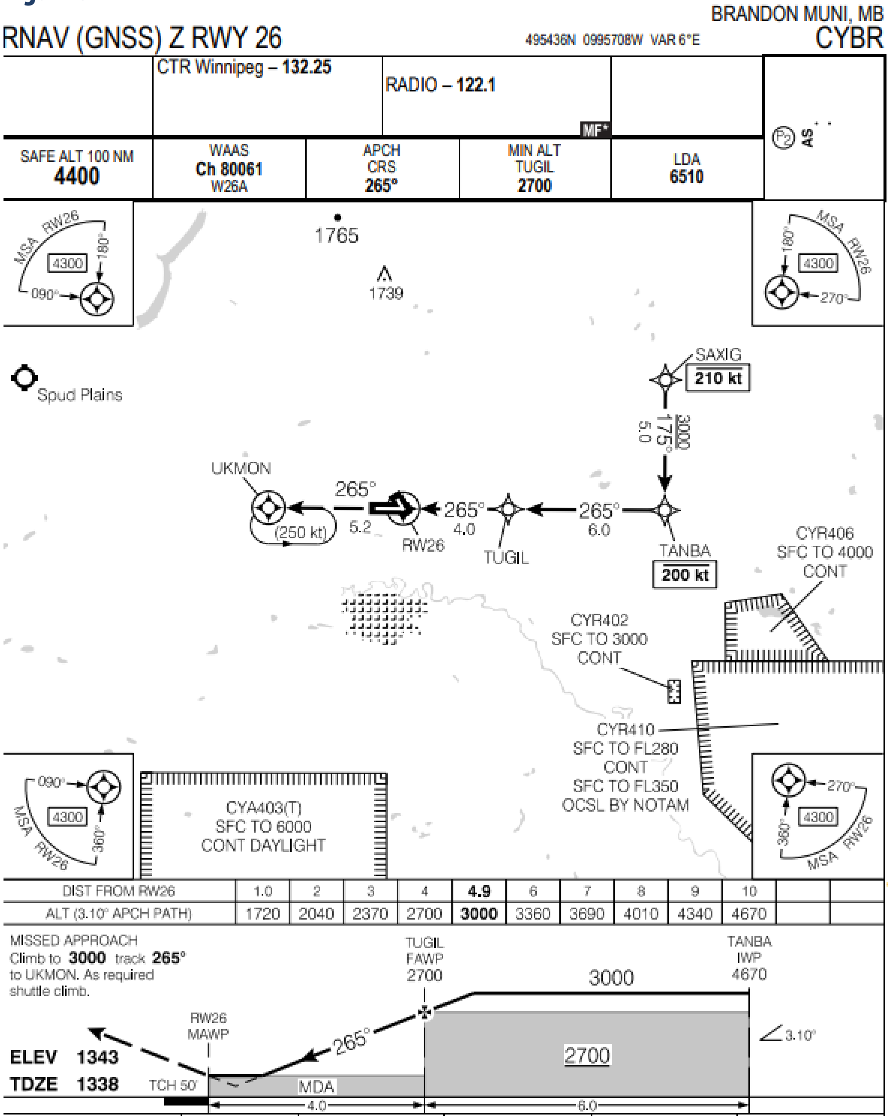
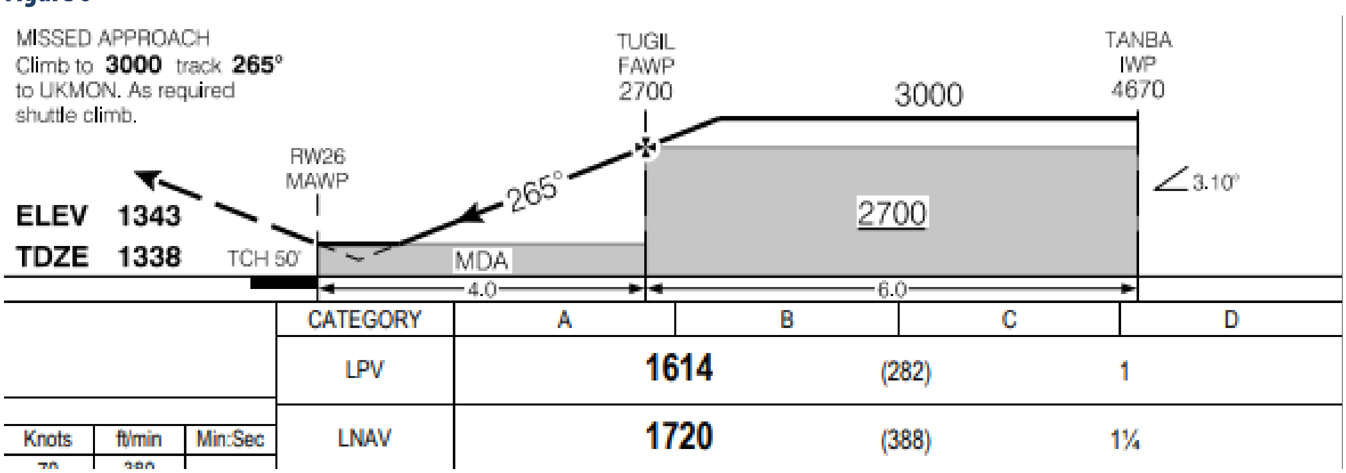


Figure 6



DFS Commendation

Outstanding professional long-term performance and dedication in the field of Flight Safety.

Major Richard Kinner

Photo: WO Upshall

Major Richard Kinner began his distinguished career in the Canadian Armed Forces (CAF) as a pilot in June 1993 and has dedicated more than 25 years of exemplary service to the CAF Flight Safety (FS) Program. His commitment to aviation safety was evident from the outset, beginning with his first posting at 434 Squadron (Sqn), where he served as both Deputy Unit Flight Safety Officer (D/UFSO) and Unit Flight Safety Officer (UFSO) from 1998 to 2002. He continued in these roles at 413 Sqn from 2002 to 2008, and again at 435 Sqn from 2008 to 2012.

In 2012, Maj Kinner was appointed as the Flight Safety Multi-Engine Desk Officer at 1 Canadian Air Division (1 CAD), a key position he held until 2015. Most recently, from 2018 to 2025, he served as the Wing Flight Safety Officer (WFSO) at 14 Wing Greenwood, where his leadership and mentorship have had a profound and lasting impact.

As part of his tenure at 1 CAD FS, Maj Kinner played an instrumental role in delivering the Flight Safety Course (FSC), directly influencing and developing the next generation of FS Officers. His passion for safety continues to resonate through the contributions of his former students, many of whom now lead FS programs throughout the CAF. His professional development includes earning an Aviation Safety and Security Certificate from the University of Southern California in 2014, and he has actively represented the CAF FS Program on the international stage—most notably at the Aeronautical Accidents Investigation and Prevention Center (CENIPA) in Brasilia, Brazil.

While serving as WFSO at 14 Wing, Maj Kinner provided critical guidance to five Wing Commanders, advised over 20 Unit Commanding Officers, and supported numerous UFSOs. He championed the promotion and expansion of the FS Program, spearheading the implementation of the Basic Flight Safety Course (BFSC) and the establishment of Flight Safety Representatives not only within 14 Wing but across multiple other Wings. Throughout his service, Maj Kinner has consistently turned challenges into opportunities to strengthen, educate, and advance the Flight Safety program.

His steadfast commitment to fostering a strong culture of airmanship, safety, and accountability anchored in the principles of "just culture" has made a lasting impact on 14 Wing's Flight Safety ethos. The countless hours he has devoted to leadership and mentorship will undoubtedly continue to shape the future of the CAF FS Program for years to come.

Maj Richard Kinner exemplifies the core values and ethos of the Flight Safety Program. His remarkable contributions, steadfast leadership, and enduring commitment have significantly enhanced the culture of safety across the CAF.

For *Professionalism*

For Commendable Performance in Flight Safety

Ryan Crawford, Colin McKee, Braydon Rand and Captain Elton Learning

On 21 November 2024, while conducting a training flight in a CT146 Griffon helicopter in the vicinity of Portage la Prairie Manitoba, Captain (Capt) Learning identified a possible broken landing gear following his student's no hover landing. When they returned to the Southport airport, Capt. Learning again observed the aircraft sitting nose high and low to the right rear.

As the collective was being lowered, the Allied Wings maintenance crew also observed the helicopter start to yaw to the right due to the broken gear. At this point, Colin McKee, the maintenance Crew Chief established radio contact with Capt. Learning and advised him to use power to maintain the aircraft in a level attitude while jacks were brought out to the aircraft. Capt. Learning had also come to the same conclusion and had started to apply power to hold the aircraft level. Neither Capt. Learning nor Mr. McKee wanted to have the aircraft shut down without jacks as they did not know how the aircraft would react once all of its weight was on the broken landing gear. Mr. McKee then went to the aircraft with Mr. Braydon Rands and Mr. Ryan Crawford who would be responsible for positioning jacks under the rear of the aircraft. When everything was in position, Mr. McKee had Capt. Learning slowly reduce power to minimize the torque and the possibility of the aircraft slipping off the jacks. Once power was at idle, Mr. McKee then advised Capt. Learning to shut down the aircraft without the use of the rotor brake. The excellent teamwork demonstrated by Capt. Learning, Colin McKee, Braydon Rand and Ryan Crawford was instrumental in the safe recovery of the CT146 and as such the entire team is deserving of this *For Professionalism* award.

For *Professionalism*

For Commendable Performance in Flight Safety

Master Corporal Richard Gorth

Photo: Cpl Vandenbroek

As part of the design upgrade of the CT 114 Tutor fleet in 2023, the oxygen lines for the low-pressure breathing systems were being replaced. Following a discussion with the Project Director, MCpl Gorth suspected incorrect line manufacturing, particularly the incompatibility with oxygen systems. He discovered that the replacement lines were chemically treated, and that the fabrication of the lines may not follow the Canadian Forces Technical Orders (CFTO).

MCpl Gorth immediately conducted a review of the line manufacturing process and confirmed that it did not adhere to the technical orders. As a result, the parts produced were deemed non-conforming, he then advised the CT114 Weapon System Manager who immediately directed re-manufacturing and replacement of all low-pressure oxygen lines to ensure the health and safety of all personnel who operate this aircraft.

MCpl Gorth's exceptional commitment to Flight Safety is evident through his thorough investigation of the oxygen line fabrication. His actions demonstrate outstanding professionalism and dedication, going well beyond the usual scope of duties. MCpl Gorth is highly deserving of the *For Professionalism* award.

DOSSIER

SOAR SPOTS: A review of glider conflictions in Canada

by Nicholas van Aalst, Safety & Quality, NAV CANADA

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During the late morning of August 12, 2022, a Boeing 767-375ER was conducting an instrument landing system approach to Hamilton, Ontario's Runway 12 when a glider rapidly filled the crew's windscreen, forcing the crew of the 767 to take evasive action, passing close enough to clearly observe the glider pilot. Fortunately, both aircraft were able to continue and make normal landings without further incident (Aviation Safety Network, 2022). This event illustrates the challenges and importance of airspace deconfliction and interactions between glider operations and other airspace users.

The Safety & Quality (S&Q) team at NAV CANADA has identified glider operations as a driver for conflicts with a heightened risk of collision within controlled airspace. Several features of glider operations contribute to this risk driver, including constraints on human performance, air traffic control operational limitations including airspace requirements, as well as the limitations on aircrew and their operational requirements. In varied and dynamic combinations of these factors, the result may render a degraded state of situational awareness and collective mental modelling leading to a near mid-air collision (NMAC), or worse. Via awareness for this type of confliction, this article will provide insights into some of the pre-conditions for events, such as occurred in Hamilton, and provide readers with interest-based best practices for prevention.

Background

Conflictions with gliders and power-driven VFR and IFR aircraft are not a new phenomenon. On August 28, 2006, N879QS – a Hawker 800XP on descent near Reno, Nevada – collided with a Schleicher ASW 27 glider, as seen in Figure 1/Figure 2, at approximately 16,000 feet above sea level. According to the National Transportation Safety Board (NTSB) report (Charnon, 2008), "...damage sustained by the Hawker disabled one engine and other systems; however, the flight crew was able to land the airplane" (p. 1). The NTSB's findings indicated that the closure rate between the aircraft rendered collision avoidance as improbable, if not impossible once the conflict became apparent.

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Moreover, the lack of a transponder signal from the glider led to a degraded state of air traffic control (ATC) and aircrew situational awareness which contributed to the mishap.

Method

The S&Q department has conducted a review of probable glider confliction areas in Canada, including transponder and ATC service provision requirements. This analysis further examined operating locations, such as Air Cadet Gliding Program (ACGP) Cadet Flying Sites, as well as civilian clubs and associations, including adjacent airspace and stakeholder interactions. Moreover, the review explored limitations of "see and be seen" and "see and avoid" principles associated with visual meteorological conditions (VMC) for both visual and instrument flight rules aircraft.

From this review, three key elements of conflicts, including their relationships, were identified as summarized below, as well as in figure 3.

1. Human performance limitations
2. ATC operational limitations
3. Aircrew operational limitations

Where limitations in figure 3 overlap and interact, conflicts are more likely to occur. The following sections describe these interactions in greater detail.

Figure 1. Schleicher ASW 27 glider

Figure 2. Hawker 800XP N879QS following a mid-air collision with glider

Human Performance Limitations

The subject of human performance is a cross discipline conversation requiring an understanding of situational awareness and perceptual blindness affecting mental modelling.

Situational awareness (SA) is generally comprised of three levels: detection, understanding, and anticipation. First and foremost, detection requires aircrew and ATC to sense information regarding the environment. Second, aircrew and ATC must understand the meaning of the information, ultimately leading to the third level of situational awareness: the anticipation of future needs. In reflection upon the events of Reno, Nevada, and Hamilton, Ontario, what is apparent is that SA was not complete prior to the gliders being spotted. However, even with rapid SA restoration, time was the critical factor in conflict resolution.

While levels of SA are built on our ability to sense the world around us, phenomenon such as perceptual blindness, also referred to as inattention blindness, involve failing to observe what may be considered obvious. Similarly, it is plausible that cognitive capture can promote a fixation upon a task, an object, or even a thought, at the expense of SA.

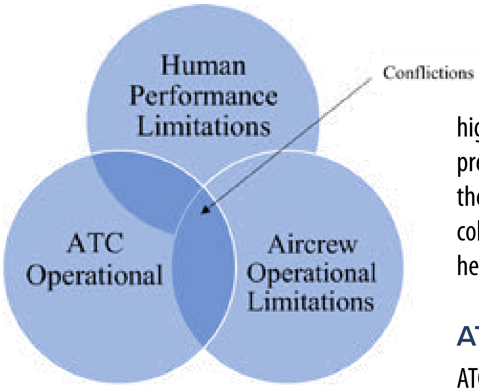

Figure 3. Risk driver relationships and interactions

In any event, what is apparent from stakeholder engagement, is that gliders are rarely forming a component of SA and collective mental modelling, largely due to low priming on the threat associated with glider operations, and a bias towards power-driven aircraft during traffic lookouts. Additionally, research indicates that the inconspicuous colouration of objects may play a role in perceptual blindness. When applied to low-profile design gliders – predominantly white in colouration – the ability to visually identify gliders is reduced. In the context of the Canadian Armed Forces and the associated ACGP aircraft – typically yellow with blue highlights – this phenomenon may not present as apparent. However, NMAC with these aircraft continue to occur, and mid-air collision is a very real threat absent a heightened level of awareness.

ATC Operational Limitations

ATC is often relied upon for traffic information to augment aircrew SA. Simultaneously, control instructions and clearances are provided based on known traffic with transponder-derived secondary surveillance radar and space-based surveillance data. However, under Canadian Aviation Regulations 605.35, gliders are permitted to operate within significant segments of Canadian Domestic Airspace without a transponder and altitude encoding equipment. This may render gliders as effectively invisible, with only occasional primary radar returns being observed, although these radar returns may represent any number of objects, including but not limited to birds.

Moreover, with primary radar returns not rendering altitude information, and with primary radar returns being quite frequent, it may be challenging for ATC to provide relevant traffic information, particularly due to workload. As such, to better manage workload and to aid in traffic deconfliction, ATC may heavily rely upon altitudes for traffic separation, such as when aircrew adhere to standard altitudes based on flight rules and direction of flight. However, the concept of operations for gliders coupled with their inability maintain constant altitudes with relatively rapid changes to heading and airspeed, suggests that gliders pass through altitudes of IFR and VFR traffic, resulting in a wide range of conditions where conflictions may occur.

Aircrew Operational Limitations

Having explored the concepts of human performance and limitations for ATC, operating limitations for aircrew in VMC, as well as available publications, deserves some consideration.

Whether operating as VFR or IFR, aircrews in VMC rely on mantras of "see and be seen", as well as "see and avoid" for deconfliction. Of these, three elements appear:

1. A traffic lookout
2. Being visible
3. Resolving conflicts

From the vantage point of a glider pilot, a traffic lookout is counter-intuitively limited, even with the visibility afforded by canopy designs. Restrictions of visibility include the wingspan and wing position, as well as the positioning of the pilot's seat. In the context of ACGP aircraft, this may be particularly evident for pilots occupying the aft seat, as seen in figure 4, which is common for glider familiarization flights. Additionally, as gliders may operate for extended periods with high rates of turn, glider pilots are challenged to

Figure 4. View from aft seat of ACGP 2-33 glider

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maintain effective traffic lookouts. In turn, from a third-party perspective, the ability to observe a tightly orbiting glider can be difficult, particularly with low-profile designs and the absence of anti-collision lighting, across varied landscapes and background colors.

When discussed from the perspective of power-driven aircraft, physical obstructions, specifically the airframe, limit visibility. However, a deeper challenge presents as a conflict between the "heads up" monitoring of displays, and effective traffic lookouts, with cockpit workload becoming increasingly predominant in the latest generation of aircraft – civilian, as well as military.

Perhaps compounding SA, a review of aeronautical publications, including applicable NOTAMs, has revealed that gliding operations may not be clearly defined, nor are glider pilots required to remain confined to Class F airspace or as depicted on VFR navigation charts. To this end, ACGP operations rarely occur within the confines of Class F airspace, and may be poorly represented in IFR publications, as well as the Canada Flight Supplement and Canada Air Pilot.


Photo: Sosinski, 2024

Figure 5. Glider pilot perspective under cumulus cloud

A Probable Confliction Scenario

Based on the drivers in Figure 3, identifying probable confliction locations within Canada required S&Q to explore areas with a mixed requirement for ATC clearances, communication, navigation, and surveillance, coupled with significant mixed flight rules and performance elements. Further review suggests that this complexity and mixed equipment/capability tension occurs more frequently within Class E airspace, where VFR aircraft operate without the element of a control service, and where transponder requirements vary in accordance with the Designated Airspace Handbook.

As such, consider the scenario of an IFR aircrew during arrival and approach phases of flight, descending through a small area of Class E airspace on an ATC clearance, prior to transitioning into a terminal control area or control zone. During this time, this crew may face heightened cognitive workloads and competing priorities – covering distances upwards of four nautical miles per minute, or greater – transitioning between VMC and IMC through scattered or broken clouds, such as depicted in Figure 5. In a multicrew environment, workload factors for the pilot monitoring include direct controller-pilot communications, and other "heads down" duties, requiring significant crew resource management skills to maintain SA.

Consider now the perspective of the VFR glider pilot, operating within the same segment of Class E airspace, relying upon rising air beneath a cumulus cloud through which the previously mentioned IFR aircraft is about to pass. In this scenario, absent a requirement for communication and surveillance-related equipment, gliders are unable to contribute to the shared mental modelling of the IFR aircrew and ATC, nor are gliders fully aware of the related traffic picture. It is here that the preconditions for a confliction are present, and it is here that conflicts, such as previously depicted in Hamilton and Reno, are able to develop.

Stay Classy in Class E

As the prevalence of threat has presented predominantly within Class E airspace, including across airways where aircrew and ATC may not be aware of glider operations, specific locations for conflictions are vast and challenging to predict. However, during stakeholder engagement with S&Q, the core concept of awareness and collaboration drive effective flight safety initiatives and have resulted in a series of recommended best practices.

Glider Pilots

1. Study airspace prior to flight operations and be aware of IFR and VFR traffic flows, including departure, arrival, and instrument approach procedures.
2. Provide frequent and accurate position reporting, and intentions, on enroute or mandatory frequencies.

3. Develop rapports with adjacent operators and ATC units while adhering to localized agreements and best practices.

Power-driven Aircraft Pilots

1. Study publications prior to flight operations and be familiar with adjacent aerodromes and airspace that may support glider operations.
2. Where practicable, monitor for traffic on the enroute frequency, and provide position reports where able.
3. Be deliberate and critical when conducting traffic lookouts in VMC.

Air Traffic Controllers

1. Where practicable, provide information on unverified traffic, including primary targets that are persistent or steady state, in areas where gliders are known or suspected to be present.
2. Develop a rapport with glider operators to engage and inform on operational impacts.
3. Where required, develop, verify, and validate localized procedures for glider operations.

Conclusion

What S&Q's review has shown is that glider conflictions are driven by three key enablers: human, ATC, and aircrew operational limitations and requirements. Further degrading situational awareness are aircraft operating without a transponder, such as the case with many gliders in Canada. As a result, best practices towards deconfliction in advance of, as well as during operations, include frequent and effective communications and stakeholder engagement leading to heightened levels of cognitive priming and awareness. These practices are crucial in preventing airborne conflictions such as those having occurred in Hamilton, and mishaps such as Reno, and may serve wider benefits to the aviation ecosystem in Canada, and around the world.

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For Professionalism

For Commendable Performance in Flight Safety

Master Corporal Heather Pettipas

Photo: Uncredited

On 11 December 2024, MCpl Heather Pettipas, an Air Operation Support Technician Junior Supervisor at 405 long range patrol Squadron, was deploying in support of Op LIMPID from 14 Wing Greenwood aboard a CP140 Aurora. MCpl Pettipas was seated on the floor aft of the Acoustic Sensor Operator station, next to the post over wing hatch when she observed an unusually large gap in the number two aft portion of the Turtle-back. Recognizing this as potentially more than the normal variation, she immediately raised her concerns with the other technicians on the flight who initially did not see it as an immediate problem.

MCpl Pettipas, driven by her commitment to safety and professionalism, insisted on further verification. She alerted the Flight Engineer which led to a pause in the launch schedule so that the issue could be investigated. Upon inspection, it was discovered that the rear inboard pin of the Turtle-back was misaligned, a discrepancy that had gone unnoticed through several checks and pre-flight inspections.

Her vigilance prompted the generation of a Flight Safety report, and the prompt correction of the issue, allowing Op LIMPID to proceed safely. MCpl Pettipas demonstrated exceptional attention to detail, professionalism, and an unwavering commitment to flight safety. MCpl Pettipas's actions prevented a potentially hazardous situation during a deployment, and she is deserving of this *For Professionalism* Award.

For Professionalism

For Commendable Performance in Flight Safety

Aviator James Robinson

Photo: Avr Pellerin

Aviator (Avr) James Robinson is a junior Airborne Electronic Sensor Operator. On their first deployment with 407 Long Range Patrol Squadron in October 2024, Avr Robinson noticed an unusual smell coming from the air gasper at their station while taxiing in for shutdown following a dual generator failure airborne of their CP140 aircraft. Avr Robinson alerted more experienced crew members but was advised by those crew members that the source of the smell was coming from the auxiliary power unit exhaust which can be smelled inside aircraft depending on wind direction.

Avr Robinson pressed the issue, leading to other crew members to reassess the odor and eventually confirmed that it was an early indication of a significant failure of an engine mounted generator. Avr Robinson's observation lead another crew member to look out the window and observe smoke from the number two engine leading to an emergency shutdown and evacuation of the aircraft.

Thanks to Avr Robinson's vigilance and unwavering determination, the crew was able to act swiftly and prevent a potentially catastrophic situation. His exceptional performance, adamancy, and quick thinking ensured the safety of everyone on board, reflecting a level of professionalism and commitment far beyond his experience and is deserving of this *For Professionalism* award.

DOSSIER

Flight Data Analysis (FDA) Trial

Photo: Uncredited

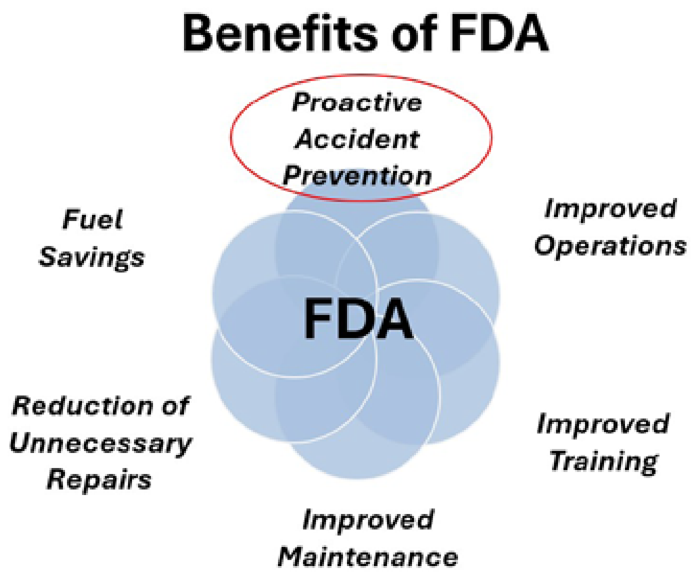
by Major Claire Maxwell, CD, Ret'd

The objective of the DFS FDA trial was to understand the scope, challenges, and potential of an FDA capability from an RCAF Flight Safety (FS) Program perspective. The two-year trial began in July 2023 using Lumina software and technical support provided by APS Aerospace and used Flight Data Recorder (FDR) information from CH146 Griffon and CC144 Challenger fleets.

In December 2023, the trial had its first upload of FDR data from four Griffon helicopters. This data set was filtered using a commercial algorithm creating a huge number of events that had to be sifted through to confirm validity. Confidence in its effectiveness was initially low until mid-January, when the DFS FDA team discovered that a rotor brake event being triggered by the Lumina software could be corroborated by Griffon maintenance records. In early February, 2024, an updated event set was released making the tool more precise for military operations and reducing the number of Griffon events from over 18,000 to 1,434. With this update, additional Griffon tail numbers were included for analysis in the software, and by the end of February, the fleet of Challengers was also added to the mix. The incorporation of the Challenger data proved to be much easier to fulfill than the Griffon data, with the first viable application discovered in April 2024 when a Challenger experienced a malfunctioning right hand airspeed indicator which led to a rejected take off. Although the search for this event was initiated by a Flight Safety Information Management System (FSIMS) report, the FDR data corroborated the pilots' story reinforcing the value of this tool as an investigative resource.

The FDA visual animation feature became available in April 2024 for the Challenger fleet. This feature is considered a valuable tool for debriefing personnel and provides rich context to display an event's storyline. This feature is not yet available for the Griffon, as the helicopters flight path is erratic and often shown below ground. This demonstrates the challenge of accurately translating helicopter flight data into useful visual animations and supports the need for an experienced technical analyst to be an essential member of an FDA team.

As the year progressed, confidence in interpreting the software grew. Many FS occurrences reported by Canadian Armed Forces (CAF) personnel within FSIMS could be seen within the Lumina software. This reinforced the value of this tool for retrospective use to enhance FS investigations. The overlay of information also confirms areas of strength within the FS reporting culture. This means that we can see where CAF personnel feel comfortable reporting Flight Safety occurrences particularly around technical-based issues. Examples include a Challenger asymmetric spoiler event during descent into Warsaw in December 2023 and a Griffon mast over torque event during a troop insert in July 2024.



FDA has also identified gaps in the current FS reporting system. There were many events triggered in the FDA software which were not reported in FSIMS. This means that there are situations of higher risk that RCAF aircrew are either not aware of or have downplayed their significance. Knowledge of these events allows the FS team to consult the crews for context of use within a privileged forum and to develop and recommend appropriate preventive measures if required. This also promotes the use of FDA as a predictive tool to highlight potential areas of concern. Examples of these gaps include Challenger Traffic Collision Avoidance System (TCAS) Resolution Advisory and Warning events which were not being reported or tracked via FSIMS. Additionally, through analysis of the Lumina software, a concerning number of Griffon bank angle exceedances were discovered. Research into these exceedances led to the discovery that the 50-degree bank angle limitation (as specified in the Griffon Flight Manual) was associated with a Gravity Load (g-load) design certification requirement of 1.5G from the Original Equipment Manufacturer (OEM). This finding initiated a Record of Airworthiness Risk Management (RARM) and spurred discussion between Griffon technical, operational and FS personnel, increasing understanding of the Griffon capability and design limitations based upon its g-load.

Finally, FDA allows for a very effective post mission analysis of crew and aircraft performance. For example, the study of Challenger GPS Spoofing and Jamming events provides valuable insight into how aircraft operations and procedures can be amended to anticipate areas of concern and create buffers of safety.

Lessons learned from the DFS FDA Trial throughout 2024 will provide valuable expertise to support the development of an FDA program and will be used to refine the requirements needed to establish a future FDA capability for DFS, the RCAF, and potentially the entire CAF.

Photo: Avr Marcoux

DOSSIER

Maritime Forces Pacific Hosts Inaugural Flight Safety Point of Contact Training

by Lt(N) Rhys Davies

Photo: Cpl Gamache

In a significant step towards enhancing Flight Safety within the Royal Canadian Navy (RCN), Maritime Forces Pacific recently hosted the inaugural Flight Safety Point of Contact training from 6-7 February 2025. This pivotal event saw the collaboration of 1 Canadian Air Division's Flight Safety staff and the Advanced Naval Capabilities Unit (ANCU) to deliver the training to the inaugural class of Flight Safety Points of Contacts throughout the Formation. Additionally, 24 Naval and Army Reservists received the training virtually thereby scaling the delivery of the training to their nascent Flight Safety programs.

The training, held at Naval Officer Training Center Venture, was designed to equip sailors and soldiers with the necessary skills and knowledge to serve as Flight Safety Points of Contact within their respective units. This initiative aims to establish a robust network of Flight Safety trained sailors who will be supported by qualified Flight Safety Officers. The comprehensive training program covered various aspects of Flight Safety, including risk management, human factors, incident reporting, and risk reduction strategies, ensuring that participants are well-prepared to uphold the highest standards of safety in their operations.

Rear-Admiral Robinson, Commander of Maritime Forces Pacific, emphasized the importance of this training, stating that "The establishment of a dedicated Flight Safety Program within the RCN is a critical enabler for our Intelligence, Surveillance, Target Acquisition, and Reconnaissance (ISTAR) capabilities. This training not only enhances our operational readiness but also underscores our commitment to safety as we conduct our training and operations."

ANCU played a crucial role in facilitating the training, bringing together experts and resources to ensure its success. Their involvement underscores their role as the Uncrewed Systems Center of Excellence in the RCN. ANCU is leading the RCN's efforts to prepare for the delivery of RCN ISTAR to the fleet, and Flight Safety is a foundational program to enable all future UAS capabilities in the RCN.

Looking ahead, the establishment of the RCN Flight Safety Program is set to play a key role in the anticipated delivery of the RCN ISTAR capabilities, with the contract announcement expected in the Summer of 2025. This program will provide a solid foundation for the integration of advanced ISTAR systems, further enhancing the RCN's operational effectiveness and strategic capabilities. RCN ISTAR will be a Halifax-Class deployed, Class I/II UAS that will provide a persistent, beyond-visual-line-of sight (BVLOS), near real-time Intelligence, Surveillance, Target Acquisition, and Reconnaissance (ISTAR) for the RCN. The uncrewed aircraft (UA) will be a low to medium altitude, medium endurance system with vertical takeoff and landing (VTOL) system that eliminates launch and recovery systems that may foul the flight deck and restrict CH148 Cyclone operations. RCN ISTAR will be capable of shore-based operations to facilitate crew training, crew currency requirements and the build-up of integrated uncrewed aircraft systems (UAS) operations within the RCN. ANCU will be the lead unit to train and employ RCN ISTAR ashore and at sea.

If you or your Command Team are interested in learning more about Flight Safety in the RCN, please contact PL-ESQCFPNUASTP@forces.gc.ca.

For *Professionalism*

For Commendable Performance in Flight Safety

8 AMS Engine Bay Team

Photo: Cpl Barrie

On 22 February 2023, during a Pre-Installation Inspection of a Quick Engine Change Unit (QECU) from a CC130 Hercules aircraft at 8 Air Maintenance Squadron (AMS), 8 Wing Trenton, the hydraulic filter was found to be contaminated with an accumulation of brass filings.

The technicians were following a routine publication which states, "Carry out a General Visual Inspection of the in-line hydraulic filter assembly for protrusion of filter bypass red buttons." The red buttons did not exhibit any protrusion; however, the technicians followed an established "shop level best practice" and opened the hydraulic line. They unscrewed the filter assembly and were surprised to discover an accumulation of brass filings.

Upon discovery of the filings the QECU and the hydraulic pump were quarantined. An investigation was initiated that later determined the root cause as deterioration of the inner workings of the pump.

The investigation also helped revise the CFTO instructions to allow for detection of such accumulation earlier during periodic inspections and hence reduce the potential for in-flight failure of the engine hydraulic system.

MCpl Wilson, Mr. Adams and Mr. Mourez, of 8 AMS, are being recognized for going the extra distance to discover the brass filings accumulation. Their efforts went one step beyond what was required and demonstrates a commitment to excellence and flight safety in the RCAF, they are deserving of this *For Professionalism* Award.

Commitment: Involving Support Trades

Photo: Uncredited

by Lieutenant Victoria Lanthier, Food Svcs O

While my position as Food Services Officer may seem removed from the Flight Safety Program, Flight Safety plays an important role in the operations of the Food Services section – specifically, Flight Feeding. Meals are produced every day that could directly impact the aircrew's ability to complete their mission successfully. This may become less obvious to persons working within Food Services due to their distance from flying operations, which is where the importance of education and commitment come in – commitment, as outlined in *Flight Safety for the Canadian Armed Forces*, resulting from all personnel believing in the value of the Flight Safety Program and understanding their responsibility to actively participate.

A particular instance that speaks to commitment was a Flight Safety occurrence regarding mold on a piece of pre-packaged cheese. These cheese pieces are received individually vacuum-sealed from the supplier. While Flight Feeding has very specific directives divulged by Strat J4 Food Services and 1 CAD A4 Food Services to ensure the safe preparation, cooking, handling and issuing of flight meals, there is room for error when these daily food preparation tasks become repetitive and mundane for both the cooks preparing the meals and their supervisors. Difficulties also exist in inspecting pre-packaged food items due to the packaging of certain items – i.e. opaque areas concealing some areas of the food as with these cheese pieces. In this scenario, the Flight Feeding cooks' lapse in vigilance while checking the items when including them in the flight meals resulted in them missing mold on one of the cheese pieces. After some deliberation of the possible options to remedy this risk, the pre-packaged cheese pieces were replaced with cheese that were individually cut by the cooks, when required for meals, to ensure every piece would be properly checked for spoilage.

My role in the situation was to properly educate the cooks about the importance of their role of supporting flying operations, and respecting the directives put in place to ensure the existing safety measures are successful. In educating them this importance, it increased their understanding of their specific responsibility to participate in the Flight Safety Program by maintaining vigilance in their daily duties, and therefore, also increased their commitment to the Flight Safety Program. Despite the seeming distance some support roles may have from flying operations, everyone's commitment to the Flight Safety Program can have an impact on its success.

Editor's Note:

As this article demonstrates so well, the fist slice of cheese in the Flight Safety Resiliency model can in fact be something as simple as a moldy slice of cheese.

Importance of the Chain of Command (CoC) in the Flight Safety Culture

by Capt David King

I have only been at my new squadron for six months and I have had several occasions to consider the implications of the Flight Safety system and the importance of a healthy Flight Safety Culture within the shops and the Chain of Command (CoC).

Here at the Squadron, there is a fantastic Deputy Flight Safety Officer who has been a reservist for about eight years. She has a clear focus on Flight Safety and an open reporting culture which is fully supported by the CoC. When there is a potential Flight Safety issue, she makes it her top priority. She emphasizes to the technicians at every chance she gets that they should treat everything like a new car that they were buying and to report everything that they wouldn't accept on this new car, and she uses her training as the Flight Safety subject matter expert to triage all these reports. There has been a trend of increased reporting after every squadron professional development day where she has had the chance to provide a mass briefing on recent incidents and taken the opportunity to praise good catches. With Flight Safety being a clear priority in her work ethic, the squadron manages to keep the number of overdue reports to nearly zero, year-round. I have also had a chance to reflect on my experiences at other squadrons which have a very different Flight Safety Culture. One such Squadron that comes to mind has a surge in activity every summer and becomes swamped with Flight Safety issues that it never seems to prioritize or dig itself out of. The CoC at this Squadron appears to have become desensitized to carrying overdue reports and observations in other areas. I have found myself doubting the effectiveness of their Flight Safety system and sought other channels to address issues I found in their squadron. If I had been assigned to this squadron full time, I wonder how likely I would have been to report issues, especially if they never seemed to be resolved. I take away from both examples a keen appreciation of the importance of a good Flight Safety Culture and how it needs to be a clear priority set by the CoC.

Photo: MCpl Gaudreault

Photo: Avr Nicholas Zahari

Flight Safety, Swiss Cheese and COMM Fail

by Capt Paula Findlater, 439 Combat Support Squadron (CSS) Bagotville

In January 2019, I was scheduled for a routine training mission on the CH146 Griffon helicopter. At the beginning of the engine start sequence I experienced issues with my communications. I had intermittent audio and any transmissions that I did make were very weak even with my crew member's volume adjusted.

On several occasions before this incident, I had changed the communication (COMM) cords, both ear cups on my headset, and completely changed out the headset outlets to remedy these continuing COMM issues. After a few minutes of discussing the impact on the training mission, the decision was made to continue the flight. Early in the mission communications seemed to be improving but we decided that as a precaution, all communications with the tower would be carried out by the Aircraft Commander (AC). The training mission continued with only minor issues noted in the COMM system until we decided to practice a simulated emergency. A stuck peddle emergency was simulated by my AC during an altitude over airspeed takeoff shortly after takeoff. On recognition of the simulated stuck peddle I immediately aborted the takeoff stating that I had a peddle issue and that I was moving back down. After I was on the ground, the rest of the crew indicated that they had heard no communications whatsoever from me and that the Flight Engineer was unaware of the simulated emergency. Also, the AC was unsure that I had recognized and actioned the emergency and indicated they were standing by the controls as per standard operating procedures (SOP).

After a brief discussion the crew felt that this was a reportable Flight Safety incident, but that it was one with minimal impact on the safety of the crew and aircraft. Following this incident our training mission was terminated early, and we returned to base without further incident. If I were to change anything in this scenario, I would not have continued with the flight and chosen to sort out the COMM issues first. The first slice in the Swiss cheese Model was the decision to depart with a COMM issue, the second was the decision to have the AC take care of the communication with tower and the third was the simulated emergency. Once the holes in these slices started to line up, a situation which had the potential to become dangerous. Fortunately, on this occasion the training mission was cut short, a decision which most likely ended the chain of events which could have led to a much worse outcome.

From the Investigator

TYPE: SZ23 Glider (C-GFMN)
LOCATION: Centralia, ON
DATE: 27 April 2025

The accident flight was part of the Air Cadet Gliding Program in Centralia, ON in support of spring glider familiarization flying operations. The glider crew consisted of a pilot and a cadet passenger.

The occurrence pilot was conducting their third glider flight of the day, their third glider flight for the calendar year. The first two flights consisted of check flights to validate pilot proficiency, followed by a passenger familiarization flight.

The takeoff from Taxiway 34[1] proceeded normally until the tow rope inadvertently detached from the glider. The premature rope release occurred near the departure end of the takeoff taxiway. The aircraft manoeuvred right, then left towards the end of Taxiway 34, and the left wing struck the ground while in the left turn. The glider nose and fuselage firmly contacted the asphalt near the end of Taxiway 34 and the right wing subsequently contacted the ground.

The aircraft sustained very serious damage and both occupants received minor injuries.

The investigation is focusing on human, operational, and technical factors.

1. It is normal Air Cadet operation to have tow planes takeoff from taxiways so as not to occupy one of the airport runways.

Photos: Centralia Cadet Flying Site

Epilogue

TYPE: Hazard Investigation
LOCATION: CAF Range Training Areas
DATE: 19 January 2022

On 19 January 2022, the Directorate of Flight Safety opened an investigation into Canadian Armed Forces Range Training Areas after numerous range-related Flight Safety occurrences and associated stakeholder concerns were noted. These occurrences involved air-land integration safety concerns that primarily affected crewed aircraft operations but had a larger nexus that related to the management of three-dimensional air and ground operations over Canadian Armed Forces ranges. Although this investigation was not initiated after a specific occurrence within any range, concerns were significant enough to warrant an investigation.

The investigation focussed on Flight Safety occurrence and hazard report statistics over a 10-year period and included investigation into Range Control function, composition, coordination and planning. Range training area governance/orders in addition to current Range Control infrastructure and communications were examined as well as recent initiatives taken to enhance safety of flight.

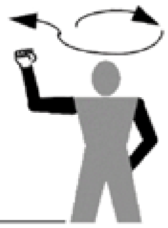
The investigation found systemic inadequacies in range training area orders and a lack of standardized and effective airspace training for range control personnel. Irregularities in weekly range control meeting participation were noted as well as limitations associated with communications infrastructure that included a lack of real-time aircraft monitoring technology.

The investigation recommends the integration of Royal Canadian Air Force and Canadian Army range training area governance/orders. The modernization of the range training area communication infrastructure and improvements to the range control coordination meeting. The investigation recommends the implementation of an airspace management system which would allow for better real-time situational awareness and deconfliction within Canadian Armed Forces Range Training Areas.

Photo: Cpl Salisbury

Photo: 2Lt Keyser

MATCH THE MARSHAL



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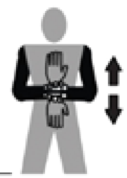

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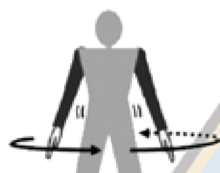

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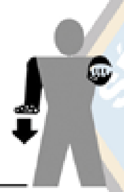

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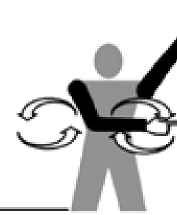

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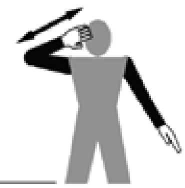

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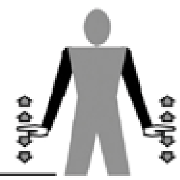

9.________________

10.________________

11.________________

12.________________

A-28 Fire

A-43 Engage nose wheel steering

B-15 Engage rotor(s)

A-31 Lower wing flaps

B-10 Move downwards

A-41 Take off

A-50 Fuel spill

A-27 Cut engines

A-25 Start engine(s)

A-56 Floss

A-7 Turn right

B-20 Winch down

A-6 Turn left

A-3 This way

A-5 Slow down

A-10 Stop