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Flight Comment

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Canada

Chief of the Air Staff

Views on Flight Safety

By Lieutenant-General W.A. Watt, Chief of the Air Staff

The position of CAS brings with it many responsibilities and obligations, not the least of which is for flight safety. Since my appointment as CAS and Commander of Air Command, I have taken the opportunity to visit many wings and squadrons to meet with Air Force personnel and to get an impression of our flight safety culture, among other things. My sense is that the commitment to flight safety at the coalface is strong. That is good news; however, a dynamic organization such as the Air Force has to keep an eye out for future threats, and needs to be constantly trying to improve its safety performance. In that vein, there are several issues that have caught my attention and on which I am determined to make progress.

Our airworthiness risk management processes are critical for the maintenance of aviation safety. Whenever flight safety hazards are identified we use these processes to estimate what the risk to aviation safety might be so that we can take action to bring these risks to acceptable levels. I consider that the risk management processes we have in place are appropriate, but to be doubly sure, I have asked the Chief of Review Services (CRS) to conduct an independent assessment and to suggest, as necessary, where they might be improved. I look forward to receiving the CRS report and can assure you that we will make very effort to ensure that our risk management processes are both sound and at the standard expected of a modern air force.

Similarly in the vein of best practices, I applaud the recent initiative of the Commander, 1 Canadian Air Division to identify ways to optimize the use of automation in our aircraft. As aircraft are increasingly controlled by sophisticated computerized autopilots, flight management and navigation systems, the proper management of these automated systems requires special training and, more importantly, a change in aircrew culture. While we already have several automated aircraft types in the inventory, the next few years will see more coming on board. Integrating these highly sophisticated aircraft into the Air Force safely requires us to change how we think about flying and maintaining them. This is an issue we need to get right and must be done sooner rather than later.

In addition, we must not forget the new training systems that will teach our maintenance personnel how to keep our new aircraft flying. Simulation and computer-assisted training will be the order of the day.

All these changes are welcome; however, we need to be sure that we are culturally ready to make best use of the capabilities of the new systems. This is the great flight safety challenge for the future – a future built upon a strong flight safety culture, where open and honest reporting of problems and incidents, effective communications of expectations and limitations, careful and professional risk assessments are its pillars. Use them. Cherish them. Foster them. Instil them. I am counting on you. ◆

Lieutenant-General Angus Watt
Chief of the Air Staff

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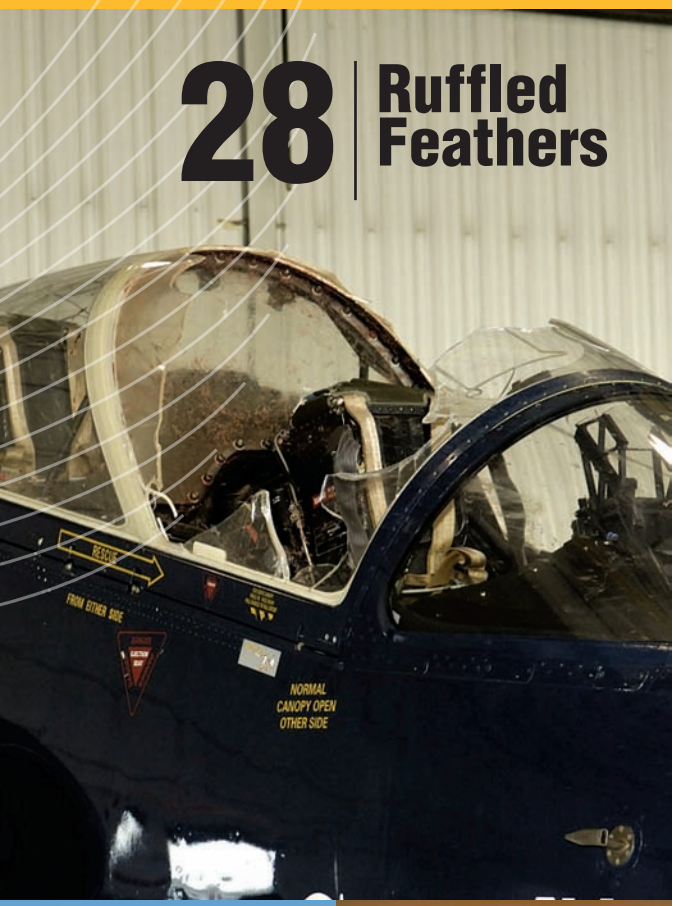

Cover Page: *A CF18 flying over Comox, BC.* **Photo:** *Private V. Lightowler*

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From the Director

"A Lonely Impulse of Delight…"

Not a few accidents have been prefaced by that infamous phrase, "Hey, watch this!" A personal review of A Category accidents over the last 60 years shows me that if these words were not actually spoken, the sentiment was at least there in the mind of the aircrew in many cases. Happily, this type of accident is now pretty rare, but unfortunately, the species is not entirely extinct.

What is it about flying that leads to impulsive behaviour? One only has to read a few lines of poetry to realize the strong emotional effect that flying has on the human psyche. Take for instance John Gillespie Magee's famous "High Flight:"

Oh! I have slipped the surly bonds of earth
And danced the skies on laughter-silvered wings;
Sunward I've climbed, and joined the tumbling mirth
Of sun-split clouds - and done a hundred things
You have not dreamed of…

Magee creates extremely powerful imagery in his poem, and its enduring popularity is surely due to the fact that it strikes a chord in the mind of everyone who has ever piloted an aircraft. We have all felt the emotional rush of mastering our powerful craft and have perhaps given way to the temptation of the moment to demonstrate to the common masses what superb airmen we are. Thus, we may easily fool ourselves into believing we are immortal, if only for a few seconds.

Of course, I hate to be a spoilsport, but I do have to point out that Pilot Officer J.G. Magee was not immortal. His death was prosaic, occurring not in combat, but in an accident. Magee's Spitfire suffered a mid-air collision with an Oxford trainer over England, killing both Magee and the other pilot. And while I do not have any information to suggest that Magee was doing anything improper at the time, it remains to be said that this accidental loss of aviation resources was a great loss to us and a comfort to our enemy.

Equally powerful sentiments appear in another poem, describing the motivation for flight:

Nor law, nor duty bade me fight,
Nor public men, nor cheering crowds,
A lonely impulse of delight
Drove to this tumult in the clouds…

Fortunately, while W.B. Yeats gave this poem the forbidding title of "An Irish Airman Foresees His Death," its publication does not seem to have dissuaded many budding aircrew from joining the Canadian Forces, as far as I know. Aircrew trades continue to be popular ones for recruits, despite the unfortunate outcomes of accidents, even though they are not nearly as common as they once were.

The point is that whenever humans get wrapped up in an activity, the emotional aspect is just as important as the rational. Flying is fun, for the most part, and completing a mission successfully is immensely satisfying. The problem, from a safety point of view, is that when our emotions overbalance our reason, we are often at risk of putting ourselves in a situation that is beyond our abilities. Whether on a sunny day, during unexpected good weather, over a crowd at the beach or passing by a gaggle of plane watchers at an air show, the "lonely impulse of delight" can come upon us suddenly. Before we know it we are doing something stupid, to put it plainly. Volumes of regulations have been written to keep us on the straight and narrow path; our leaders have counselled us on the folly of our ways; we've heard many a cautionary tale at the bar on a Friday night; yet, people will still succumb to the urge to put on a "departure show," make a low pass, do a wing-over on top of the cottage or slip underneath that bridge when no one is looking. When emotion overtakes reason, aircrew may take incredible risks on the flimsiest of justifications, with dreadful results. Quite often, colleagues of the aircrew involved are genuinely stunned to learn they have committed such an uncharacteristic act. But, the truth is that we are all vulnerable to that "lonely impulse of delight."

In the language of the Human Factors Analysis and Classification System (HFACS), such impulsive acts contrary to regulations are known as an "exceptional deviation." In other words, even though we know the contemplated behaviour is forbidden, we give way to the impulse of the moment and do it regardless. Often such decisions are taken in a fraction of a second, and regretted for a lifetime. The deadly aspect of such behaviour lies in that by committing an exceptional deviation, we make it five times more likely that a fatality will be the end result, according to Drs. Shappel and Weigman, the creators of HFACS. Five times - think about it! Giving way to the impulse of the moment exposes you and others to enormous risks of your own creation. And, unlike the Irish airman of the poem, you have probably not thought through the likely consequences of your action. So, as the clear and sunny skies of summer approach, and the airshows beckon, pause and take a good hard look at yourself, your peers and your subordinates. Maybe it is time to reinforce the concepts of airmanship and flying discipline within your organization, before someone you know gives way to an unfortunate impulse and has to deal with a lifetime of regrets. ◆

Colonel C.R. Shelley,
Director of Flight Safety.

Winter be gone!

I don't know about you, but after a winter like the one we've just had, I totally intend to make the most of the warmer months to come. We've seen record temperature lows in the prairies, and a record-breaking total snowfall in parts of eastern Canada. As with any Canadian seasonal cycle, April, May and June will see us transition from snow shovel to lawnmowers, from driveway salt to pool chloride, and from snowsuits to bathing suits.

Besides what we do at home, many of our work routines and habit patterns must be deliberately changed and refocused along with the climate change. Being the avid readers of *Flight Comment* that you all are, you'll notice that this edition's theme is indeed geared towards some of the challenges which summer months bring: birds, storms, microbursts, rain, fog, summer VFR traffic and Aircrew Life Support Equipment (ALSE).

Many other summer related subjects deserve to be explored, and will be in the next edition. But for now, here is some additional food-for-thought for your summer ops planning:

1. **Hot weather brief**. Most Wings/Squadrons maintain the tradition of presenting a mandatory summer/hot weather briefing to operators, and that is certainly a good idea in order to help us change our mental gears towards some very real technological and health concerns.

2. **ALSE**. Warm weather brings some changes in some of the ALSE we use on a daily basis. The ALSE working group article contained herein reminds us to use proper channels for hazard and deficiency reporting. Otherwise, proper, safe and effective changes just won't materialize. Trust me on this, I've seen it first hand during aircraft accident investigations. Of equal importance is the need to wear your ALSE adequately, i.e. dual protection clothing when required, flight suit sleeves not rolled-up, adjusting your harnesses and life support vests for summer clothing, etc. You can count on the fact that there will be temptations to cut corners as the temperature rises.

3. **Dehydration**. Definitely one of the main hazards of summer ops. Water intake must be in your daily routine checklist, for the effects of dehydration go way beyond a dry mouth, and include increased mental and physical fatigue, disorientation, and lack of concentration, to name a few. Also, beware of the effects of diuretic drinks like coffee and soft drinks, which, although giving you the impression to quench your thirst, will actually drain you of some of your water content and accelerate dehydration.

4. **Supervision on the flight line**. During summer ops, flight line supervisors must be increasingly aware of the effects of heat and dehydration on their flight and ground crew. I encourage you to seek guidelines and symptoms to watch for through your wing medical staff. As daylight hours increase, so does the opportunity to fly longer days and get more missions accomplished in some CF communities. This may translate into longer hours and an increased workload for some members, which in turn will necessitate closer supervision.

5. **Summer leave and postings**. Invariably, we all look forward to summer leave and the opportunity to "*get away from it all*". What is sometimes less obvious is the way we reconnect to our work upon returning from leave. New faces will emerge, familiar ones will go away, and procedural changes, like CFTOs or aircrew checklist amendments, may have happened in your absence. The onus is on you to ensure you seek and absorb these changes before you hit the flight line.

Spring and summer months bring lots of excitement and an Oh-So well deserved relief from winter. Not only does the shear size of Canada means it carries a multitude of climatic variations in any given season, but the cycle of seasons also means that any given location will go through a wide variety of temperatures and weather patterns. As air operators, we must constantly readjust to this, and be on the lookout for the various traps within each cycle. As such, summer means in no way that we can drop our guards. On the contrary, the last few summers have been rather busy in terms of occurrence investigations. ◆

Captain Stéphane "Pacman" Paquet,
Flight Comment editor.

Good Show

For Excellence in Flight Safety

Master Corporal Pierre Castonguay

MCpl Castonguay is currently serving with 3 Air Maintenance Squadron, 3 Wing Bagotville.

On 10 June 2007, during the Bagotville International Air Show, aeronautics technician Master Corporal Pierre Castonguay was working as a member of the technical support team assigned to several pilots and participants from different areas who were performing a variety of demonstrations using different aircraft. One of the acts was Carol Pilon, a wing walker who performs on the wings of a Stearman biplane while it is in flight. When MCpl Castonguay was helping Ms. Pilon to disassemble her biplane, he observed that the front and rear U-fasteners, which secure the mast that the wing walker holds on to on the top wing of the aircraft during her performance, was cracked over 40% of its surface. Despite the fact that these U-fasteners are readily accessible, the cracks were difficult to see, as they were located at the base of the radius and hidden by numerous paint touch-ups. Note that the U-fasteners are all that secure the base of the mast, and that the mast is stabilized by the two cables fastened at the top of the wing. The situation required immediate attention, and corrective measures were taken by Ms. Pilon to resolve the problem.

The extremely specialized knowledge, attention to detail and extraordinary effort of MCpl Castonguay resulted in the identification of a deficiency that could have resulted in a very serious, if not catastrophic, error in flight. He demonstrated unparalleled commitment and outstanding investigative efforts, despite changing situations and not being qualified for or responsible for this type of aircraft. His performance and vigilance make him truly deserving of the Good Show award for his professionalism. ◆

Good Show

For Excellence in Flight Safety

Captain Jens Rud (Danish Air Force) and Flight Lieutenant James Boning (Royal Air Force)

On September 25, 2007, 419 Tactical Fighter Training Squadron exchange officers Captain Jens Rud (Danish Air Force) and Flight Lieutenant James Boning (Royal Air Force), were conducting a 2-ship low level air-to-surface tactics mission, approximately 60 nautical miles south of 4 Wing Cold Lake.

At 250 feet above ground level and flying at more than 400 knots, the crew had just finished reacting to a Red Baron attack when their CT155 Hawk aircraft struck a single migratory bird. The bird impacted the front cockpit and resulted in a catastrophic blow-out of approximately 70 percent of the front canopy. In the front cockpit, Flt Lt Boning received lacerations to his neck from the flying shards of the canopy. With most of his canopy destroyed, communication between the tandem cockpits was almost impossible over the 400 knot windblast. Despite this loss of communications, the crew effected an immediate transfer of aircraft control to Capt Rud in the rear cockpit and flawlessly executed the required emergency response.

By yelling into the aircraft intercom system and using hand signals, Flt Lt Boning informed Capt Rud of his neck injuries as well as the fact that the canopy fragmentation system in the front cockpit was severely damaged. Both crewmembers accurately surmised that any attempt to eject from the aircraft would likely result in life-threatening injury to Flt Lt Boning. Further, the aircrew determined that the damage to the cockpit and canopy fragmentation system would pose a significant hazard to any emergency response personnel unfamiliar with the system. Based on this logic, the aircrew decided to recover at Cold Lake rather than at a closer civilian airport. Fully cognizant of potential engine damage to their single-engine aircraft, Capt Rud proceeded to Cold Lake on a profile that would allow safe recovery in the event of an engine failure.

Once again, during the resulting recovery, Flt Lt Boning and Capt Rud correctly assessed that the damage to their aircraft's canopy would have an adverse effect on its aerodynamic performance. Although not covered in existing aircrew emergency response literature, Capt Rud demonstrated a first-class knowledge of aerodynamics by altering his recovery profile and ensuring safe control of the aircraft. Despite the uncertain handling characteristics of the damaged aircraft and the fact that forward visibility from the rear cockpit was considerably degraded, Capt Rud performed an uneventful recovery. Once on the ground, both pilots remained in the aircraft until 419 Squadron ground crew could safely disarm the canopy and allow the medical staff to extract and deliver Flt Lt Boning to the base hospital.

Capt Rud and Flt Lt Boning are to be commended for their outstanding level of crew coordination, skill and professionalism demonstrated under extremely demanding conditions. Their stellar performance, tenacity and clearly demonstrated expert competence in the face of a potentially catastrophic situation make them fully deserving of this Good Show award. ◆

Capt Rud is currently serving with Tactical Command Denmark (TACDEN). Flt Lt Boning is currently serving with 15 Squadron, Lossiemouth, UK.

Just One More Job.

By Sergeant Timothy Thompson, 443 Squadron, 12 Wing Shearwater

This is a story of a catastrophic accident that happened on March 2, 1984 in Baden-Soellingen, Germany, involving three CF104 Starfighter aircraft. The details are still etched in my mind: it was late on a Friday night after a long week – and night, for that matter – of pushing through "just one more job" before we could all head home. After all was said and done that night, three aircraft were written off due to the extensive damage that the fire caused. On a good note, a lot of lessons were learned from the series of unfortunate events that led up to the accident.

The job was to be a test of the left hand sub panel which housed the landing gear handle and the emergency jettison button, the latter being the test that my crew were to test for serviceability. We had been very busy as usual with many snags to get repaired and all the paperwork to sign off. I had assigned two crews to carry out the jobs at hand and was in the process of signing second column when the stuff hit the fan. I was at the snags desk when a loud pop was heard from the other side of the wall. The desk Sgt said "God that sounded like they blew the ENCS (Emergency Nozzle Closure System)" As we approached the door into the hangar, it flew open with one of my crew running. He said only one thing, "FIRE" and disappeared into the ARO (Aircraft Repair Office) hangar next door. The Sgt opened the door to look and immediately closed it and yelled "Everyone out!" Next thing the fire alarm is blaring and all the techs departed the area and headed out to the flight line.

I remember that the Fire Trucks seemed to take forever to arrive, but in reality it was probably within 4 or 5 minutes. They approached the hangar doors and opened one just enough to get the nose of the truck in, started to fight the fire when from that very small crack under the other doors, a thirty foot fireball appeared. For the majority, about 30 or 40 of us, where we were standing just didn't seem to be far enough away and Dino, the big crane, seemed to be a better place.

We then started to hear popping sounds as the fire crew were fighting the fire, which were in fact 20 mm rounds cooking off. The other crew member that had been in the cockpit was relieved that his partner had not been injured, and related that when he pushed the button, a shotgun blast was heard, followed by a huge fireball which engulfed his partner. He saw him departing the hangar and to all of our amazement he had actually beaten him out of the hangar.

The fire was eventually extinguished, and all of us were then recalled to the hangar to render the scene safe and get a debriefing from the SAMEO. The flight safety staff then also began their investigation.

We subsequently found out what had actually happened: the right hand tip tank had jettisoned and struck a piece of AMSE gear. This caused the nose cone of the tank to split and the flash from the impulse cartridge ignited the fuel inside. This in turn now acted like a blowtorch, as explained to us by the fire chief, which directed the flames to the first aircraft, melting it from the intakes all the way to the nose of the aircraft. On a good note the ejection systems did not function in their usual way. The ejection seat rails must have deformed, as the seat was sitting on the floor of the hangar with the canopy still hanging on somehow. The radome was gone and you could plainly see the 20mm cannon, as the skin of the aircraft had melted away. Most of the rounds normally seen in the feed chute, appeared to be gone, and in fact all 47 rounds had cooked off during the fire. A hole about 10-15 feet in diameter was apparent in what was once the roof of the hangar. The aircraft directly beside the aircraft that had ejected the tank sustained heat damage as well, visible from the melted paint and erased numbers on the aircraft.

The disappointment then set-in as we realized that we had made a procedural error that started the chain of events. The backup that was

in place to counter such an error also failed, with the pin for the tip tank still in place, where it should have cut the jettison circuit to the tank. My first scare after the accident was a comment made by the SAMEO to the effect that "we knew something was going to happen, we have been pushing you guys hard. We just didn't expect it to be so bad"

Next on the list was to safety the aircraft of all the explosives. One problem was how to download the gun, as it was now a big hunk of melted metal. There was no way to remove it completely, as the hard points on the aircraft were gone, i.e., no way to support it. The bosses didn't want any machines running in the hangar, as they didn't want anything to restart the fire. When all was said and done, the subsequent day shift finally removed the gun from the melted bird the following morning.

In summary, this was a bad night by any definition, yet lucky as well for the fact that most of us were at the desk cleaning up the paperwork when it happened. Only three techs were on the floor at the time, my two guys and the tech on the far side of the hangar. The firefighters put it all out within minutes, even though the pylon tanks were expanding from the heat and the bullets cooking off during the battle. MSE, the gas pumps and the Liquid Oxygen storage tank across the street were not affected, and for that matter the offices and ARO hangar with another 5 aircraft weren't damaged either.

Lessons learned:

- A hangar fire suppression system may have saved more assets.
- Always follow the procedures to the letter, as the shortcut you take may be your last, or your partners'.

Editor's note:

This accident from 1984 was published herein to highlight a very important point. Although technology has greatly evolved over the years and now allows us to use fancier, more expensive, bigger-better-faster aircraft and tools, we are still faced with the same basic human limitations.

We are all well aware by now of the concerns stemming from current CF demographics, and the high level of tasking brought by the operational tempos of each fleet. The ingredients for disaster often mix-up insidiously and faster than we think. Faced with either real or perceived pressure to "put rubber on the ramp", a sometimes limited number of experienced technicians to accomplish the task, and supervisors stretched to the limit, the temptation to "cut corners" and to

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Live to Rescue Another Day

By Major Dave Stelfox, Unit Flight Safety Officer, AETE, 4 Wing Cold Lake, Alberta

It was a dark and stormy night, and we were in the middle of it. The question I was asking myself was how we had ended up here, airborne, in the middle of this divine blackness and unforgiving turbulence, with horizontal rain pelting off the windshield of the Cormorant search and rescue helicopter in which I was fighting an uncertain battle in trying to keep the shiny side up.

A solitary hiker, while exploring the remote beauty of the northwest tip of Vancouver Island, had slipped between some logs and broken his femur. He had crawled for miles with his broken leg before finally being found and assisted by two other hikers, who called emergency services requesting help. Due to the extremely remote location and the severity of the injury, our Cormorant crew from 442 Squadron had been tasked with the night rescue mission.

The weather between Comox and Port Hardy was amiable, but less than ideal on the west coast of the island, with winds approaching 60 knots, reduced visibility in heavy rain, and accompanying low cloud ceilings. Although we were using night vision goggles to aid us while flying through this maelstrom, our visual cues of the shorelines and mountains were very degraded due to the heavy rain. As soon as we turned from the south into San Josef Bay, we were assaulted with unforgiving turbulence. The only point of light visible in the bay was from the fire burning on the beach below, tended by the hikers.

As we circled over the bay, the autopilot of the helicopter was working hard to maintain our barometric altitude and controllable air speed. Each time I turned downwind for another pass in our circuit above the bay, the strong southwest winds threatened to push us into the nearby mountains rising above the beach. Hoisting was not an option, as there weren't enough visual cues for us to safely hover. No matter what type of illumination we attempted, the situation did not improve. I also realized that landing on the beach was next to impossible, due to the turbulent winds and tall obstacles in these visual conditions.

At this point, I told the rest of the crew that I thought it would be too dangerous to try and complete the mission in these conditions, and that we should go back to Port Hardy to wait for daylight. The built up tension on board the helicopter seemed to evaporate at that very instant, with each crewmember agreeing wholeheartedly with this suggestion. Until then, I hadn't realized that each crewmember was thinking the exact same thing as I, that we would probably end up killing ourselves if we attempted a landing here. I pointed the helicopter at the mouth of the bay, and we made our way carefully back to Port Hardy to await the arrival of daylight.

The weather conditions hadn't improved by the time we arrived back in the bay, just after sunrise, but with the added visual cues available, I was able to bring the helicopter to a hover 300 feet above the beach and gently coax it down in the turbulence to a safe landing on the hard sand. As the search and rescue technicians made their way out of the helicopter to ready the injured hiker for transport, we could feel the winds relentlessly buffeting the 15-ton machine we were in. In the crew debrief that followed the mission, we reflected on how we were willing to push the safety envelope to the limit in order to carry out a rescue that we believed could be a case of life and death.

One of the hardest decisions a crew has to make is to decline a mission, or delay it, due to safety of flight concerns. In retrospect, I know we made the right decision that night, no matter how badly injured the hiker had been. If we had followed through with our aim of getting the helicopter on the ground in those dead-of-night conditions, we would have endangered the entire aircraft and crew. There is a point in time where one must realize the safety of the mission has been jeopardized, and people need to use their judgment and experience to avoid crossing that line. ◆

Roll Up Your Sleeves –We're Committed!

By Captain Kenny King, 409 Tactical Fighter Squadron, 4 Wing Cold Lake, Alberta

Ask any pilot that has been flying for a few years for stories that he/she may have about low fuel and poor weather and chances are he/she has a few. I have a related experience that I would like to share with you.

First, let me ask what you think are two of the most important things that aircrew manage on every mission? I think they are Fuel and the Weather. In some communities these factors are more critical than in others but I think that they are among the most important elements on every mission and are common to all flying environments.

In September 2007, I was a newly qualified CF188 Hornet wingman on detachment in Inuvik, North West Territories (NWT). I had just completed my NORAD qualification, and after holding "Q" (alert) for a few shifts in Cold Lake, I was tasked to support northern sovereignty operations (NSO) already underway. On my fourth shift in Inuvik, as an alert force wingman (AFW), I had now flown a few local sorties and was enthusiastic about my being able to contribute to our NSO mission. During the occurrence evening, the alert force commander (AFC) received a release from the Canadian air defense sector (CADS) to allow us to conduct a local patrol combined with a training mission. Accordingly, we then planned a 2045L take-off (0345Z). CADS requested that we fly multiple air intercepts for their controller training. The fact that this would be a night mission also meant

that we would be able to get some night proficiency flying as well.

We checked the weather, and everything was a go. The lowest weather forecast was a broken ceiling at 1500AGL with good visibility. The actual weather was CAVOK. We decided that we would plan to hold Norman Wells, NWT, as an alternate (Norman Wells is approximately 250nm Southeast of Inuvik). We also briefed that, if we landed in Inuvik with sufficient fuel to hold Norman Wells as an alternate, our landing weight would place us unacceptably close to, or even beyond, our safe landing distance required versus runway length. We therefore expected that we would need to make a decision airborne to either divert to the alternate, land using the arresting cable, or burn our fuel down to an acceptable landing weight for Inuvik's runway (therefore holding no alternate at all for landing). Our plan was to decide airborne on the final need for the alternate and our back-up plan was that if we considered it necessary to hold diversion fuel on landing we would fly individual approaches and land using the arresting cable. We also planned for me to make a practice approach end cable engagement on landing, regardless of the weather.

The brief, scramble, start and take-off all went as per SOPs.

The weather on departure was as good as, or better than forecast. We began our mission once we were on top of cloud and checked in with our CADS controller.

During the mission, we updated the weather on a number of occasions. Prior to hitting our Bingo fuel for diversion to Norman Wells, we checked with the FSS in Inuvik and we were advised that there was no significant weather to report and that the latest actual showed a ceiling of 3600ft AGL. We were also advised that the estimated current conditions were a ceiling at 4000ft AGL with good visibility. We had received no weather updates or changes from the duty ops officer on our ops/COC frequency. My lead and I then decided, as planned, to lower our Bingo fuel and no longer hold diversion fuel.

After one last intercept, we decided to return to Inuvik. The ATIS for Inuvik was reporting a ceiling of 4300ft and was only five minutes old. We decided to set-up for a radar trail ILS approach, meaning that I would follow my lead during the approach in approximately a 1.5nm trail using the aircraft's radar. We entered cloud while on the arc transition to the ILS. Approximately 2 minutes prior to intercepting final we heard our operations officer on the COC frequency advising us: "*Hey guys, you should start heading back, fog has just started to roll in here and it is really thick!*" We advised Ops that we were IMC, just turning final, and that we expected to land in 3-5 minutes.

I think we both took the direct translation of this radio call from Ops to be "*Roll up you sleeves – we are committed to Inuvik and this one is going to be IFR for real!*" We both knew from this radio call that the weather was going to be significantly lower than expected. We then asked the FSS controller for an update of the weather and he advised us that significant fog had just developed over the airfield and that he estimated the visibility to be ½ sm and deteriorating.

With landing checks completed, IMC, 1.5 miles behind my lead, arresting hook down and the landing light off (to avoid disorientating reflections while IMC), the approach was nicely stabilized at 3nm final. My lead then reported visual with the runway at approximately 1 mile final… *whew!* I was in cloud/fog until approximately 1nm final when I started to breakout and see the runway lights from within the low-level fog. I began transitioning to visual while crosschecking the ILS and PAPI indications and I turned on the landing light. I intended a min roll landing technique due to the runway length and aimed for a firm touchdown at approximately

500ft beyond the threshold. As I approached the threshold I crosschecked my lead and could just confirm that he was clearing at the end of the runway. The fog was in fact much worse over the runway than it appeared to be back on final. Immediately upon touchdown, the landing/taxi light failed. For the Hornet pilots out there, it was a 1.7 G landing.

With the arresting cable still approximately 1000ft in front of me, I was unable to confirm that I would make a centered cable engagement and I decided to raise the hook and concentrate on keeping the aircraft approximately in the middle of the runway using the runway lights in my peripheral vision. At this point, I could only see approximately 1000-2000ft in front of the aircraft. I realized on rollout just how bad the fog was, and getting worse! I requested that my lead wait for me on the taxiway at the end of the runway so that I could follow him into the hangar area. I had no taxi light, the visibility was minimal and there was little or no taxiway lighting on the taxiway to the hangar facility. Tower then asked if we had cleared the runway. After taxiing into the hangar bay for de-arm, I noticed that the hangar bay itself was full of fog!

We reported to ops after shut down and checked the now amended weather. The FSS had just put out a special report. Please refer to the forecasts and observations in figure 1 for Inuvik, which were in use during our mission. Our take-off time was 0345Z and our landing time was 0525Z.

Here then is the lesson learned on this one. No matter what your experience level is and what you expect to happen on a mission – *anything can happen*. This is not the first nor will it likely be the last time that the weather deteriorates rapidly and unexpectedly with potentially huge consequences. In this case we applied alternate fuel criteria in planning this mission, we monitored the weather closely, we made reasonable decisions and we were still left with a difficult situation to handle. The potential outcomes in this type of situation are limited only by your imagination. Of course, as the old adage goes: '*A superior pilot uses his superior judgment to avoid situations which require the use of his superior skills*`. Sometimes, however, even when you apply good judgment and do things as safely as possible, you can still find yourself in a situation where you need to roll up your sleeves and go the extra mile. Be prepared – "Stuff" happens!

Editor's note

This article is a prime example of the many challenges our operators face when operating in remote areas of Canada's great white north. Flying a fast jet, in a heavy configuration, and often with live weapons, in and out of FOLs equipped with relatively short runways is tricky enough. Add to the mix changing weather, temperature extremes, contaminated runways, few-and-far-between suitable alternates also equipped with short runways, and the limited availability of arresting gear, and the need for accurate mission and contingency planning becomes crystal clear. As the author emphasized, the need to communicate effectively and get all the relevant information throughout the mission, not just in the planning stage, is also very obvious.

Yet, over the years we've had to learn and re-learn those lessons through flight safety occurrence investigations. As always, your flight safety team needs **all** occurrences to be thoroughly reported so we can pass the knowledge gained throughout the CF and effect change where needed. No data, no change.

As a follow-up to this article, I strongly encourage you to read the full FSIR related to a CF188 accident which occurred in Yellowknife, NWT, in June 2004. Many factors were highlighted in terms of FOL mission planning, short runway ops, fuel management and contaminated runways. Here is the link to the report on the DFS website:

www.airforce.forces.gc.ca/dfs/reports-rapports/l/cf/CF188761-eng.asp ◆

Figure 1

Forecasts for Inuvik:

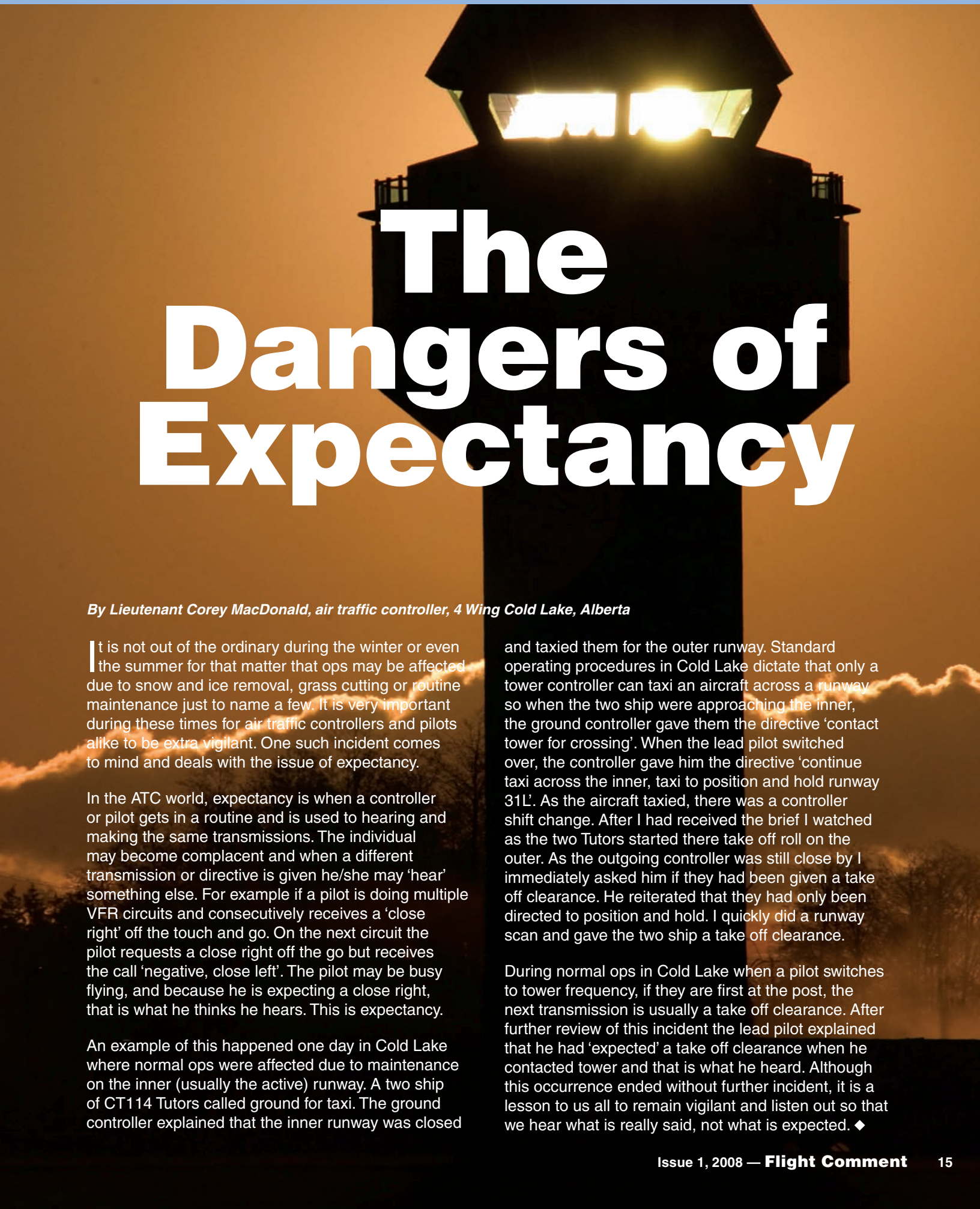
```
METAR CYEV 150400Z 00000KT 10SM FEW021 BKN036 OVC100 09/08 A2978 RMK SC2SC3AS3 FU SLP090 5
KYXX=
METAR CYEV 150500Z 05003KT 15SM SCT021 OVC043 08/07 A2978 RMK SC3SC5 SLP088 SKYXX=
SPECI CYEV 150530Z 04004KT 1/4SM R06/2200FT/N FG VV001 RMK FG8 SKYXX=
METAR CYEV 150600Z 04004KT 1/4SM R06/2800V6000FT/U FG VV001 06/06 A2977 RMK FG8 SLP087 570
05 SKYXX=
METAR CYEV 150700Z 09004KT 1/4SM R06/1200FT/N FG VV001 05/05 A2977 RMK FG8 SLP087 SKYXX=
```

Observations for Inuvik:

```
AMD CYEV 150134Z 150113 VRB03KT P6SM SCT015 BKN230 TEMPO 0113 BKN015
    BECMG 0406 10008KT
    RMK NXT FCST BY 07Z=

AMD CYEV 150545Z 150513 VRB03KT 1/4SM FG VV001 TEMPO 0507 2SM BR BKN015
    BECMG 0709 10008KT
    RMK NXT FCST BY 07Z=

CYEV 150638Z 150719 04005KT 1/4SM FG VV001 TEMPO 0713 2SM BR BKN015 BECMG 0709
        10008KT BECMG 1416 10012KT P6SM NSW SCT002 OVC040
    FM1600Z 10012KT P6SM SCT002 OVC040 PROB30 1619 2SM -DZ BR BKN002
    RMK NXT FCST BY 13Z=
```



The Dangers of Expectancy

By Lieutenant Corey MacDonald, air traffic controller, 4 Wing Cold Lake, Alberta

It is not out of the ordinary during the winter or even the summer for that matter that ops may be affected due to snow and ice removal, grass cutting or routine maintenance just to name a few. It is very important during these times for air traffic controllers and pilots alike to be extra vigilant. One such incident comes to mind and deals with the issue of expectancy.

In the ATC world, expectancy is when a controller or pilot gets in a routine and is used to hearing and making the same transmissions. The individual may become complacent and when a different transmission or directive is given he/she may 'hear' something else. For example if a pilot is doing multiple VFR circuits and consecutively receives a 'close right' off the touch and go. On the next circuit the pilot requests a close right off the go but receives the call 'negative, close left'. The pilot may be busy flying, and because he is expecting a close right, that is what he thinks he hears. This is expectancy.

An example of this happened one day in Cold Lake where normal ops were affected due to maintenance on the inner (usually the active) runway. A two ship of CT114 Tutors called ground for taxi. The ground controller explained that the inner runway was closed and taxied them for the outer runway. Standard operating procedures in Cold Lake dictate that only a tower controller can taxi an aircraft across a runway so when the two ship were approaching the inner, the ground controller gave them the directive 'contact tower for crossing'. When the lead pilot switched over, the controller gave him the directive 'continue taxi across the inner, taxi to position and hold runway 31L'. As the aircraft taxied, there was a controller shift change. After I had received the brief I watched as the two Tutors started there take off roll on the outer. As the outgoing controller was still close by I immediately asked him if they had been given a take off clearance. He reiterated that they had only been directed to position and hold. I quickly did a runway scan and gave the two ship a take off clearance.

During normal ops in Cold Lake when a pilot switches to tower frequency, if they are first at the post, the next transmission is usually a take off clearance. After further review of this incident the lead pilot explained that he had 'expected' a take off clearance when he contacted tower and that is what he heard. Although this occurrence ended without further incident, it is a lesson to us all to remain vigilant and listen out so that we hear what is really said, not what is expected. ◆

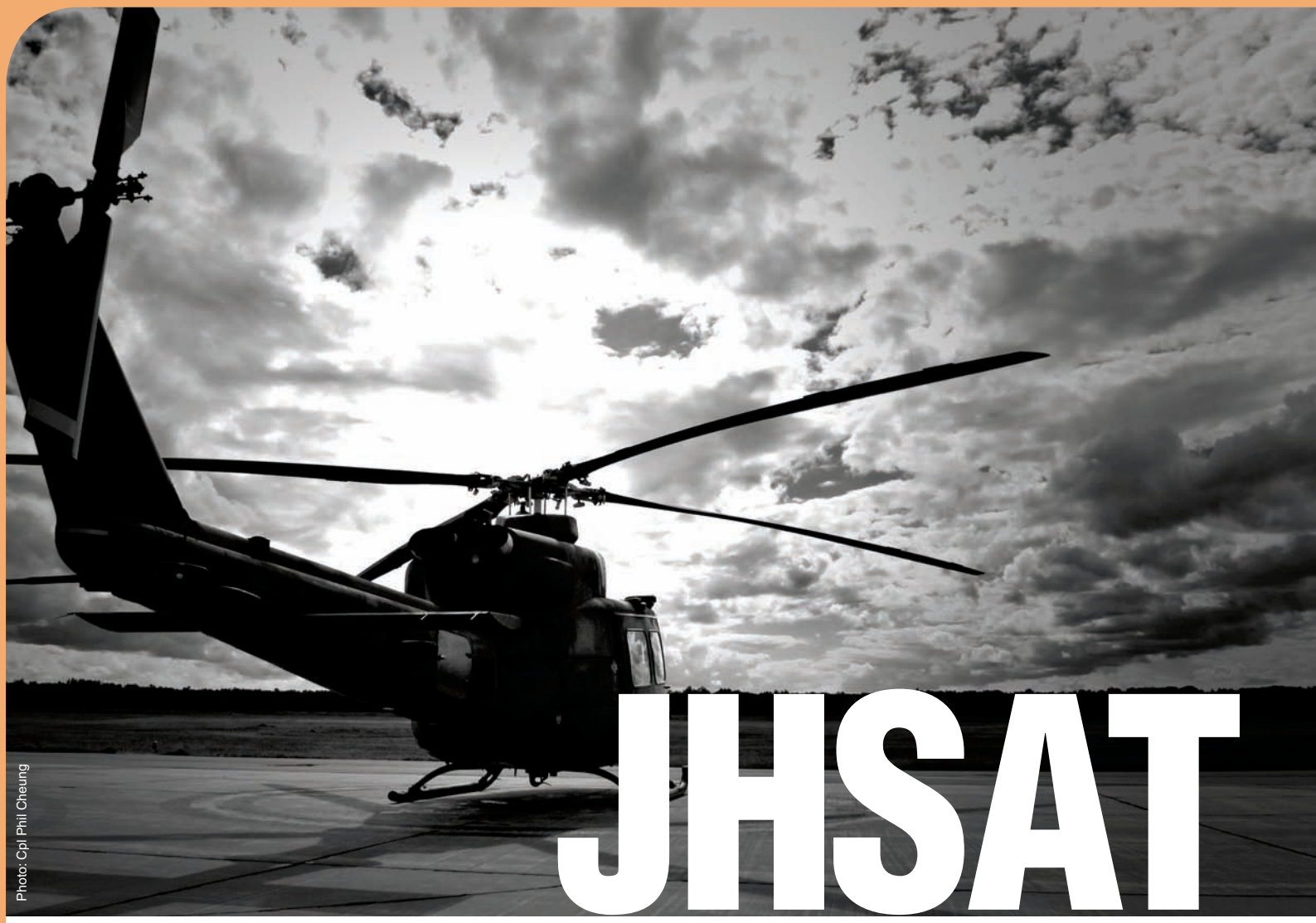


Photo: Cpl Phil Cheung

Aiming for an 80% reduction in helicopter accidents

By Major Martin Leblanc, aircraft accident investigator, Directorate of Flight Safety, Ottawa

Ambitious goal? Indeed it is, but that is the goal set by the International Helicopter Safety Team (IHST) a few years ago. This initiative originated in the United States when helicopter accident rates were noted to be significantly higher than their fixed wing brothers'. The American Helicopter Society (AHS), the Helicopter Association International (HAI), and the Federal Aviation Administration (FAA) focused together and formed the first iteration of IHST. Originally the IHST was to be an American only endeavor, however, the original members quickly recognized that the helicopter accident situation was not an American only challenge. So it quickly became an international journey. The concept called for the IHST to be formed of two distinct working groups: the Joint Helicopter Safety Analysis Team (JHSAT) and the Joint Helicopter Safety Implementation Team (JHSIT). Let's go back to the 80% reduction goal for a minute. What exactly is the goal? Simply put, the goal is to reduce worldwide helicopter accident rate by 80% between 2006 and 2016, and we, the CF, are onboard for the journey.

The Canadian JHSAT first met in June 2007 and has already convened a total of four times so far. The Canadian JHSAT team is comprised of representatives from diverse organizations, ranging from training, maintenance, operators, manufacturers, regulators, and

accident investigators. At the higher level, the IHST has held two international conferences so far, in Montreal, QC. Both those conference took place in the month of September, the first one in 2005 and the latest one in 2007.

How does the JHSAT work and what does it do? It became clear that the initiative had to be "data driven" in order to be valuable. So the process that was adopted is to look at past accident reports to retrieve the data. The starting point was agreed to be the year 2000, which would guarantee the team could work with fully completed investigations. An important fact to note, however, is that the JHSAT is not reinvestigating the accidents being examined. They only extract the raw data from the accident report and assign standard problem statement (SPS), a way to identify problem areas and areas of concern. From those SPS, the team then looks at interventions that could solve the issues at hand. The end result of the JHSAT will be a consolidated report containing problem areas and proposed interventions. That report will be issued to the IHST and the JHSIT. The JHSIT team, yet to be formed for Canada, will look at the proposed interventions and assess their feasibility. In the end, JHSIT will produce a report issued to the helicopter industry that will propose interventions that are deemed appropriate and feasible.

In conclusion, this international venture, which includes Canadian participation, will provide a holistic view of the worldwide helicopter accident rate and, with shared information between participants, will attempt to reduce the accident rate by 80% between 2006 and 2016. Ambitious indeed, but think about the following:

a. The first controlled powered flight by Orville Wright on the 17 December 1903;

b. Charles "Chuck" Yeager broke the sound barrier and made the world's first supersonic flight on 14 October 1947; and

c. Neil Armstrong became the first man to walk on the Moon on 21 July 1969.

Were those endeavors ambitious? Indeed they were, and they took a tremendous amount of effort, just like reducing the accident rate by 80% in a ten-year window. Challenging but not impossible. ◆

Photo: Sgt. David Snashall

Photo: MCpl Stephen Phillips

Photo: MCpl Sgt Ron Hartlen

ALSE Working Group

By Major Chris England, Chief of the Air Staff Aviation Life Support Equipment Officer, Ottawa

When I was asked to submit an article to Flight Comment my first reaction was how do I effectively communicate the message that I want to get across in a few pages? The realm of Aviation Life Support Equipment (ALSE) covers an extremely wide spectrum and is a topic that is held near and dear to all aircrew hearts. Having inherited the position of Chief of the Air Staff (CAS) Aviation Life Support Equipment Officer (ALSEO) here in Ottawa at NDHQ in the Fall of 2006, I think that I can safely state that I am now aware of the majority of deficiencies within the ALSEO world. There are challenges that exist in addressing all of those deficiencies and one other lesson that I have learnt very quickly, is that you cannot keep all of the people happy all of the time. I do not mean to make light of the situation, but our Air Force finds itself in a unique operating environment (both domestically and operationally), and one of the pitfalls in trying to address ALSE deficiencies is that the "system" traditionally attempts to procure one item that will address all fleets and communities (usually at the expense of one or two communities having to wait an extraordinary length of time to receive the new kit they so desperately require). The net effect of this systematic peculiarity is that, dare I say all communities have become frustrated with the ALSE chain of command. Rightly so!

Throughout the last decade or so, ALSE was pushed to the "back burner" with respect to visibility and importance within the Air Force. Numerous incidents and accidents in the last decade have highlighted this fact. As a result, the Chief of the Air Staff made ALSE one of his top priorities and the ALSE Working Group (ALSE WG) was formed to assess and provide recommendations with respect to "fixing "the ALSE world. The ALSE WG

comprises subject matter experts and representatives from many sources:

1. The Technical and Operational Airworthiness Authorities (OAA, TAA);
2. A4 Maintenance, 1 Canadian Air Division;
3. Aerospace Engineering and Test Establishement (AETE);
4. Air Force Test and Evaluation Coordination (AFTEC);
5. Directorate of Flight Safety (DFS);
6. 1 Cdn Air Div ALSE Special Projects Office and;
7. yours truly.

The tasks before the ALSE WG were significant in that they addressed all aspects of ALSE, from deficiency reporting to acquisition of new ALSE products; from maintenance of ALSE equipment to certification of equipment from an airworthiness point of view. The task also examined the role of the ALSEO and D/ALSEO at the unit level as well as the staffing of Headquarters ALSE positions, both at 1 Cdn Air Div and NDHQ.

Deficiencies were identified over the last 18 months and recommendations are now being submitted to the Chain of Command for action. Some examples of improvements that have been recommended are as follows:

- Staffing of key ALSE positions at 1 Cdn Air Div and NDHQ need improvement. In fact, the ALSE Special Projects Office at 1 Cdn Air Div has been formed to increase the staff (from 1 to 4) to address ALSE issues. At NDHQ, an additional position was created to assist the NDHQ ALSEO and boost the office personnel from 1 to 2. So if any aircrew are looking for a great staff job in Ottawa for APS 08, let your Career Manager know!
- Some Units/Sqns/Wings require infrastructure changes to allow for better maintenance of ALSE (e.g. storage facilities were deemed inadequate and/or inspection/maintenance facilities were not IAW CFTO's).
- Communication within the ALSE chain of command is not as effective or efficient as it could be. For example, when new ALSE is introduced, the information on usage and maintenance is sometimes lacking.

The ALSE WG also identified numerous processes within the ALSE realm that do not require improvements, but perhaps require a certain amount of education and information passing, to allow for these processes to work as designed. One example that comes to mind is the ALSE deficiency reporting process, using mainly Unsatisfactory Condition Reports (UCR)'s and Statement of Operational Capability Deficiency (SOCD)'s. The reporting system itself is not particularly "broken" (although that could be argued in another article), but the confidence in that system from the operational communities is not where it should or could be. The "back burner" syndrome that I alluded to earlier in this article resulted in numerous UCR's and SOCD's being submitted with good faith by the users. However, due to staffing priorities and pure lack of bodies to work on the sheer number of deficiencies, a time lag was created from reporting to solution - to the point where confidence in the use of that reporting system diminished (with a certain amount of added frustration and a feeling that no one cared at Headquarters). Addressing this deficiency is a delicate matter, since it involves re-establishing confidence in the use of the existing reporting systems. How can I assist in re-assuring you as aircrew that you should still use the existing system (since there will be no direct improvements to that reporting system as a result of recommendations from the ALSE WG)? All I can say is to emphasize that the CAS has made ALSE a priority and that past staffing issues have been or will soon be addressed! Now with that in mind, the onus is still upon the individual to report the deficiency and allow the system to react. There has to be a recognition that it will take a certain amount of time for that system to work through the back log of reports – however, the ALSE WG also formulated a priorities list for each fleet (with the direct input from all the communities) to allow staff to address the top priorities in a organized fashion.

The annual ALSE Symposium was held at 17 Wing Winnipeg from 16-17 January 2008. The attendance was encouraging and there was an extremely well-balanced representation from the ALSEO and D/ALSEO sides. The theme of this year's symposium was "Better Communication leading to Better Results". This theme was applied not only to deficiency reporting but also to training, acquisition / introduction of new ALSE equipment, lessons learned by one community being shared with other communities, or sharing of information within individual communities. To be able to gather the majority of the ALSE "players" in one location for two days was worthwhile, since it fostered an environment which led to getting to know who is who in the ALSE world and led to excellent dialogue between all the attendees.

(Continued on page 47)

Microburst...

...Riding the Sea King Roller Coaster

By Lt S J Fisher, Royal Navy 845 NAS

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Microburst: *'A convective downdraft with an affected outflow area approx 2 miles wide and peak winds lasting less than 5 minutes. Microbursts may induce dangerous horizontal/ vertical wind shears, which can adversely affect aircraft performance and cause property damage".*

It was with great anticipation that we awaited the details of our Tasker 1 duty for the next day. After a week of less demanding duties it was time to get back in the saddle and strap into a good chunk of tasking around the vastness of the Multi National Division (South East) Iraq. With 3 tours of Op TELIC and about 400 hours flying in theatre, you get to know the area quite well, but the varied tasks of the Joint Helicopter Force (Iraq) always kept you on your toes.

My crew and I were due to start the day with a "VIP taxi", but in true tradition, on arrival that had changed. Great ..... I know I'll jump in the right hand seat, get some hands on time, and that'll give my mid-first tour copilot (P2)

some quality left-hand seat (LHS) captaincy time.

The plan was to fly to Basrah Palace, pick up 12, and off to Tallil 100 miles NE of Basrah.

The 'met' was your average sandy, murky Iraq day, so off we went. Just as we were about to commence our Tac-descent into the Palace another aircraft nipped underneath and into the landing site (LS) - not the way a chap goes about business - does he not listen to our flight safety calls? As a helicopter weapons instructor (HWI), I have always questioned the necessity of these calls in an operational theatre, but this case was a prime example of why they are required. It later transpired our second radio was unserviceable. To add to the delay, a Lynx call sign was also in the overhead awaiting a pick up. Not an ideal situation. The recent threat report had stated that local insurgents were intent to target a helicopter operating in the Basrah area of operations (AO). The date was 24 April 2007. The knock on effect of the Basrah Palace stack was 20 mins in as much of a subtle hold as possible and the requirement to refuel at Basrah. Would these extra 20 mins make any difference to our day?

Conscious of the amount of time spent in the area of the Palace, the departure was somewhat anxious, low, and behold, there it was:

'CONTACT, 1 o'clock, HMG (heavy machine gun), evading South!'

As what looked like high calibre machine gun muzzle flashes pounded in from a roof top on the far side of the river, it was time for some of that HWI stuff, and we broke into 3D manoeuvres to the South before climbing out of the threat band and assessing further. Once established with the safety blanket of altitude between us and with the flashes still occurring, but no tracer or reports

from the LS, I assessed the sighting as not a threat. And off to BAS we went for refuel, 30 mins into tasking.

After departing BAS it was a familiar route to Tallil as we headed up over the wetlands.

Constantly assessing the weather, it did seem to be decaying somewhat. Still nothing we hadn't seen before, after all, flying in Iraq is very similar to flying over the sea and with some

Junglie cunning you can always find a way to get in, and regularly do. So we continued, with a slightly strange phenomenon that seemed to be a three-layer inversion of what looked to be layers of sand, smoke then sand. The visibility at this point was about 3 km with no particular horizon but perfectly workable. As we approached habitation we had brought our height down and, conscious of the everexisting threat, we elected to push South and pick up a previously discussed line feature with the vis still decreasing. Finally, once able to gain comms with Tallil, they passed their vis to be 800m in blowing dust, no thunderstorms in the vicinity. Not a problem as Tallil vis is consistently worse due to local factors and there is a radar option if required (prevailing winds wouldn't allow a suitable return to BAS).

So on we went. The vis continued to decay to approx 1 km at which point I assessed it was not a critical life saving sortie and we would head to Tallil, approx. 2 km South of the intended LS; a road move would complete the journey for our pax. So we climbed 'on instruments'. Life becomes a little easier:

"Ali Centre, Super XX"

"Super XX, Ali Centre, Pass your message" in that familiar American drawl.

"Super XX, S-61 Helicopter, 13 POB, currently 2km N of your field 2500' heading 320, request radar pick up to PAR"

"Super XX Climb FL 250"

"Ali Centre, Super XX, Negative we are an S-61 HELICOPTER"

"Super XX that's copied climb 2500ft"

Suddenly, there was a clearance, at pretty much the same time as all the hairs on the back of my neck stood on end. The vis had increased to about 3-4 km, and that's odd, a few specks of rain on the Windshield, mmmmmm,,, strange.

Then came the call from the LHS - "AIRSPEED!!"

With a Vmax at the beginning of the sortie of 100 Kts we were now showing 130-140 Kts IAS with a 1000-1500'/min rate of climb accompanied by significant turbulence. This very rapidly transferred to a 2500+'/min rate of descent with the turbulence now making the aircraft uncontrollable. Conscious that any severe control inputs may result in PI0 or worse, major structural damage to the aircraft, I elected to maintain the 80% matched throttle quadrants with small increases/decreases in

Photo: Cpl David McVeigh

"...This very rapidly transferred to a 2500 + ft/min rate of descent with the turbulence now making the aircraft uncontrollable…"

Photo: Cplc Charles Barber

opposition to the aircraft. Despite this relatively high power setting we were still going down, and fast, with airspeed varying between 70 and 120 Kts …. not happy with this picture!

Tallil was calling on the radio to which I was replying: "STANDBY, STANDBY" whilst I was trying to regain control of the situation, or

at least put the odds in my favour, an area I generally prefer to have them.

It is always said that when things are going horribly wrong time slows down, and indeed it does. Suddenly, I began to realize that the only thing that was going to stop our rate of descent was a small green patch of Iraq in my 1 o'clock low. I began to think:

'Does this warrant a MAYDAY', 'What actually happens when I call a Mayday and squawk 7700, the whole theatre will kick into panic won't it?' My mind then jumped: 'At least we are going to hit a green patch of this God forsaken part of the world.

But wait, who will get to us first, the good guys or the bad guys; hold on a minute I think we're all going to die' ..... Question answered!

"MAYDAY, MAYDAY, MAYDAY, Tallil, Super XX, S-61, NW of your field and uncontrollable, squawking 7700, wait out"

I continued to attempt to control the cab, which seemed to be in a world of it's own, rolling around the axis of the control column I was holding. My main intention was to try to some how fly clear of whatever we were in, but as we were passing 1500' with 2500'/min rate of descent, my main intentions were now focused on what I could do to alleviate the impact if we didn't fly out of this, namely lever under the arm and attempt to put the tail in first, all that good uncontrollable landing stuff that you never in a month of Sundays expect to have to use. As we approached 1000' 1 called a pre-emptive:

"BRACE, BRACE, BRACE"

Might as well get them into it early and then I won't forget when it all starts to get a little bit busy and little scarier, if that's at all possible.

Hold on a minute ! ROD slowing, turbulence declining, I think we're coming out of it. Power coming in at 105%, all responding well and with the ROD now manageable, finally we returned to straight and level.

Having entered at 2500' heading 320, we recovered at 1000' heading 190. As the flying pilot, I had become quite disoriented but luckily my P2 had managed to maintain his spatial awareness. We elected to expedite our recovery to Tallil, downgraded our emergency and requested continued feed in for recovery.

Unfortunately, this did not run as smoothly as we hoped. Tallil was renowned for it's lack of flexibility, hence my booking of fuel the previous day. As we downgraded our emergency we

were not cleared into the airfield. I informed them of the situation and that we were unable to return to Basrah due to the wind, and the combination of that and my slightly perturbed tone gained the trust that in fact we weren't a rogue insurgent Sea King hoping to carry out some instrument flight practice (IFP)!

Once we had cleared up any confusion, we were marshaled on an into wind heading, I can only assume to take us away from the weather. After being hit by a further bout of slightly less severe turbulence, it was at this point that we had all finally had enough and wanted to establish ourselves firmly on Terra Firma, with my main concern now being that whatever had hit us could do so again on approach. The same happening at 1000' was not an option. After finally explaining to radar that we were required to expedite our pattern they obliged accordingly. Cue the next round of fun.

Initially, the talk down sounded rather familiar, similar to any IFP recovery to Yeovilton (UK), but this rapidly changed. With 130 kts ground speed, IMC in blowing sand and with the fastest and most incomprehensible talk down due to the combination of accent and poor comms, we quickly came to the decision to amend the procedure.

"Right fella's, whatever happens we are landing off this, Happy?" ... the reply was a resounding "HAPPY".

The plan: fly immediately down to 200' RADALT, as we could only make out the azimuth of the talk down; continue in and fly down the runway until we see something we could land off. Slightly non-standard, but with no hazards or aircraft airborne it was deemed the safest option. As we approached decision height, we were visual with the ground. An artistic pause, 130kts closure, and the airfield boundary became visual with the fence, then the threshold.

We're In ..... "Visual, to tower", with possibly the longest sigh of relief in an aircraft I had ever experienced. In fact I think it was the first breath most of us had taken since the whole incident began. From the cloud clearing before the turbulence hit to landing on was a thoroughly unpleasant 45 mins.

The rest of the day saw some rather impressive weather systems pushing through the area, a rather emotional 30 mins attempting to blank and tip sock the mighty King in a desert thunderstorm and the finest 4 alcohol free beers ever to be experienced.

So what had happened? Without turning this into a 'met' lesson, the educated view was that we had been hit by a microburst. A wind phenomenon seen in the developing stage of a thunderstorm resulting initially in significant up-draughting air followed by equally strong downdraughts. Lasting about 5 mins and spreading over an area of 4-5 km, these are of particular danger to large aircraft on final where the initial up draughting air and associated headwind cause a rate of climb.

The power is then reduced before being hit by the down draughting tail wind, with loss of airspeed and lift.

The same happens to rotary wing aircraft. These are made significantly worse in hotter climates due to the evaporation of any precipitation and the energy transfer in the process, adding to the turbulence. The good news I have learnt is that it will normally disperse by about 500' AGL. In extremis these winds can however get up to 200 mph.

So, what did I learn through the whole Experience ?

- Did I read the weather thoroughly for the day in the morning brief? It is very easy to forget that in a day of operational tasking you can cover a vast area, much bigger than you would in the UK. Do not become complacent as the weather can change dramatically.
- The requirement for constant assessment is key to safe operation. Discussion as a crew, no matter the gradient, as to what we are going to do, why and what else could we do is essential.
- CRM is not just about punching your P2. Although flying with a relatively junior P2, he managed to maintain his spatial awareness throughout our time on the 'Big Dipper'. The result was to offload myself as the flying pilot allowing me to concentrate on sticks and poles. With his calm commentary and updates I was able to concentrate on what the aircraft was doing and the many 'what ifs' going through my head. At the same time, our aircrewman very professionally dealt with the passengers, more than aware of the severity of the situation.
- Never expect a foreign radar service to be the same as your friendly Yeovilton controller. The terminology is pretty similar but when the chips are down, it can be hard work and we all do things slightly differently.
- You never know when you'll need it. This incident occurred half way through our three months in Theatre. I can safely say I never thought I would have to use instrument flying techniques in anger in the middle of the desert

(Continued on page 47)

Managing Collision Risk in Class G Airspace in Canada

By Don Henderson, Manager, Level of Service and Aeronautical Studies, NAV CANADA

During the course of recent consultation and other meetings held between NAV CANADA and various air carriers and pilots, concerns have arisen with respect to operating practices in class G airspace—particularly in the vicinity of high-density airports. These concerns focus around the following areas: pilot assumptions with respect to services provided by air traffic control (ATC); pilot vigilance; use of VFR routes, transit routes and associated reporting points; and communication practices.

The systems approach

Managing the risk of collision between aircraft is one of the primary goals of the air traffic management system. This can only be accomplished within a "total system" framework where user conduct rules are harmonized with service provision. Understanding the contribution that each element makes to overall system safety performance is essential in effectively reducing collision risk.

Photo: Sgt Ed Whitmore

Risk and defensive barriers

There are three fundamental techniques that can be employed to manage the risk of collision. The first is to design airspace and conduct flight operations so

as to preclude the opportunity for conflict or risk of collision. Examples of this are to specify flight along non-intersecting tracks or to define a volume of airspace for the exclusive use of one user.

A second technique is to alter flight trajectories to resolve conflicts and avoid collisions. Examples of this include the directions pilots receive from ATC when being "vectored."

Finally, the "rules of the air" are applicable to pilots, and compliance introduces a proven defence barrier against collision risk.

In practice, the risk of collision is not normally managed by the application of one technique or the other, but by practices and procedures that to some extent employ all three techniques. Thus, classes of airspace, the provision of ATC services, radar or some other means of surveillance or position reporting, communications and regulations (rules of the air) come together to create an operating system.

In addition, arrival and departure procedures, routes and airways are designed to further facilitate a safe and efficient operating environment. This system can have different configurations and components depending on traffic volume and complexity. For controlled airspace, these defensive barriers can be expected to perform in a predictable way.

Class G airspace

For uncontrolled airspace (class G), it is different. While VFR routes, transit routes, reporting points and recommended practices can be put forward, they

are not fully supported through regulations, and depend on pilots understanding the system and doing the right thing—the right thing is called airmanship.

If pilots use the system in the way it is intended to be used, they can reduce their risk and improve efficiency of their operations. If "ad hoc" procedures are applied, if pilots decide that "this is the way we have always done it" or "it's quicker this way, and anyway, I don't have to do it that way" then there may be unintended negative consequences.

Pilots are solely responsible for traffic separation in class G airspace. Avoiding conflicts requires pilots to communicate with each other on appropriate frequencies, advise of their intentions, and plan accordingly.

If there are specific recommended practices for an area, such as VFR routes, transit routes, reporting points or an aerodrome traffic frequency (ATF), pilots'

voluntary compliance is required to ensure the system performs as intended, and that acceptable safety is achieved.

In some instances, ATC or flight service specialists may provide additional information, including traffic information, if their workload permits. This in no way implies that pilots are being provided separation, or their flight is being controlled in any way. The pilots are entirely responsible for flying the aircraft.

About VFR routes

VFR routes or transit routes are often published in order to reduce the risk of collision in heavily travelled VFR corridors as well as to provide an aid to ATC for the purposes of expediting arrivals and departures from airports.

VFR routes are advisory; that is, they are not mandatory, but adherence to the routes reduces the risk of conflicts.

See and avoid

Pilots are expected to follow the rules by flying the appropriate altitudes, communicating when required, and conforming to recommended practices to reduce the probability of conflict. The "see and avoid" concept still plays a key role and requires vigilance on the part of pilots—particularly in high-traffic areas.

In the future, technology will provide pilots with a traffic picture in the cockpit to assist with reducing collision risk. Even then, there will be no substitute for a good look out.

Airspace classification system

The airspace classification system defines the air traffic services (ATS) provided, and pilot responsibilities.

The classes applicable to the provision of ATC services are as follows:

Class A: Only IFR flights are permitted; all flights are provided with ATC services, and are separated from each other.

Class B: IFR and VFR flights are permitted; all flights are provided with ATC services, and are separated from each other.

Class C: IFR and VFR flights are permitted; all flights are provided with ATC services, and IFR flights are separated from other IFR flights, and provided with conflict resolution from VFR flights. VFR flights are provided with conflict resolution from IFR flights, and receive traffic information in respect of other VFR flights. Conflict resolution between VFR flights is available upon request, equipment and workload permitting.

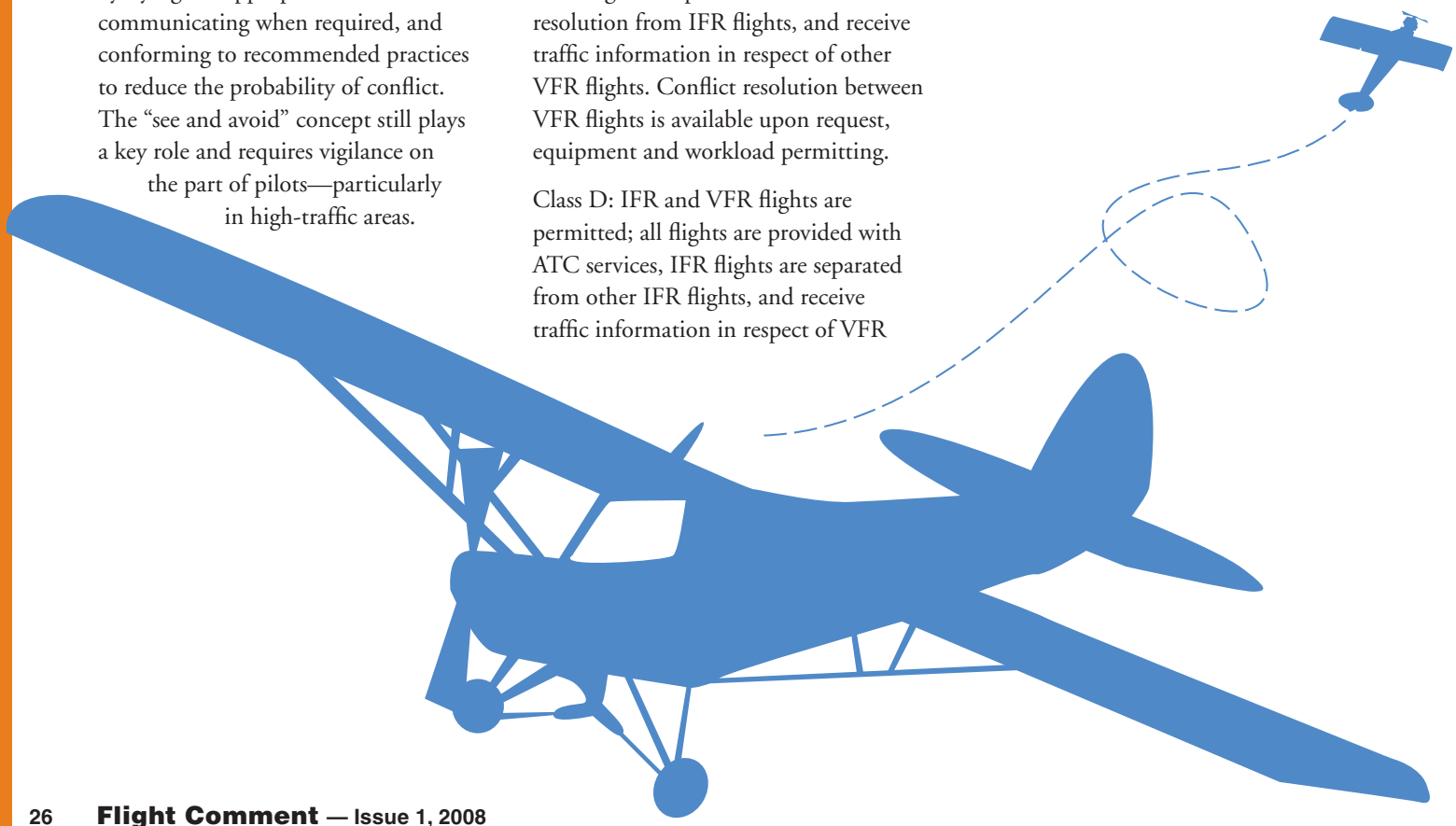
Class D: IFR and VFR flights are permitted; all flights are provided with ATC services, IFR flights are separated from other IFR flights, and receive traffic information in respect of VFR flights. VFR flights receive traffic information in respect of all other flights. Conflict resolution between VFR flights is available upon request, equipment and workload permitting.

Class E: IFR and VFR flights are permitted; IFR flights are provided with ATC services, and are separated from other IFR flights. All flights receive traffic information as far as is practical.

Class F/G: All other airspace is either class G uncontrolled airspace or class F special use airspace.

In conclusion, if you are a pilot flying in class G airspace, the responsibility for collision avoidance is all yours—you have control! ◆

This article is reprinted with permission from Paul Marquis, the editor of Transport Canada's Aviation Safety Letter. It originally appeared in Issue 4/2004 of the Aviation Safety Letter.



2007 System of Cooperation Amongst the Air Forces of the Americas (SICOFAA) Flight Safety Award Nominee:

15 Wing Moose Jaw Flight Safety Team

for Outstanding Achievement in Flight Safety Activities

15 Wing Moose Jaw is home to the NATO Flying Training in Canada (NFTC) program as well as 431 (Air Demonstration) Squadron (The Snowbirds). It is the heart of Canada's pilot training capability. A contractor provides all maintenance activities, ground school and simulator instruction that supports the NFTC program. The Wing supports these activities throughout the year and the pace of operations is hectic. To meet this challenge, 15 Wing has instituted an integrated military/contractor flight safety office responsible for the Wing Flight Safety program. This approach was the first of its kind in Canada's Air Force and the results of this innovation have been impressive.

The key to an effective Flight Safety program is an informed culture. In addition to the normal challenges faced in cultivating this culture, 15 Wing has the added challenges of integrating other National and corporate cultures into the CF Flight Safety ethos. Through a proactive approach, the 15 Wing Team has overcome any opposition related to these cultural differences through a diplomatic and tactful approach to safety. One of the main activities that the Team has engaged in is the provision of Flight Safety awareness briefings, plus regular updates that the aim of the FS program is not to assign blame, but to prevent the accidental loss of aviation resources. This activity is fully supported by the contractor Flight Safety staff and they are active participants in this process.

During the last year, the Flight Safety team at 15 Wing took positive steps to reduce the number of "near-miss" incidents that had been occurring at an alarming rate. This was accomplished through the collation and analysis of statistics and the preparation of a detailed briefing, which was presented to all personnel, from the Wing leadership on downwards. The result was a 60% reduction in the number of "near-miss" occurrences since this process was initiated.

The 15 Wing Flight Safety Team approach to their program emphasizes that all personnel, be they regular or reserve force, Foreign or National, and contractor are integral, contributing and essential participants in the program. This proactive DND/contractor team philosophy to Flight Safety at 15 Wing has the full support of the Wing Commander and the contractor management staff, which is truly effective in promoting an informed culture and is a model for others to emulate.

In recognition for their outstanding contribution to safe flight operations in a multi-national and corporate environment, the officers, non-commissioned members and contractor staff of the15 Wing Moose Jaw Flight Safety Team are deserving of the 2007 SICOFAA Flight Safety Award. ◆

Ruffled Feathers

Return of the Bird Menace

part II

By Capt Stéphane Paquet, editor of Flight Comment, Directorate of Flight Safety, Ottawa.

Alrighty then! We've managed to survive yet another Canadian winter. As we begin to shed layers of clothing and contemplate the joys of spring and summer to come, mother nature will indeed once again replace one flight safety concern, aircraft icing, with another: birds….lots of birds.

This article will serve as a follow-up to Ruffled Feathers, published in Flight Comment issue 2, 2007. Just in case you don't have it handy, here is the link to the article on the DFS web site:

www.airforce.forces.gc.ca/dfs/publications/fc/07-2/d/d3-eng.asp

While the first article was mainly focused on effective bird strike mitigation actions for crews, this one will offer you a basic statistical analysis of the bird strike problem, as experienced by both the Canadian Forces and civilian aviation operators. As you are about to see, the CF sustains a very significant number of bird strikes every year, each one with its own potential for aircraft damage and personnel injury. The goal here is to gain a better understanding of the bird threat distribution in terms of the following factors: phase of flight, altitude, time of day, season, aircraft type and occurrence category.

In addition to the CF data taken from FSOMS between 2002 and 2007, this article draws on data and analysis from the Transport Canada publication TP13549E - Sharing the Skies, henceforth referred to as TP13549E in this article. It is available on-line at the following address:

www.tc.gc.ca/civilaviation/AerodromeAirNav/Standards/WildlifeControl/tp13549/menu.htm

Let us first take a look at the number of birdstrikes sustained by the CF in the last 6 years. As figure 1 (below) indicates, a total of 882 strikes were reported, with a statistical average of 147 per year. It is generally accepted that the reporting of birstrikes in the CF is consistent and thorough, and that indeed these numbers are a close match to what is actually happening.

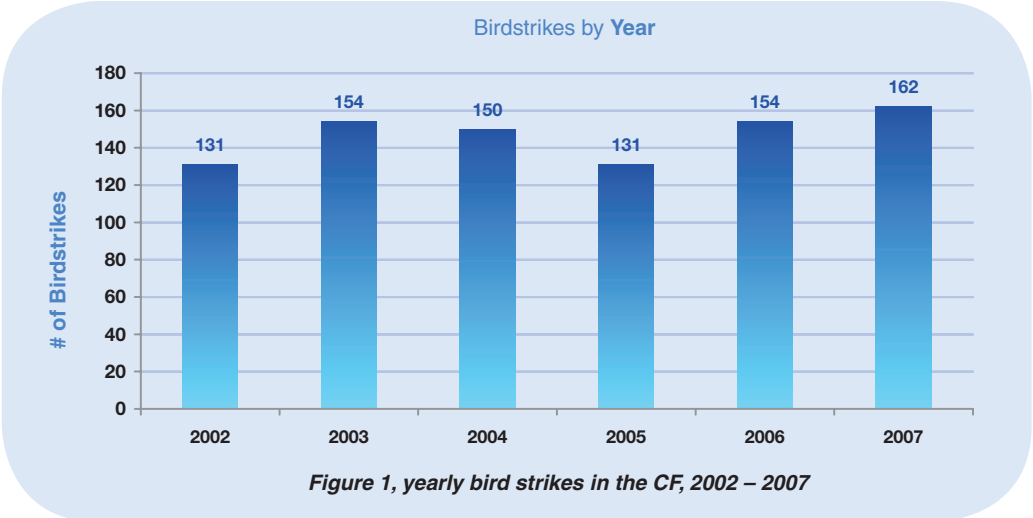


Figure 1, yearly bird strikes in the CF, 2002 – 2007

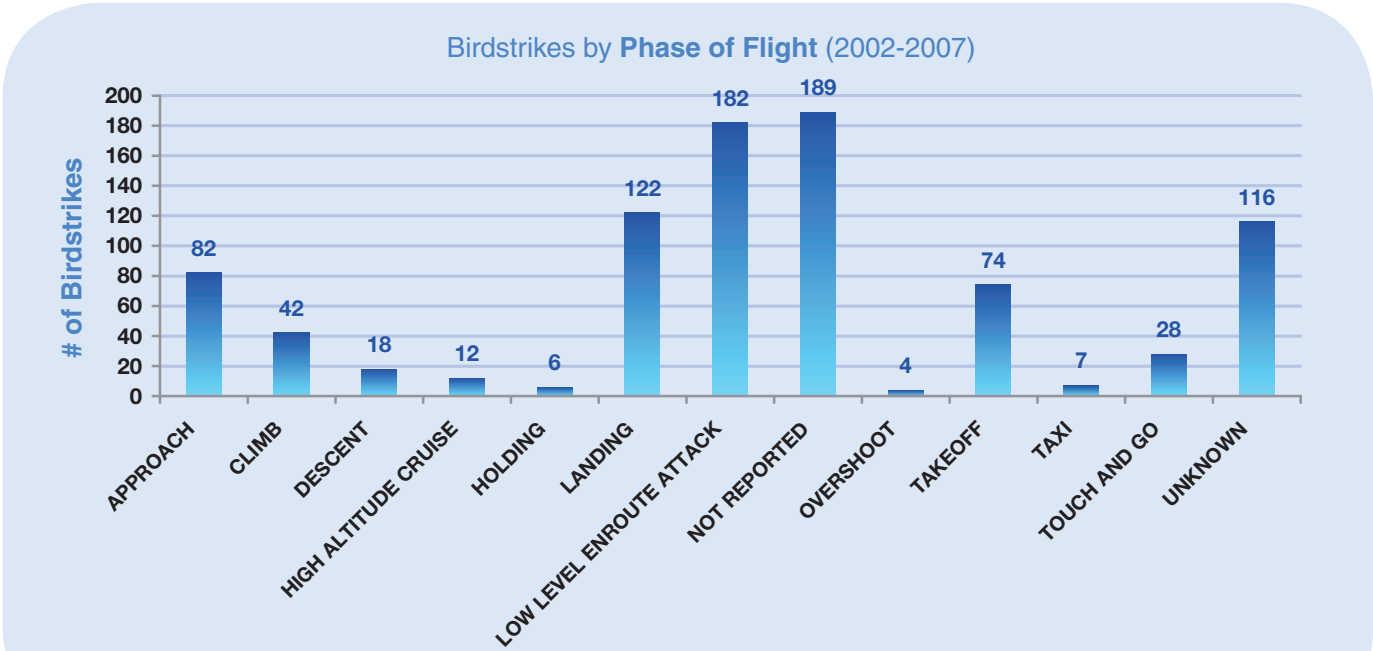


Figure 2, CF birdstrike distribution by phase of flight, 2002 - 2007

Phase of flight

From TP13549E, we note the following:

Most bird-strike databases contain statistics noting the phase of flight during which strikes occurred. These statistics are important because each flight phase has a different level of risk. The two most critical are takeoff and landing; overall accident statistics show that most accidents occur during these two phases of flight.

From a wildlife-strike perspective, an aircraft is much more vulnerable during takeoff than when landing.

At takeoff, an aircraft's engines are operating at high power settings, and the aircraft is heavier due to a full fuel load. During takeoff there is very little time—perhaps two to three seconds—to react to a wildlife strike, evaluate aircraft or engine damage and decide to reject takeoff or continue to fly. Successful rejected-takeoff and engine-out takeoff manoeuvres require precise flying skills and good crew co-ordination, since aircraft performance under these circumstances is limited. Any multiple-system failures caused by a wildlife strike—such as loss of lift-enhancing devices or more than one engine—can render an aircraft unflyable.

There is significantly less risk involved during landing. Impact force and potential for damage are reduced because an aircraft is approaching at lower speeds, under reduced power and carrying a diminished fuel load.

Photos: Sgt Allan Brace

CK2007-0427-3
4 Wing Imaging

This analysis is basically valid for both civilian and military aircraft. However, one of the greatest distinctions here lies with the fact that military aircraft actually perform a large amount of operational flying at low altitudes, compared to civilian transport aircraft. Therefore, the overall exposure to birds per flight hours, for several of our fleets, is in fact much higher. Obvious examples of that are:

- Tac Hel Ops;
- SAR (fixed and rotary wing);
- Maritime surveillance and ASW (fixed and rotary wing);
- Low level navigation/air-surface employment;
- Flight training (multiple approaches, landings, etc).

In addition to the increased low-level exposure, military aircraft are typically the only ones performing high speed flying at low altitudes, while most civilian aircraft are limited to 250 kias below 10,000 feet. As explained in the first Ruffled Feathers article, remember that the damage to an aircraft will be directly proportional to the kinetic energy of the impact, which in turn is directly proportional to the mass of the bird, and also proportional to the square of the impact velocity. In other words, double the mass of the bird, and the impact energy is multiplied by two. However, at double the impact velocity, the impact energy is multiplied by **four**. Hence, fast jets at low altitudes are most vulnerable to catastrophic failures for this very reason.

Refer to figure 2 for the distribution of birdstrikes in the CF per phase of flight for the reported period.

Altitude

Further to the chart above, TP13549E offers the following strike altitude distribution for the United States between 1991 and 1999, based on 20,893 known reports:

Altitude (AGL)	Percent of Known Total
0	40
1-99	15
100-299	11
300-499	5
500-999	7
1000-1499	5
1500-3999	10
>4000	6

Fig. 3, percentage of strikes with altitude

Although some variations can be expected between the U.S. and Canada due to bird types and geography, the assumption that the vast majority of bird strikes occur below 1000' is well recognized, and is a close match with the CF phase of flight chart.

Time of day

Another important factor is the time of day. Since most birds are not yet equipped with night vision goggles, it is only natural that most of their flying, hence most of the threat, will occur during daylight hours, as shown in figure 4.

From TP13549E:

The 1999 hourly distribution of bird strikes in Canada is presented in Figure 7.4, demonstrating the substantial numbers of bird strikes occurring at all hours of the day. Small increases are evident in the morning—between 08:00 and 10:00—and early evening—15:00 through 17:00—when the numbers of scheduled flights peak.

Birds tend to be most active at dawn and dusk, but as sunrise and sunset times vary throughout the year these strike patterns are obscured. Consequently, daily strike-rate patterns revealed in the data are strongly influenced by peak aircraft-activity times. There is also variation in the temporal distribution of strikes among airports. Recent analysis also suggests that North American strike rates may in fact be higher at night.

An interesting note is also made on mammal strike (furry beasts on the runway) hourly distribution.

The temporal patterns of mammal strikes are quite different than those of birds. The FAA database reported 681

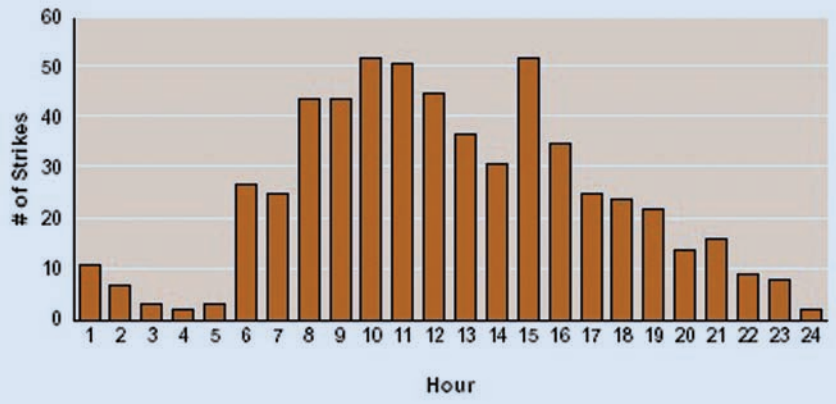


Figure 4, hourly distribution of birstrikes, Canada, 1999

mammal strikes during the 1991 to 1997 period; of the 522 mammal strikes in which time was known, 63 percent occurred at night—13 percent occurred at dawn and dusk, and only 24 percent during the day. These patterns reflect the nocturnal and crepuscular behaviour of most mammals that frequent airports in the U.S. and Canada.

Seasonal distribution

Following a pattern just as understandable as daily hours, the distribution of strikes per month of the year should come as no surprise to Canadian operators (see figure 5).

While some bird activity can be expected throughout the year, migratory birds, which represent a large percentage of the overall bird population in Canada, will fly north during the spring, and south during the fall months. The largest peaks, in August and September, can be attributed to the increase of the population after the nesting season, especially young birds with little or no experience with man-made objects, as well as the start of the migration of the furthest north populations towards the south.

Aircraft type

As mentioned earlier in this article, the number of birdstrikes should be proportional to the low level exposure for each fleet. Other factors of influence include aircraft size (including propeller radius or jet engine intake size) and geographical location. The chart in figure 6 then makes sense, considering the aircraft types which have either the highest number of takeoffs and landings per year, the longest mission times at low altitudes and/or operate in areas of dense bird populations.

Assuming an equally thorough reporting of birdstrikes throughout CF fleets, it then behoves operators of CC130, CF188, CH146, CP140, CT144, CT155 and CT156 aircraft to pay particular attention to birdstrike avoidance techniques, wear adequate crew protection (helmets, visors), and to include this risk systematically in their mission planning, as described in the first Ruffled Feathers article.

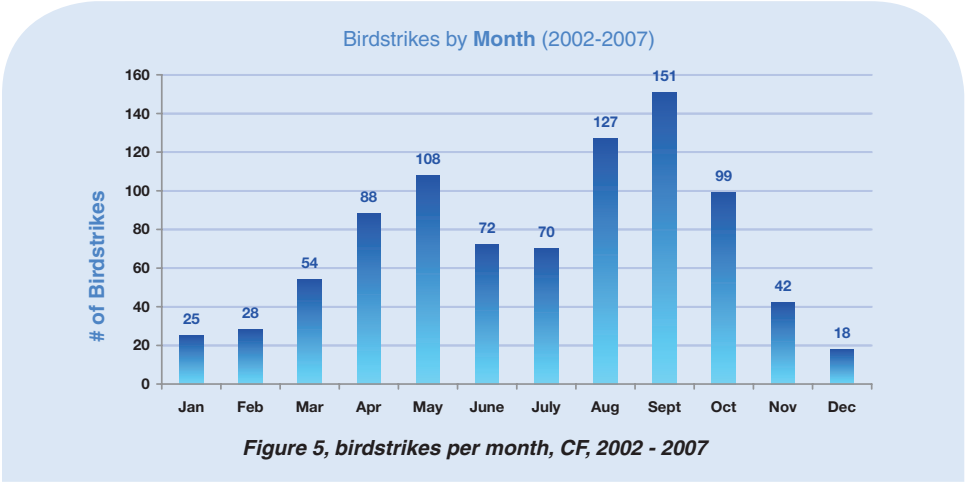


Figure 5, birdstrikes per month, CF, 2002 - 2007

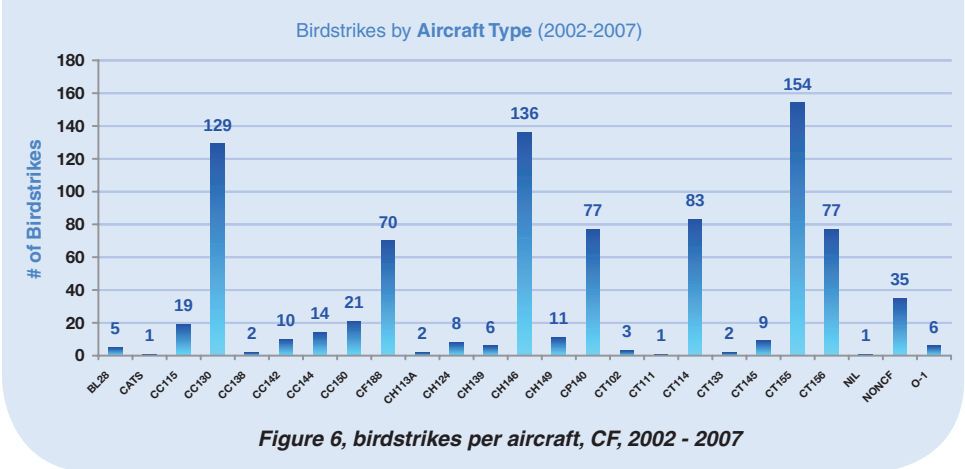


Figure 6, birdstrikes per aircraft, CF, 2002 - 2007

Occurrence categories and injuries

During the reporting period, the following were reported for occurrence categories and injuries related to birdstrikes:

Occurrence categories:

A	B	C	D	E
1	0	1	116	764

Injuries

Injury Level	# of Injuries
Fatal	0
Missing	0
Very Serious	0
Serious	1
Minor	4
Total	**5**

Although most of the birstrikes caused only minor damage to the aircraft, a significant number of D Cat damage was sustained, resulting in costly aircraft repairs. As well, one A Cat accident, with serious aircrew injury, occurred in 2004 when Hawk

(Continued on page 47)

How Much Jewellery is Too Much Jewellery?

By Capt Michel Bernier, aircraft accident investigator, Directorate of Flight Safety, Ottawa.

A question raised by a flight instructor in Moose Jaw prompts this article.

The Air Force is seeing a young work force taking over its demographics. Soon the average experience in the CF will drop by 15 yrs. This means we need to revisit what common sense has meant to us in the past.

So, how much "bling bling" is too much ?

For aircrew and ground crew the rules, while **off** the flight line, are found in the A-AD-265-000/AG-001 CF dress manual in chapter 2 section 2 page 2-2-5 para 6 and 7 where it states;

- The only jewelry that may be worn in uniform shall be a wrist watch, a service-issued ID tag, a Medical Alert chain identifier, a maximum of two rings which are not of a costume jewellery nature and a tie tack/clasp. Additional rings may only be worn where they indicate professional standing, such as an engineer, or are worn with a wedding band as a single set indicating betrothal or fidelity, e.g., an engagement or an anniversary ring.
- Safety regulations should always prevail, especially in workshops, warehouses or during operations. In addition, female members in uniform may wear a single pair of plain gold, silver stud or pearl earrings in pierced ears. The single stud earring, worn in the centre of each earlobe, shall be spherical in shape and shall not exceed 0.6 cm (1/4 in.) in diameter. (For wear of pearl earrings; see Chapter 6, Annex E.) No other type of earring shall be worn, except for a gold or silver stud-healing device of similar shape and size, which may be worn while ears are healing

after piercing. Only a single earring or healing device, worn in the centre of each earlobe, may be worn at a time (see Figure 2-2-3). When wearing civilian clothes on military installations, only one pair of unobtrusive earrings may be worn.

- Male personnel shall not wear earrings or ear-sleepers on the ears while in uniform or on duty in civilian clothes. When wearing civilian clothes off duty, jewellery and accessories will preserve a conservative, disciplined, professional appearance.

For aircrew and ground crew the rules, while **on** the flight line, are found in the C-05-005-P10/AM-001. Chapter 3, page 3-3 Para 22, sub Para d; states that Wing/Unit Commanders shall:

- Establish FOD prevention programmes particular to their wing/unit; appoint a Wing/Unit FOD committee and designate a FOD Control Officer.
- That this committee would be most effective as an integral part of the Wing Safety Committee under the chairmanship of the Wing Commander;
- That it will establish local maintenance/operational practices and inspection procedures that will minimize FOD;
- That it will ensure that personal equipment such as metal hat badges, rank insignia, name tags, etc. are not worn by personnel in and around aircraft, aircraft maintenance workshops, hangars and flight lines;
- That it will ensure that ramps, taxiways, and runways are inspected daily to ensure absence of foreign material that may cut tires, be ingested into engine(s), or cause other damage to the aircraft;
- That equipment such as metal hat badges, rank insignia, name tags, etc. are not worn by personnel in and around aircraft, aircraft maintenance workshops, hangars and flight lines to ensure absence of foreign material that may cut tires, be ingested into engine(s), or cause other damage to the aircraft.

As you can see, the C-05-005-P10/AM-001 order does not mention jewellery while on the flight line. However, common sense dictates that jewellery is implied and that the statement "not worn by personnel in and around aircraft" encompasses aircrew and ground crew alike.

Inspect yourself before you start your day on the flight line. Do a "buddy check" with your peers at work, wear your "bling bling" at the right time and place, be safe and keep FOD off the flight line.

Editor's note:

A thorough search of FSOMS surprisingly revealed no entries whatsoever related to injuries caused by jewellery. However, there is a high probability that, if you canvass your unit/wing verbally for such stories, you will find them, as was the case in and around DFS cubicles here in Ottawa.

Remember folks: your flight safety program's cornerstone, or in this case, Achilles' tendon, is the reporting culture. We absolutely must report **all** types of injuries related to flight line duties in order to address these hazards effectively. We generally don't get hurt because of gross negligence, but rather because many threats slip under our skin and become accepted and invisible to us. Don't wait for your blood or that of a squadron mate to spill. Help us identify and track the problems. Your life depends on it… ◆

EPILOGUE

TYPE: Cessna 172M (C-GFVE)
LOCATION: Waterville Airport, NS
DATE: 13 July 2007

The accident occurred during a student solo flight being conducted as part of the Air Cadet Power Scholarship program. The student pilot was on a second solo flight and was conducting circuits to practice landings and touch-and go's. On the sixth landing attempt the pilot did not flare and the aircraft landed nose-wheel first in a nose down attitude. The aircraft bounced back into the air and then came down in a nose-low attitude, causing the propeller to make contact with the runway, and the aircraft bounced into the air again. The pilot's instructor, observing from a nearby building, used the radio to direct the student to overshoot. The aircraft bounced twice more on the main landing gear before becoming airborne. The pilot completed an uneventful circuit and landing. The student pilot then taxied to the ramp, shutdown and exited the aircraft, apparently unaware that the aircraft had been damaged.

The student pilot was uninjured but the aircraft sustained serious damage. This occurrence is classified as a C Category accident.

The weather conditions at the time of the accident were near ideal and did not contribute in any way to the occurrence. The aircraft was airworthy and serviceable prior to the occurrence.

The investigation was unable to determine what led to the student's lack of flare on the occurrence landing attempt. The student had received the requisite training from a certified and very experienced instructor. The student could not recall being distracted or any other unusual phenomenon that would have led to a lack of attention to the task at hand. It is not unusual for very inexperienced pilots to make errors of judgement or technique.

With no other evidence available to explain the student performance, the occurrence is attributed to poor technique, compounded by inexperience, a recognized risk inherent in ab-initio pilot training.

The investigation found that the student pilot had taken a cold medication 10 days before the occurrence, without benefit of a medical examination or advice from the Flight Surgeon. This lapse was not found to be causal to this occurrence. However, it should be noted that this "self medication" is contrary to Canadian Aviation Regulation CAR 404.06:

"…no holder of a …, licence, … shall exercise the privileges of the permit, licence or rating if … the holder is taking a drug…unless…the holder has undergone a medical examination." ◆

EPILOGUE

TYPE: CH149 Cormorant (149910)
LOCATION: Gander, NL
DATE: 7 May 2007

On 07 May 2007, CH149910 was being towed onto the ramp when, after a turn was initiated, the tow crew heard a loud noise/bang followed by a hissing sound. The towing evolution was stopped and the tow crew found the tow bar entirely disconnected from the aircraft.

Initial assessment identified that the damage was limited to the right-hand wheel assembly and the left-hand tow bar adapter. It was also found that the mechanism allowing the nose-wheel to turn freely (or castor-latch) was not disengaged prior to the towing evolution. The castor-latch was disengaged and the aircraft was towed back in the hangar. A second damage assessment revealed serious damage. Specifically, the assessment identified damage to the right-hand wheel, both tow bar adapters, the axle, and the landing gear itself.

For operational necessity, the decision was made to lift the quarantine and perform the corrective maintenance recommended by the site manager. The actions taken were to change the flat tire, perform a detailed inspection of the damaged area, and impose an operational restriction to preclude landing gear retraction and ground taxi. A pre-flight was carried out but the aircraft did not fly, as the search and rescue mission was later stood down.

The occurrence was the result of a procedural step omission. Specifically, the step calling for the installation of the pip-pin to hold the nose-wheel manual castor-latch in the disengaged position was missed. The investigation revealed that several technicians assumed that the castor latch was disengaged, because the aircraft was prepped and ready to go; however, there was no documentation or procedure supporting this assumption.

The investigation revealed that the safety feature of the tow bar did not preclude damage to the landing gear. A review of the technical publications revealed that there are no torque values for the tow bar safety bolt and shear bolts. The analysis of the occurrence suggests that the torque value of the safety bolt, in all probability, delayed the shearing of the shear bolts.

The CH149 community has taken several preventive measures including the provision of refresher training on towing procedures, the distribution of a maintenance alert to CH149 Main Operating Bases, and the implementation of positive confirmation (verbal or hand signal) for castor-lock disengagement prior to chock removal. Several additional preventive measures were identified including the conduct of a special inspection to re-torque all tow bar attachment bolts and shear bolts to the approved value, once known, the reinforcement of towing procedures, and the creation of On Job Training Plans or equivalent documentation for each tow crew position. ◆

EPILOGUE

TYPE: CU161 Sperwer (161014)
LOCATION: Kandahar, Afghanistan
DATE: 24 January 2007

The accident occurred during an uninhabited air vehicle (UAV) mission conducted at the Kandahar Airfield (KAF) in support of Op ARCHER. Immediately following launch, the air vehicle (AV) entered an uncommanded steep left turn, descended and crashed approximately 250 metres from the launcher. There were no injuries and the AV was destroyed.

The AV's attitude and navigation functions are controlled by a hybrid navigation system (HNS). The HNS senses the AV's pitch, yaw and roll and provides an input signal to the mission control unit (MCU). The MCU in turn processes the signal and provides an output signal to the AV's control surfaces for steering and navigation. The AV must be launched with the HNS in alignment mode; otherwise, the AV will not have the requisite attitude and navigation functionality for controlled flight. The investigation concluded that the AV was launched with the HNS in standby mode. Consequently, the AV's flight control surfaces were essentially frozen which caused the AV to crash.

A series of human factors contributed to this occurrence. The crew was using a modified and unapproved checklist, condoned by supervisory personnel, in order to cope with perceived time pressures. Additionally, at the precise moment when the HNS was to be selected to alignment, the mission commander (MC) was distracted by a radio call. The checklist was not being directly referenced by the MC; rather, it was being actioned by memory and the step was consequently missed. Additionally, a red thematic page warning that showed the HNS was still in standby mode, was available to the crew; however, neither the AVO nor MC checked it prior to launch as this check was not an explicit checklist requirement.

All CU161 operators were briefed on the importance of diligently adhering to the approved checklist. Outstanding recommendations include modifying the CU161 system design so that the AV cannot be launched unless the HNS mode is selected to alignment. Additionally, it was recommended that the checklist explicitly direct the thematic page be checked prior to launch. ◆

EPILOGUE

TYPE: **CH146 Griffon (146422)**
LOCATION: **Goose Bay, Labrador**
DATE: **7 December 2006**

On 7 December 2006 the crew of Griffon 146422, from 5 Wing Goose Bay, had completed an overnight survival exercise and were starting the aircraft for the return trip to the base. As the outside air temperature (OAT) was approximately –10oC, the crew conducted the Cold Weather Start Procedure (CWSP) on engine #1. Once engine #1 fuel control unit was back in automatic mode, the crew proceeded to start engine #2. Engine #2 was not started using the CWSP as engine N1 was observed below 62% and the checklist procedure available to the crew at the time did not require a CWSP if N1 speed was within 61+/-1%. The crew proceeded with aircraft systems check. The left-seat pilot advised the pilot at the controls (right seat) that the rotor RPM (NR) was high. The pilot at the controls then rolled down the throttles to keep NR at 85%. On a second occasion, the left-seat pilot noticed NR still high. He then reduced the throttles further without advising the pilot at the controls so as not to interrupt the pilot's systems checks. Shortly afterwards the aircraft experienced a main rotor overspeed in excess of 120% NR, sustaining serious damage.

The investigation revealed three main contributing factors to this accident. First, critical information was not available to the crew. The 61+/-1% N1 criterion for CWSP had been removed from the procedure via an MCOIN 1 message on 16 Nov 06. Since the MCOIN application had neither been installed on the unit's computers, nor was the staff aware of the MCOIN program, the message was not read and the new information was not relayed to the crew. Second, the left-seat pilot moved the throttles without informing the pilot at the controls, thus reducing his awareness of the developing situation.Third, the crew did not recognise the onset of engine overspeed when they had to reduce throttle twice to keep NR within limits.

Recommendations include that information critical to safe aircraft operation be transmitted with a requirement for the user to acknowledge receipt. Users at all levels should be made familiar with, and be properly trained on, the use of the MCOIN application. Message traffic using MCOIN should also have a subject line that is more conducive to the content of the message. In addition, the technical airworthiness authority should find a permanent solution to cold weather start related problems as previous occurrences show that the CWSP does not eliminate the risk of overspeeds. ◆

EPILOGUE

TYPE: Schweizer 2-33 (C-GBJR)
LOCATION: Mountain View, ON
DATE: 07 August 2006

The glider pilot was conducting the second solo flight of the Air Cadet Glider Pilot course in Mountain View, Ontario. On base leg, the canopy unlatched but remained closed. While attempting to secure the latch the glider pilot inadvertently lowered the nose of the glider, induced some right bank, and flew through the on-course of the landing area. The pilot's instructor, who was monitoring the flight from the ground, was concerned that the right wingtip of the glider might contact the ground and cause the glider to cartwheel. The instructor radioed directions for the solo glider pilot to level the wings. The glider pilot levelled the wings and attempted to land in a field on the extended base leg. The glider overflew a fence, touched down in a small field, bounced, and finally impacted a stand of trees while still airborne and travelling at approximately 45 miles per hour. Despite the sudden stop, the glider pilot received only minor injuries. The glider was destroyed.

Because of a miscommunication between the tow pilot and the launch control officer, the tow pilot had planned for a 2,500 foot above ground level (AGL) tow and release altitude, while the glider pilot had expected a 1,500 foot AGL release. As a result, the glider pilot released from the tow plane at 1,600 feet AGL, even though the aircraft were not at the proper release location. This made it more difficult for the glider pilot to rejoin and complete a normal circuit. Also, the pilot did not perceive the glider's position in the circuit to be a problem, unlike the solo monitor who perceived the hazardous situation and directed the glider pilot to conduct an off-field landing.

Improvements to communication procedures have been identified, which should reduce the likelihood of this type of accident from recurring. As well, the glider pilot restraint system is being reviewed, and guidance on the use of seat and back spacers should provide improved protection for pilots. ◆

EPILOGUE

TYPE: CC130 Hercules (130311)
LOCATION: Alert, Nunavut
DATE: 25 April 2006

The incident occurred during the landing phase of a resupply mission to Canadian Forces Station Alert in support of Op BOXTOP. Upon completion of a precision radar approach (PAR), the aircraft landed long and after touchdown experienced directional control difficulties. The aircraft was unable to stop in the remaining runway available and departed the end, coming to rest in two-foot deep snow. There were no injuries. The aircraft sustained minor damage.

The crew transitioned from the PAR to visual flight prior to reaching minimums and at this point the aircraft was 225 feet above glidepath. Corrections were made and the aircraft crossed the runway threshold 75 feet high and nine knots fast. The aircraft touched down with 2950 feet remaining on the 5500 foot, snow-packed runway. The remaining distance was 200 feet more than the minimum required to safely stop the aircraft; however, CC130 deceleration mechanisms were not employed in accordance with the Aircraft Operating Instructions and this distance was compromised.

The investigation assessed that Human Performance in Military Aviation (HPMA) practices were not gainfully employed by the crew and regulatory stabilized approach and go-around criteria were not available to ensure the safest possible mission outcome. Symptoms, including degraded situational awareness, task saturation, channelized attention, normalized deviancy and an un-optimized authority gradient, were present in the cockpit and went unchecked. As a result, sound decision-making processes were displaced and the aircraft was unwittingly flown beyond the edge of its performance envelope.

Outstanding preventive measures include the development of an HPMA training module incorporating lessons learned from this occurrence and amendment to current CC130 pilot training associated with CC130 normal and maximum effort landing performance. Additional recommendations include the development of regulatory stabilized approach and G/A criteria for all types and phases of approaches, development of a PMA proficiency Standard and amendment to current direction pertaining to pilot monitored approach selection criteria. ◆

EPILOGUE

TYPE: CC115 Buffalo (115457)
LOCATION: Comox, BC
DATE: 2 February 2005

A Buffalo SAR standby crew conducted a currency/proficiency training flight, which included a freefall parachute jump of two Search and Rescue Technicians (SAR Techs) into a pre-designated drop zone (DZ). The Team Leader (TL) dispatched streamers over the DZ at an altitude of 3500 feet above ground level (AGL) and then the aircraft commenced a climb to 7000 feet AGL. The Buffalo crew dispatched both SAR tech freefall parachutists over the pre-calculated free-fall exit point. Both jumpers reported being under functional canopies above 3000 feet AGL. Winds at the opening altitude did not cause the jumpers any concerns and they proceeded to the pre-designated DZ. The jumpers were surprised when they encountered a wind shear at approximately 1000 feet AGL, which blew them over the built up area of the hangar line. The Team Member was blown over the hangar and landed in turbulent conditions in the hangar parking lot. The TL experienced a loss of lift at about 100 feet AGL and landed with an increased rate of descent in turbulent conditions between hangars 7 and 14 and between the rotor blades of a Cormorant helicopter that was being towed into the hangar. The Team Lead sustained serious injuries. The Team Member sustained minor injuries.

The investigation determined that the crew did not use all available means to assess wind conditions, which were very close to limits at the time of the jump. As a result of these undetected conditions (wind shear and wind speed close to or above limits) the jumpers were blown off course and away from the Drop Zone towards the hangar. The investigation also found that lighter jumpers are placed at an increased level of risk of injury when wind conditions are greater than 20 knots

A warning was added to the Standard Manoeuvre Manual (SMM) stating that during turbulent and gusty wind conditions it is highly recommended that the CSAR 7 canopy be flown in full glide without trim tabs. The SMM was also amended to include a requirement to follow the streamer all the way to the ground as a necessary procedure when assessing the wind particularly when wind shear potential exists.

Finally, a Technical Investigation and Engineering Study contract was initiated with the parachute manufacturer to provide more technical data on the parachute's performance when using trim tabs. ◆

For Professionalism

CAPTAIN ANTONIO TORRES

While on a routine two plane air sovereignty alert mission in armed CF188 Hornets, Captain Antonio Torres was alerted by his wingman, Captain Robinson, that his aircraft had experienced a left engine compressor stall. Capt Robinson responded to the initial actions and secured the engine. Capt Torres formed up on his wingman and saw that Capt Robinson's left engine was on fire. Upon notifying him of the problem, corrective actions were taken to stop the fire and initiate recovery action to the Bagotville aerodrome. Capt Torres then immediately liaised with ATC to get the emergency response vehicles in place and continued to provide them with flight location updates.

Capt Torres provided his wingman with exact guidance on how to handle the recovery, including all the appropriate considerations. They discussed the damage seen, the status and flying characteristics of the damaged aircraft and how the recovery was going to occur. Following the controllability check, it was determined that the wingman had to fly an approach speed higher than the arrestor cable rating. Capt Torres informed Capt Robinson of all courses of action that maybe required to be exercised in the event that the chosen flight path was unsuccessful. This turned out to be paramount, as the wingman was busy controlling the aircraft that had reverted to mechanical mode, characterized by pilot induced oscillations.

Capt Torres remained composed and focused throughout the entire event and was instrumental in the safe recovery of Capt Robinson's aircraft. As a result of this incident, the remaining leg of the flight required six yellow and six red page emergency checklist responses to be carried out during the short transit home. In addition to dealing with all the constant demands of this in flight emergency, Capt Torres continued to maintain a coordinated ATC flight plan that avoided populated areas.

Capt Torres is commended for his calm demeanor and the superior leadership he demonstrated while orchestrating the recovery of two armed aircraft. His notable skill and competence make him most deserving of this For Professionalism award. ◆

Capt Torres is currently serving with 425 Tactical Fighter Squadron, 3 Wing Bagotville.

COMMISSIONAIRE SHELDON LAVALLEE

On 27 July 2007, Provincial Airlines Flight 411 (PAL 411) departed Goose Bay, Newfoundland (NL) for Deer Lake, NL. Commissionaire Sheldon Lavallee, Security 57, was tasked with monitoring construction in the vicinity of the intersection of Runway 26 and 34.

Commissionaire Lavallee observed PAL 411's takeoff roll and noted that it appeared to have a low right hand main tire. He advised Air Traffic Control (ATC) of his observation, and they in turn advised PAL 411 of the suspected condition. Soon after, a report of debris on the active runway was noted by a landing aircraft. Commissionaire Lavallee was tasked by ATC to inspect and remove the debris, which turned out to be several pieces of tire rubber. PAL 411 was again notified of the condition and the decision was made by the Aircraft Captain to divert to St. John's NL airport where a precautionary landing was conducted without further incident.

The alertness of Commissionaire Lavallee to raise awareness of the departing aircraft's low tire is commendable. His action averted a more serious occurrence by enabling the aircraft's pilot to develop courses of action specifically designed to deal with this unsafe condition. Commissionaire Lavallee's dedication to his duties and concern played a major role in minimizing the risk to both crew and passengers. His concern for the safety of others clearly makes him deserving of this For Professionalism award. ◆

Commissionaire Lavallee is currently serving with 5 Wing Goose Bay.

For commendable performance in flight safety

CORPORAL DANIEL ALLAIRE

On 4 July 2007, Corporal Daniel Allaire, a journeyman aviation technician at 423 Maritime Helicopter Squadron, was conducting a before flight check ("B" check) on Sea King Helicopter CH124410. During the inspection of the main probe, which is located in a dimly lit area, he noticed the explosive cartridge on the messenger cable cutter assembly was flush against the housing. Upon discovering the omission of the "O-ring", Cpl Allaire immediately informed his supervisor and the aircraft was quarantined.

A review of the applicable Canadian Forces Technical Order revealed an "O-ring" was missing on the cartridge. The "O-ring" is critical as it ensures the channelling of all the explosive pressure required to move the cable cutting head when the explosive cartridge is actuated. The "O-ring" also aids in the retention of the cartridge in its housing. The messenger cable cutter assembly on the main probe allows the pilot to cut the cable if an emergency arises during haul-down operations aboard ship, or if during slinging operations the load becomes unsteady and starts to swing violently.

Realizing the tail probe has the same explosive cartridge

build-up, Cpl Allaire decided to double-check this similar system and also found the tail probe cartridge was missing an "O-ring". This cartridge is used if the hydraulic system becomes inoperative when landing aboard ship, and allows the pilot to secure the aircraft to the deck by cutting the cable and releasing the tail probe.

Cpl Allaire's professional attitude and attention to detail in an area of reduced illumination are highly commendable. His actions clearly averted a very serious flight safety issue and eliminated a potential threat to the aircraft and its personnel. He is very deserving of this For Professionalism award. ◆

Cpl Allaire is currently serving with 423 Maritime Helicopter Squadron, 12 Wing Shearwater.

CORPORAL ERIC WILLISTON

After a lengthy downtime repair on the CF188912 Hornet, Corporal Eric Williston electronically conducted a maintenance record set (MRS) search for time expired aircrew life support equipment (ALSE). During this search, he realized that the MRS maintenance planner did not contain a time expiry date for the canopy unlatch thruster. The MRS contains in excess of 250 lifed components and flags all items coming due for inspection or removal with a yellow (coming due) or orange (overdue) colour highlight. Normally, a level C releasing authority carries out a MRS maintenance planner record check prior to each flight.

Cpl Williston continued to research this anomaly and eventually discovered a 1998 dated transcription that deleted the item's history record from the MRS. He then calculated the life cycle of the component and determined the thruster had been time expired for almost 2 years. The canopy unlatch thruster is a key component in unlocking the canopy in an ejection sequence and its failure to operate would have significantly increased the risk to aircrew in a bailout situation.

Cpl Williston is a highly motivated level A technician who clearly exceeded his task requirements by taking the initiative to review the maintenance planner to ensure aircraft ALSE serviceability prior to flight. For him to notice the component,

and that its life cycle information was missing from the maintenance planner, demonstrated an attention to detail and in-depth trade knowledge that is commendable.

His meticulous attention to detail and determined effort to research the root cause of a log set error that had gone undetected for 9 years is notable. He is truly deserving of this For Professionalism award. ◆

Cpl Williston is currently serving with 410 Tactical Fighter Squadron, 4 Wing Cold Lake.

For Professionalism

MASTER CORPORAL ANDRÉ MIMEAULT

On 28 September 2007, Master Corporal André Mimeault demonstrated exemplary composure and professionalism while dispensing instrument flight rules (IFR) services to a civilian registered Golden Eagle aircraft, on an instrument landing system (ILS) approach into 3 Wing Bagotville.

Under marginal meteorological conditions on the final ILS approach phase, MCpl Mimeault noticed that the pilot deviated from the published approach without any confirmation of visual contact with the airfield. The pilot at this time appeared troubled and continued to deviate further, which prompted MCpl Mimeault to direct the pilot to execute the published overshoot procedure.

Demonstrating an increased level of anxiousness, the pilot was unable to comply with the post-overshoot procedures and MCpl Mimeault, in a calm and reassuring manner, hastily proceeded to direct the pilot with radar guidance in order to safely reposition him for another approach. However, the pilot's disorganization was still evident and following a bad turn he involuntary lost altitude, which had the potential to place him under the minimum IFR altitude.

MCpl Mimeault, the precision radar approach (PAR) controller, quickly rectified the situation by using non-technical "plain language" to restore the pilot's confidence for a precision radar approach. Within a short period of time, his reassuring voice allowed the pilot to regain his composure and use the PAR approach to land the aircraft without further complications.

MCpl Mimeault demonstrated a superior level of professionalism and notable calm demeanour throughout this ordeal. His keen sense of duty, tenacity and compassion were instrumental in neutralizing a potentially dangerous situation. His heightened dedication to the task makes him very deserving of this For Professionalism award. ◆

MCpl Mimeault is currently serving with Wing Operations, 3 Wing Bagotville

CORPORAL ANDRÉ ROYER

During September 2007, Corporal André Royer was tasked to replace the CF188 Hornet rigid seat survival kit (RSSK) lanyard quick release mechanism. This emergency escape system modernization process required the sewing of a new attachment point onto the RSSK abdominal strap.

While employing the applicable technical publications to verify the proper nylon thread needed to secure the quick release mechanism using a '2 inch box X', he realized that the thread size indicated wasn't sufficient to ensure safe and proper completion of this task. He then very thoroughly researched all technical orders for past modifications to the RSSK harness to verify that the proper threat size was indeed used. Conducting an even more in-depth investigation, he found that numerous spools of different size thread were identified with the same North American treaty organization (NATO) stock number (NSN).

Cpl Royer immediately notified his supervisor who in-turn suggested he inform the life cycle material manager (LCMM) of his findings. Once in possession of this information, the LCMM immediately informed all affected CF trades and units that until this improper thread size identification abnormality is completely addressed, the potential for strap failure is present and due diligence is required until proper thread sizes are established and recorded in the technical orders.

There is no doubt that the efforts put forward by Cpl Royer played a paramount role in avoiding the use of incorrect sized thread during the modernization process. When a pilot is obligated to use his parachute as a last resort, it is imperative that it is maintained in a manner that ensures optimum survivability. Cpl Royer is to be commended for his tenacity, professionalism and deep-rooted concern for all flying members of the Hornet community. His identified efforts make him most deserving of this For Professionalism award. ◆

Cpl Royer is currently serving with 3 Air Maintenance Squadron, 3 Wing Bagotville.

For commendable performance in flight safety

MASTER CORPORAL NATHAN LEAMAN

On 11 December 2007, flight engineer, Master Corporal Nathan Leaman, was conducting a pre-flight inspection on a CH146 Griffon when he noticed a discrepancy with the lower swash plate link bolts. Immediately upon discovering this potential abnormality, he took the initiative to perform a closer visual inspection as well as use another Griffon helicopter to conduct a bolt installation comparison. These simple but thorough maintenance actions verified that the link bolts were indeed installed backwards. Upon this discovery, MCpl Leaman promptly informed the servicing section and the aircraft was rendered unserviceable.

The subsequent investigation revealed that these bolts were incorrectly installed on 18 April 2006. The subject aircraft had been flown 165 times with more than 472 airframe hours after the bolts had been improperly installed. With each subsequent flight, the potential for failure of the attachment bolt continued to increase. This failure would have resulted in the catastrophic loss of the aircraft's controlled flight.

MCpl Leaman's exceptional attention to detail, determination and drive to ensure all likely abnormalities are thoroughly investigated led him to discover this potentially hazardous attachment bolt condition. It is his proven manipulation of these professional efforts that make him very deserving of this For Professionalism award. ◆

MCpl Leaman is currently serving with 403 Helicopter Operational Training Squadron, CFB Gagetown.

SERGEANT ROBERT GEARNS
MASTER CORPORAL JASON SNOW

On 24 September 2007, the crew of Burma 45, a CC 130 Hercules aircraft (130335), was conducting an operational airdrop mission to a Canadian forward operations base northwest of Kandahar, Afghanistan. Following the successful extraction of 10 container drop system bundles, the flight engineer (FE) began to close the cargo ramp and door as per the post-drop checklist.

During this procedure, Sergeant Robert Gearns noticed that the right-hand aft anchor cable support bracket had apparently sheared off during the airdrop and was now preventing the cargo door from closing. He immediately instructed the FE to cease operating the ramp and door. Sgt Gearns then moved to the rear of the aircraft in an attempt to troubleshoot the malfunction. Recognizing the seriousness of the developing situation, Master Corporal Jason Snow immediately moved to the rear of the cargo area to assist Sgt Gearns. After securing himself to the cargo floor, Sgt Gearns was able to manually raise the cargo ramp.

As Sgt Gearns began to climb up the right side of the cargo ramp, MCpl Snow securely positioned himself at the cargo ramp and took over the manual operation of the cargo ramp and door controls. Sgt Gearns then physically held the dangling anchor cable and support bracket against the side of the cargo compartment, allowing MCpl Snow to manually close the cargo door.

The quick reaction, initiative and cooperation of these two crewmembers significantly reduced the amount of time the aircraft remained within a hostile environment. Their superior efforts and notable teamwork overcame a very unfavourable configuration and also eliminated the hazardous scenario of a landing with the cargo door open. Their efforts clearly make them deserving of this For Professionalism award. ◆

Sgt Gearns and MCpl Snow are currently serving with 435 Transport and Rescue Squadron, 17 Wing Winnipeg.

For Professionalism

For commendable performance in flight safety

WARRANT OFFICER MICHAEL HOPE

On April 16, 2007, during his pre-flight inspection on the Hercules aircraft CC130313, Warrant Officer Michael Hope noticed that the flap drive torque tube mounting bolts were installed incorrectly. It is not a normal part of a flight engineer's pre-flight inspection to check these bolts. This condition had eluded more experienced aircraft technicians and engineers for a period of three years.

WO Hope made use of his previous experience on the CH113 Labrador, which had torque tubes with similar installation requirements, to determine that the bolts on the two Thomas couplings drive torque tubes outboard of the flap motor were incorrectly installed. Because of the proximity of the torque tube bolts to the flap motor mounting bolts, there was the possibility that the flaps could get stuck if the torque tube bolts contacted the mounting bolts while the flaps were in transit.

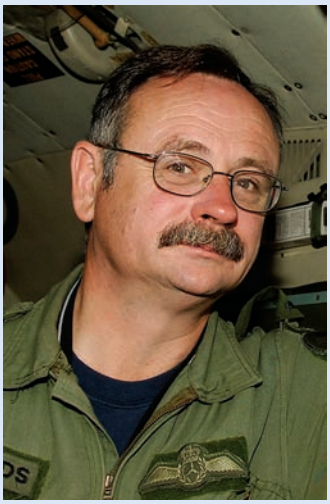
There are times during search and rescue operations when the possibility of the flaps being stuck is very real, which in turn would seriously impede the aircraft's performance and ability to safely return to home base. WO Hope's professionalism, attention to detail and willingness to go beyond normal pre-flight requirements likely averted a serious aircraft safety of flight condition.

His dedication to task and thoroughness averted the potential loss of both aircrew and material resources. He is a meticulous professional and very deserving of this For Professionalism award. ◆

WO Hope is currently serving with 413 Transport and Rescue Squadron, 14 Wing Greenwood.

WARRANT OFFICER GORDON WOODS

On 5 June 2007, during the pre-flight inspection of Hercules 130323, Warrant Officer Gordon Woods, a 436 Transport Squadron flight engineer, noticed a suspicious gap between the drag braces and the nose landing gear oleo shock strut assembly. Believing the nose gear assembly to be improperly assembled, WO Woods declared the aircraft unserviceable and had the drag links closely inspected by an airframe technician.



Further inspection revealed that the spacing washer was incorrectly installed between the drag brace and the shock strut. Upon disassembly, the drag braces were found to be worn beyond limits and required replacement.

The drag link attachment point is on the very top of the nose gear oleo and located deep inside the nose-wheel well. The lack of ambient lighting and the restricted space available in the nose wheel well, coupled with the unusual high concentration of grease further complicated the inspection process. The nose gear assembly is inspected only for general serviceability during the flight engineer's pre-flight inspection and the nature of the incorrect assembly was extremely subtle and therefore very difficult to detect.

Examination of the aircraft maintenance record set (AMRS) revealed that the last time any work had been completed in the area of the nose landing gear was during the last contractor periodic inspection. The aircraft had since flown multiple missions and had been subjected to numerous pre-flight inspections prior to the condition being discovered by WO Woods.

His superior attention to detail while inspecting an assembly that is normally only checked for general serviceability during the pre-flight inspection, clearly averted the potential for a catastrophic failure of the nose landing gear assembly. WO Woods' professional efforts make him deserving of this For Professionalism award. ◆

WO Woods is currently serving with 426 Transport Training Squadron.

Just One More Job

(Continued from page 9)

bypass established procedures and CFTOs becomes the devil's contract. We might get away with it once… twice, and then some. Eventually, and usually when our guards are dropped, we will pay the price.

Remember that CFTOs, just like pilots' flying checklists, are often written in blood, and represent your safety net. They are not put in place to frustrate you or slow you down, but to ensure the work will be consistently well done, especially in times of fatigue, short manning, and high operational pressures. This excellent account of a past accident just reminds us that this has been around for quite some time, and it's not about to disappear. ◆

ALSE Working Group

(Continued from page 19)

Numerous briefings highlighted current initiatives within the ALSE world that will lead to new items or improved items being introduced into communities; helmets, LPSV's, flying clothing, immersion suits are but a few examples of new kit on the way. The message that should go along with this is that it will take time. The process to acquire and safely introduce ALSE equipment is (from the operator's perspective) long, but from the airworthiness perspective exists to allow a safe introduction after extensive testing. This ensures that all possible aspects of the introduction and use of that new ALSE equipment have been addressed to avoid further incidents or accidents. The units involved in testing that equipment are overwhelmed with competing priorities and as such, ALSE equipment sits within that prioritization at a lower level than most would wish.

As I mentioned at the outset, at times our acquisition process tends to try and find the "silver bullet" solution to most ALSE deficiencies. For example, one community might submit a SOCD to address a problem, and rather than solving that particular community's problem, the "system" attempts to introduce a new ALSE piece of kit to improve all communities. However, the time involved in engineering that pan-Air Force solution holds back the original community that had the original problem. The acquisition mindset must evolve to the point where ALSE can be acquired in groups, thus getting away from that "silver bullet" solution. For instance, when faced with a new ALSE requirement, rather than getting one piece of kit and trying to "square peg the round hole", perhaps a different approach could be taken leading to a rotary-wing solution, a fixed-wing transport-type solution and a fixed-wing jet solution.

So what is the message that I am trying to communicate? It is that the ALSE world is well on the way to being mended. It will take time for the recommendations to manifest themselves in visible improvements. It will take a certain amount of faith on the part of the aircrew and maintainers to know that these improvements are being made and will eventually lead to a better ALSE system. It will require better communication within your own chain of command as well as the ALSE chain of command. The bottom line is that the CAS wants to reassure you that ALSE is a top priority for him. There is someone listening to your concerns and they are working towards better results. ◆

Microburst

(Continued from page 23)

other than for night flying. It is imperative to maintain core flying skills and to encourage their practice on operations in a manner commensurate with the threat.

- Know your local 'met'. Due to the expeditionary nature of the Fleet Air Arm, we operate and transit through many different areas of the world. With that, we get to experience a great deal the world has to offer and are probably better versed than many in the variety of environments we may experience. It is imperative however, that we are also aware of all the little nasties that can jump up and bite you unaware, and that's not just every junglies' favourite, the camel spider! ◆

Ruffled Feathers

(Continued from page 31)

155202's engine ingested a bird on takeoff, resulting in the ejection of both crewmembers and total loss of the aircraft. A more recent occurrence in September 2007, also involving a Hawk, saw the disintegration of most of the front windshield of the aircraft as it hit a bird during a low-level air-surface mission at 420 kias. The pilot sustained lacerations to the neck, but was otherwise adequately protected by his helmet and visor *(see pictures on page 29)*.

Conclusion

Birdstrikes have been a continuous concern in the past years, and will continue to remain a real and serious threat for all CF aircraft. Several fleets have been demonstrated to be particularly exposed to this risk, based on their mission types, exposure to the low-level environment, geographical location, and operating speeds at low altitudes.

A proper understanding of aircrew mitigation actions, including adequate in-flight response, thorough mission planning and proper use of ALSE, is critical if we are to face this threat with the intent of minimizing the damage. I hope the combination of the two *Ruffled Feathers* articles will provide you, the operator, with a better understanding and a clear picture of the level of risk.

Word up, visors down, eyes out! ◆