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Flight Comment
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FLIGHT SAFETY
Canada

Flight Comment

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Photo: Cpl Piotr Figiel

Views on Flight Safety

By Lieutenant Colonel Stephen Hanson, Commanding Officer Canadian Detachment Elmendorf, Joint Base Elmendorf-Richardson (JBER), Alaska

After 27 years in the Canadian Armed Forces (CAF), I am continually amazed that I receive a salary for doing what most people would pay to experience first hand. From my first flight in the mighty *Labrador* with 442 Transport and Rescue Squadron – planned flight, I must add – to my latest cross-country jaunt with 412 Transport Squadron. I have had the opportunity to work with nearly every fleet in the inventory, past and present. As small an Air Force as we may be, we are one of the most professional military organizations in the world. I do not base this point of view on propaganda or pride in my service; I base this on my personal experience, having served the Queen abroad, working, controlling, and flying with several other nations and Air Forces as either their guest or as part of their aircrews.

While our selection process, training, and maintenance are key factors in creating and maintaining our lead in military aviation, I have noted a key difference that clearly sets us apart from many other nations; our pro-active, effective and innovative Flight Safety program. Compared to many nations, Royal Canadian Air Force (RCAF) personnel seem to come with a built in, permanent Flight Safety switch that is always set to "ON".

Some of our Flight Safety program's key principals are reflected in other nations' Flight Safety culture; HPMA, crew resources management, Shared-Mental Models, and the AIPA decision model, for example. I had the opportunity to take, on various occasions, the USAF and the NATO Crew Resource Management courses, which focussed on Flight Safety and aviation decision-making. Highly trained, ex-military contractors, who had not flown in a military aircraft since their retirement, taught these courses. These instructors were experts, thought provoking, imaginative and they followed all the latest trends in Flight Safety and CRM theory. All the same, it became more and more difficult to relate to their views on Flight Safety and our actual execution of the mission. Unlike the RCAF instructors I had spent time with in Canada, who had just left, and would most likely return, to a flying billet, the contracted instructors' understanding of modern military aviation seemed to atrophy over time. Nothing beats having military members teach their own.

One of our Flight Safety's program's key principals that I have rarely seen reflect abroad is the openness and inclusiveness of our training and messaging. While we will allow nearly any CAF member who touches flying operations to take a flight safety course, many other nations restrict access and limit their member's exposure to a flight safety oriented culture. This opportunity to learn about the program, combined with our Annual Flight Safety briefings (41 in 2012, at 29 different locations, to include international HQs) saturates our RCAF community with a continual message – Flight Safety is Everyone's responsibility. The Flight Engineer of a small, foreign transport aircraft I was flying with in 2000, who was refuelling the aircraft AND smoking a cigarette, had obviously not received this training or DFS' brief.

One facet of our Flight Safety program that I believe is essential is our open reporting policy. Our Flight Safety program has created an environment that allows for the free and open sharing of critical safety information, without the threat of punitive action (thanks to the A-GA-135-001/AA-001 for the proper wording!). While I have seen this approach elsewhere, it was never emphasised or protected by leadership in the same manner we would in Canada. I remember Canadians defending this concept with multi-national crewmembers, reminding foreign leadership that once squadron personnel linked punishment with flight safety reporting, critical safety information would cease to flow and eventually our ability to overcome safety issues would vanish. Negligence aside, this open reporting culture should be considered one of our flight safety program's sacred principals.

In closing, I would just like to highlight the fact that I would never have had the chance to realize just how effective our program is without having the chance to see other nation's Flight Safety approaches and cultures. While our system is not perfect, and mistakes sometimes are repeated, we are going in the right direction, and I believe we are leading the pack. While some of you may tire of the annual Flight Safety brief, or scoff at an old issue of Flight Comment, where someone tells a story about their foolish and inexperienced youth, remember that our Flight Safety program has helped make us one of the most professional and operational oriented Air Forces in the world. What we lack in size, we make up with training, quality people, and heart.

Editor's Corner

Welcome to the summer issue of the Flight Comment!

I would like to start by saying that the Flight Comment magazine belongs to all those that have an interest in aviation safety; as such I am putting out an open invitation for articles and content. If you have a topic of interest, a great picture or a subject that would benefit from some hieghtened awareness of, by all means submit it. In addition, if you have a question or concern that you think warrants further discussion, send me an email and I'll track down the subject matter experts to respond, either in this section of the magazine or by producing a future article.

It's with this intent that this issue features a discussion on the topic of "Risk Management in SAR Operations", which includes a reprint of a epilogue related to the conversation, an article produced by the chair of the Search and Rescue Capabilities Advisory Group, Col Michel Brisebois and comments by the Director of Flight Safety, Col Steve Charpentier. These are not conflicting views on what should be "the way ahead" on the topic, but rather a starting point for future discussions.

we have also some great content on new RCAF capabilities, including a dossier article on the evolution of Meterology services from the Commanding Officer of the Joint Meteorology Center (JMC), LCol Joseph Barry. Timely and accurate meteorology services will always be a force multiplier for Royal Canadian Air Force (RCAF) operations and although aircrew have the ability to self-brief, there is significant value added to having a Meteorology technician provide their analysis and experience.

You may have noticed that in the last couple issues I have included some features outside of the standard flight safety realm; both the JMC article on page 11 and last issues "Construction Engineer Capabilities for Airfield Assessment and Repair", are examples of RCAF capabilities that exist and contribute to flight safety but may not be universally understood. In my mind, the term "flight operations" pertain to all of the pieces of the puzzle and I intend on highlighting the many facets of our operations throughout my time as Editor in Chief.

Finally, I would like to mention the retirement of one of 1 Canadian Air Division Flight Safety team members, Major (Maj) Ron Cooney. After over 43 years, Maj Cooney has decided to hang up the wedge and transition to civilian life. On behalf of DFS, I would like to thank him for his contribution to the cause and the level of professionalism he did it with.

Fly well,

Lt T.J. Baker

For Professionalism

For commendable performance in flight safety

Captain Laszio Beothy-Zsigmond

Photo : DND

On 23 September 2013, while conducting ground training on conducting aircraft pre-flight checks, Captain (Capt) Laszio Beothy-Zsigmond noticed a bolt on the CH146 *Griffon* tail pitch link assembly was installed backwards. The bolt's installation is considered flight critical, as it prevents catastrophic failure if the nut were to come loose during flight operations. The location of the bolt and its size makes it extremely difficult to observe the faulty installation. A detailed aircraft records search revealed that this bolt had been installed in the wrong direction for several months.

The pre-flight check list requires a check for general condition; it does not specify to examine the bolts nor is there any reference in pilot publications for the direction of this particular bolt. Capt Beothy-Zsigmond's in-depth knowledge of aircraft systems averted a possible accident. His attention to detail, professionalism and steadfast determination to constantly ensure the safety of flight makes him very deserving of the For Professionalism award.

Lieutenant Trevor Giles

On 4 July 2013, Lieutenant (Lt) Giles, a tow pilot at Regional Glider School (Pacific) attached to 19 Wing Comox, was taxiing a *Cessna* 182 tow plane on Alpha taxiway, approaching the hold-short line for runway 18/36, with clearance from Alpha taxiway to the ramp via runway 18.

Lt Giles realized a *Beechcraft* 1900 commercial aircraft had lined up on Runway 36 for departure; he knew the tower controllers were very busy and identified the potential for a dangerous situation to develop, because of his conflicting clearance to taxi onto runway 18. He immediately stopped the aircraft on the hold-short line for runway 18/36 to query his taxi instructions. As he stopped, the *Beechcraft* 1900 received takeoff clearance and commenced the takeoff roll. The air traffic control tape recording later revealed Lt Giles had received clearance to taxi on runway 18 from Alpha taxiway before the *Beechcraft* 1900 was cleared to takeoff.

Lt Giles's vigilance, situational awareness, quick thinking was directly responsible for averting a serious incident. His exceptional grasps of the big picture with resultant decisive actions are commendable and fully deserving of this For Professionalism award.

Photo: DND

Corporal Charley Fabre

On 28 May 2013, while employed as a stretcher- bearer supporting Crash Exercise 2013 in Bagotville QC, Cpl Fabre demonstrated exceptional situational awareness when he secured a civilian observer from a life-threatening situation.

3 Wing invited members from the local police, fire brigade and Quebec Ministry of Transport to observe and promote disaster response in the area. All observers were instructed on the danger zones in the vicinity of the exercise area and the group was assigned an escort. 439 Combat Support Squadron participated in the exercise with a CH146 *Griffon* used as a medical evacuation unit. Cpl Fabre, porters and other medical technicians tended to the injured and prepared them for ground and air evacuations. As the *Griffon* was preparing to make a medical evacuation from the exercise crash site, a civilian cameraman was observed backing up towards the tail rotor. The cameraman was absorbed in filming the scenes in progress and was unaware of the environment around him. Cpl Fabre took immediate action intercepting and escorting the cameraman out of the danger zone back to his party.

Cpl Fabre's vigilance, quick thinking and rapid intervention were directly responsible in averting a serious incident. His exceptional diligence and decisive actions are commendable and fully deserving of this For Professionalism award.

Photo: DND

Corporal Jonathan Gerlach

Photo: Cpl Stuart Macneil

On 07 Nov 2013, Cpl Jonathan Gerlach of 443 Maritime Helicopter Squadron was tasked to a maintenance test flight following a Main Gear Box (MGB) and Main Rotor Head replacement on a CH124 *Sea King* helicopter. A myriad of tests were required to prove the aircraft was serviceable.

The first part of the test flight was to verify serviceability of the MGB by constantly monitoring temperatures and pressures while in the hover. As the maintenance test pilot's (MTP) attention was focused on the gearbox, Cpl Gerlach proactively watched the engine gauges and kept a keen eye for any abnormalities. When Cpl Gerlach inquired about the high oil pressure indication on the No. 2 engine, the MTP explained that the indication seemed normal with the helicopter full of fuel in the hover. Later, when controllability checks in the hover began, Cpl Gerlach again noticed, and pointed out, that the No. 2 engine oil pressure indicator seemed exceedingly high. The MTP put the aircraft into different regimes of flight to ensure the indications matched expected readings. During these maneuvers, when the gauges were analyzed with changing power regimes it became obvious that they were indicating backwards. Upon shutdown, the MTP explained his suspicions to the senior Aviation technician and through trouble shooting of the related systems, it was revealed that the electrical connectors for both the fuel and oil pressure transmitters were reversed.

Cpl Gerlach`s steadfast determination towards learning aircraft systems and his keen eye for recognizing the unordinary in an area outside of his expertise aided in the identification and subsequent rectification of faulty wiring. Cpl Gerlach is most deserving of a For Professionalism Award.

For Professionalism

For commendable performance in flight safety

Captain Scott McLean

On Thursday, 24 October 2013, Capt McLean was flying a CF188 *Hornet* mission as a member of the Fighter Pilot Course mission at Holloman Air Force Base, New Mexico, USA.

While parking the aircraft, it was discovered that it would need to be relocated to a different aircraft shelter. The instructor pilot took control and taxied the aircraft through an 180 degree turn. With the number two engine already shut down, the steering and brakes quickly ran out of reserve hydraulic power and the aircraft was now taxiing out of control towards the shelter at speed. When the instructor pilot couldn't get the aircraft to stop from the rear cockpit, control of the aircraft was returned to Capt McLean. Reacting quickly, he pulled the emergency brake handle and used emergency braking techniques to stop the aircraft, coming to a stop with the nose 18 inches from the shelter wall.

Capt McLean's quick thinking and knowledge of the Hornet systems averted what would have been a significant accident with damage to both the aircraft and shelter. Despite his limited time flying the aircraft as a student under training, his skill, knowledge and quick reactions were key in avoiding a significant accident. His outstanding professionalism and conduct makes him very deserving of this For Professionalism award.

Photo: DND

Corporal Krystine Nicol

On 15 November 2013, Cpl Krystine Nicol, a 4 Wing heavy equipment operator, and a co-worker were clearing snow from the non-active runway (31L/13R). Both Cpl Nicol and her co-worker were given the instruction to "hold short" of the active runway (31R/13L). When they completed their work they began to head back to their shop with Cpl Nicol's co-worker in the lead. As they approached the active runway, Cpl Nicol noticed that her co-worker was encroaching upon the hold short line and not slowing down. She immediately transmitted on the ground frequency, reminding him to hold short and stop immediately. He complied. As this was happening, a formation of CT 155 Hawk aircraft were approaching rotation speed abeam the two heavy equipment vehicles.

Due to Cpl Nicol's excellent diligence and quick reaction, she prevented a possible vehicle/aircraft accident. Cpl Nicol is commended for her superior professionalism and knowledge of aerodrome practices. She is truly deserving of this For Professionalism award.

Photo: Cpl Elena Vassova

Master Corporal Chad Vatcher

On 3 October 2013, MCpl Chad Vatcher, an unqualified Aviation (AVN) technician instructor with 404 Squadron (Sqn), was undergoing familiarization and on the job training under supervision of a qualified instructor. While conducting the brake bleed procedure of the CP140 Aurora for the first time in an instructional setting, he noticed that something appeared out of the ordinary.

He was in the flight station with one student while the supervisor instructor with seven other students remained outside the aircraft within five feet of the open door of the hydraulic service center. During the brake bleed procedure, the aircraft developed a severe hydraulic leak. Hydraulic fluid was being rapidly discharged out from the rigid lines used to connect the hydraulic surge damper and was rapidly draining the hydraulic fluid under pressure out of the open hydraulic service center door. This potentially put at risk the safety of the students who were in close proximity to the hydraulic service center door. This was not expected and was not readily evident to any personnel in or around the aircraft. MCpl Vatcher's comprehensive knowledge of the system allowed him to quickly identify the hazard from the flight station and to rectify it by immediately shutting down the system. The investigation revealed that previously, the hydraulic surge damper had been removed from the 1A system and not entered in the Aircraft Maintenance Record Set (AMRS). Additionally, incorrect AMRS entries for pulled circuit breakers had been made giving the impression there was no power to the hydraulic system. Along with the hazard of hydraulic fluid draining under pressure, there was potential for a catastrophic failure if the pump was left to run dry.

MCpl Vatcher's exceptional attention to detail, outstanding initiative, and timely actions were instrumental in preventing possible serious damage to the aircraft and injury to personnel. The quick and decisive actions of this new and upcoming instructor are worthy of this For Professionalism award.

Master Corporal Marc Tremblay

Photo: DND

On 26 October 2012, MCpl Tremblay, Aviation technician at 417 Combat Support Squadron, observed a colleague conducting an independent inspection of the installation of the co-pilot's cyclic stick ona CH146 *Griffon*. He then noted that the collar that sets the minimum cyclic friction was missing on the pilot's cyclic stick as well as the sticker on the adjusting nut and immediately notified his supervisor.

Subsequently drafting a detailed account of the flight safety incident, he proceeded to inspect other squadron aircraft to ensure that it was an isolated case. This anomaly, which is difficult to detect, remained unnoticed by many technicians and crew members during several pre-flights and 25-hour inspections.

MCpl Tremblay's action possibly prevented a loss of control in flight due to a lack of tension and the minimum force required on the cyclic controls. If the minimum friction adjusting nut were to suddenly unscrew, the potential result could be an inadequate flight control condition for this aircraft.

The experience and heightened attention to detail of MCpl Tremblay have almost certainly prevented a serious incident caused by a loss of parameters required by crew members to perform their duties safely.As a result, MCpl Tremblay is most deserving of this For Professionalism award.

For Professionalism

For commendable performance in flight safety

Captain Pierre-Claude Quirion

Photo: LS Alex Roy

On the evening of 16 November 2013, Captain Quirion was on a routine CF188 *Hornet* ferry flight from 4 Wing Cold Lake to 17 Wing Winnipeg. After completing the approach with a low ceiling and precipitation limiting visibility, he initiated the taxi back to the transient servicing hangar at 17 Wing. During the taxi, he noticed a slight vibration coming from the wheels, but suspected that the cause was the extensive presence of carbamide on the taxiways for de-icing due to the bad meteorological conditions.

After parking and shutting down the aircraft, Capt Quirion proceeded to do a thorough inspection of all the wheels and landing gear. Despite the darkness and the wheels being quite dirty, he noticed anomalies with the two nose wheels: the bearing on the left side had been damaged and the right wheel hub was cracked. These defects could have easily been missed and further attempts to fly this aircraft could have potentially resulted in the loss of both nose wheels on take-off or landing, leading to a catastrophic accident. The aircraft was then declared unserviceable and stayed in Winnipeg until repaired.

Despite the unfavorable outside conditions and his limited experience on the *Hornet*, Capt Quirion made an extra effort and demonstrated a superior professional attitude to prevent a potentially serious accident. This makes him truly deserving of a For Professionalism award.

Photo: DND

DOSSIER

Early Morning Wake-up Call

By Captain Eric Switalski, 2 Canadian Forces Flying Training School, 15 Wing Moose Jaw

It was early morning start for the CP140 *Aurora* crew from 405 Long Range Patrol Squadron, 14 Wing Greenwood. As one of the new on the job training (OJT) pilots on squadron, I was given the opportunity to tag along with the crew on their several day long patrols over the waters of the Atlantic. Although normally based out of Greenwood, Nova Scotia, during this mission we were temporarily operating out of St. John's, Newfoundland as it decreased the transit time to the patrol area.

As we took to the skies in the *Aurora* over the Atlantic, all crew members were preparing their stations for the mission – everything seemed very normal. As we continued to climb to transit altitude, I began to notice that there was significant pressure building in my ears and sinuses. Although I had to clear my ears and sinuses significantly more frequently than normal, I quickly dismissed it as another episode of sinusitis as I had regularly been experiencing sinus flare ups ever since I moved to the east coast due to the climate.

As we continued to climb, well through 10,000' now, I heard over the inter-comm. system (ICS) that one of the crew member appeared to be feeling unwell, and shortly thereafter that he was showing obvious signs of hypoxia. The pilots immediately commenced an emergency descent below 10,000' feet, prepared the aircraft for a heavy weight emergency landing back in St. John's, and declared a physiological emergency. The pilots skilfully brought us back to safety in St. John's, and within a few hours, the entire crew had been checked over by medical staff, and we were reflecting on how a scenario like this could have gone much worse.

As a pilot in training very early in my career, this is something that I reflected upon for a long time. To this day, as I review the emergency procedures for hypoxia on the aircraft I currently fly, this incident pops into my head as if it happened yesterday. Here are some lessons I learned from this experience:

- If something doesn't feel right, it probably isn't – so tell someone or do something about it!
- Pilots have a huge responsibility - they must be ready to make immediate decisions and take actions, which will directly affect the well-being of their crew.
- Emergencies are not just something we brief or practice in the FTD (Flying Training Device) – they often happen when you least expect, and if handled well, can mean the difference between life and death.

Photo: Pte Piotr Frigiel

DOSSIER

Transforming Meteorological Support to the RCAF

By Lieutenant-Colonel Joseph Barry, Commanding Officer Joint Meteorological Centre, 5th Canadian Division Support Base Gagetown

In the case of Canadian Forces Weather and Oceanographic Services (CFWOS) transformation project, every element of that definition is true: Meteorology (Met) support to the Canadian Armed Forces (CAF) and particularly the Royal Canadian Air Force (RCAF) is changing in form, appearance and structure. With the transformation project on track to be completed this fall, RCAF organizations and personnel will see a significant improvement in the quality of forecasting and briefing services provided to them including an expansion and increased responsiveness of those services anywhere in the world, 24 hours a day.

Why Change

Approximately ten years ago the CAF Director of Meteorology and Oceanography in consultation with CAF Metrology technicians (Met tech) and Environment Canada came to the conclusion that met support across the CAF had to change and do so dramatically in order to remain effective, relevant and sustainable. The CAF Met community, as was structured at the time, did not have research and development resources focused on generating new cutting-edge products nor did it have the capability to provide those services rapidly to the CAF. It was also recognized that the Met Tech occupation was top-heavy and not representative of a balanced, sustainable trade. As a result of this and with many Met techs being deployed in support of CAF operations, RCAF wings and squadrons were left without sufficient Met techs to maintain the required level of service. Finally, it was apparent that the model of four CAF forecasting offices (19 Wing Comox, 8 Wing Trenton, 14 Wing Greenwood and Halifax) plus on-site weather briefers at all major RCAF bases meant there was no synergy or collaboration between those who forecast the weather and those that brief it.

The Result

After much consultation with all three service environments and the Met community, it was decided that forecasting and briefing services would be concentrated in three centers:

Meteorological and Oceanographic Centre (METOC) West

Located at CFB Esquimalt with one forecaster and one briefer on duty 24/7 providing forecasting and remote briefing support within Maritime Forces Pacific (MARPAC) and Joint Task Force Pacific (JTFP) areas of responsibility (AOR) including 19 Wing Comox and Pat Bay;

Meteorological and Oceanographic Centre (METOC) East

located at CFB Halifax with one forecaster and one briefer on duty 24/7 providing forecasting and remote briefing support within Marinetime Forces Atlantic (MARLANT) AOR plus to CAF units in Nova Scotia, PEI and Newfoundland including 9 Wing Gander, 12 Wing Shearwater and 14 Wing Greenwood;

Joint Meteorological Centre (JMC)

Loacted at 5th Canadian Division Support Base Gagetown with a minimum of four forecasters and minimum of five briefers on 24/7 will provide:

- 24/7 forecasting and remote briefing support to CAF organizations from the BC/Alberta border to New Brunswick/Nova Scotia border up to the North Pole including supporting HMC ships operating within the waters contained within that AOR. This year, the JMCs AOR expanded to include Labrador and 5 Wing Goose Bay
- support to CAF units including deployed Air Task Forces and aircrews worldwide
- research and development on improving current Met services and products while investigating new technology and techniques for application within CAF meteorology;
- IT support for current Met software and rapidly develop products to meet new CAF requirements;
- a high-readiness Met support team ready to deploy anywhere in the world and be able to sustain that effort for the length of the operation; and
- the manning pool to fill any Met tech personnel shortfalls across the country including HMC ships.

What does this mean for RCAF

Air bases will continue to have manned 24/7 weather observer sections. Tactical helicopter squadrons will still have a Met section to provide on-site support. But, there will no longer be face-to-face weather briefings at most RCAF wings and squadrons.

If there is one constant remark from aircrew, it's the loss of ability to look a Met tech in the eye while they brief the crew before stepping to the aircraft. Unfortunately, like many of our allies, the lack of manpower to do "in-person" briefs is the reality. At the same time, the CAF Met community is aware that because air bases have already lost their Met briefers, many aircrew are self-briefing weather through Jeppesen or Nav Canada. As an alternative to self briefing, the project is creating the capability to conduct weather briefings via video conference or desktop Polycom technology, either on DWAN or secure networks. This will allow a Met Tech briefer to go over the charts and other Met data real-time with video. This video capability will be particularly useful for mass crew briefs and initial results with just audio have been very successful.

To request 24/7 support, RCAF personnel have a number of options; they may fill out the Request for Support (RFS) form located at CF Weather Office, **http://met.forces.gc.ca/** on the DWAN. Email that form to the indicated account and they will receive confirmation immediately from the JMC that it has been received and processed. Personnel can also send a normal email with their request to the same account with as much information as possible or can call **commercial 506-422-2613 or CSN 432-2613** to submit their RFS. There is even a toll-free number for within North America, **1-800-WXMETEO (996-3836)**. The big advantage with the RFS form is that it will help you identify all your requirements and assist in identifying those that you may not have thought of. The JMC located at 5 CDSB Gagetown will process it and if it is not in its AOR send it to the appropriate METOC centre for their action. If it is a major RFS such as created for OP RENNAISANCE, it will likely take several days. Most RFSs can be filled within an hour and sent back to the requestor by email, fax or over-the-phone brief: whatever is needed and practical.

CAF Met services are truly changing in form, appearance and structure. It will be much more responsive since CAF weather centres will be properly resourced to support ops at home and abroad including real-time support to NORAD and SAR. Forecasters and briefers are in the same spaces, ensuring their shared situational awareness of what is developing across the AOR. When a RCAF member calls or emails, they will know that those weather centres are focused on RCAF requirements 24/7 and ready to help wherever RCAF personnel are deployed.

Photo: Cpl John Bradley

Photo: Pte Dan Moore

It's Just Kool Aid, Right?

By Master Corporal Steve MacNeil, Canadian Forces Environmental Medicine Establishment, Toronto

It was just another day in the Aviation Life Support Equipment (ALSE) shop at 444 Combat Support Squadron (Sqn) in Goose Bay. The day was routine until I was told that our helicopters were going to Haiti with the Canadian relief effort. Two of our CH146 *Griffons* were going, so I had to make sure that everything which was life support related was up to date. Everything was, except for the lift rafts and basic kits for both helicopters, their inspection dates would expire while the helicopters were deployed.

I decided to do one aircraft at a time. While the inflation test was being carried out on the life raft, I would carried out the inspection on the 6 person life raft kit. I deflated the life raft and placed the 6 person life raft kit inside and I packed the life raft.

One helicopter done and one to go, but it would have to wait until the next day. Friday morning, I jumped right into it carrying out the inflation of the life raft and the inspection of the kit, and then packing it, then moved on to the basic kit. By the time I started the basic kit it was 1345hrs in and most people were sent home. The ALSE shop was a one man show when I was there so I stayed to take everything out of the basic kit, look for dates and exchange those that were expired. The flares, the Survivor Locator Beacon (SLB), the first aid, the rations. . ...the rations were good until 2013 and the drink mix, well they go hand in hand, they should be the same dates, right? WRONG! The date on the drink mix was 2008. Was that the same date on all of them?

This was on my mind all weekend, but I knew what I had to do. On Monday I went into the hanger, knowing that the two helicopters were needed by closing time on Tuesday for an early departure on Wednesday. I knocked on the Master Warrant Officer's door. I stated my case and I was given one hour to find new drink mix, needless to say, I walked out of there feeling two feet tall.

I called the nearest base to us, which was Canadian Forces Base Gander. Thankfully they came through for me. However, by the time we received the package it was Tuesday, and I had to pack two life rafts and two basic kits for the end of the day. Luckily there was another ALSE tech on the floor, who was now doing maintenance. He agreed to help and showed up in the ALSE shop. We got everything packed properly in more than enough time.

Here's what I learned, if two items look the same and are in the same category, never assume they have the same expiry dates. And more importantly what I learned, is when you feel like you've got your back up against the wall, turn around and look because sometimes it is not the wall, it is someone who's got your back.

Photo: DND

Photo: Cpl Miranda Langguth

Leak Check

By Sergeant Tracy Reid, 14 Software Engineering Squadron, 14 Wing Greenwood

I was a young Radar Systems technician Corporal in my first operational posting, tasked to be the fire guard for a bleed air leak check on an CP140 *Aurora* aircraft. The check involved using a scissor stand next to the running engine, with the cowling open, and feeling the air ducts for escaping pressure. The other technicians involved in the run-up (start man, brake man, right seat, ground man and run up person In-Charge (IC)) were all experienced technicians. The check was to be carried out on the number three engine (inboard right wing). The stand was positioned, the cowling was opened, and everyone took their places. The number three engine was started, and run in low idle at zero thrust, meaning no air was being pushed by the propeller. The ground man climbed the scissor stand and started to feel around for the leak. Aha! There it is! He signaled to the start man with a "thumbs up" that he had found the leak and that it was ok to shut down the engine. The start man then gave the signal to shut down the engine with the standard "throat slashing" sign. When the run up crew didn't notice him, he signaled more vigorously, which really got their attention! Thinking there was a major problem; the run up IC quickly performed an emergency shutdown on the engine.

Photo: MCpl Marc Andre

Photo: Cpl Rick Ayer

Things to note: When an *Aurora* engine is shut down with the emergency or "E" handle, several things happen: fuel and electrical power are cut off to the affected engine, and the propeller blades are turned so that they present as little resistance as possible to the airstream. Great in the air, but on the ground it produces an enormous "whoooosh" of air rearwards. Can you guess what happened next? The technician checking for the leak was nearly blown off the stand, 10 feet up in the air! Only his quick thinking to drop flat to the stand saved him from injury.

The moral of the story? Even if everybody has done the job a hundred times, make sure you are all on the same page, agree what any signals will be, and what you will do in an emergency. Also, don't go flying without an airplane.

Air Sickness

By Lieutenant Colonel Stephen Cooper, Director Flight Safety Medical Advisor, Ottawa

Photos: MCpl Robert Bottrill

Human Factors (HF) will always have a part to play in aircraft incidents and accidents. Subtle degradations in human performance from drugs, alcohol, hypoxia, fatigue, dehydration, hunger, stress, head colds etc. are often present in aircraft occurrences. Air sickness is amongst the most common of these degradations, especially in new aircrew and can cause severe limitations in human performance and pose a risk to flight safety. This article will discuss the causes of air sickness and how to mitigate its presence and effects on mission accomplishment.

CAUSES OF AIR SICKNESS

Air sickness is caused by your brain receiving conflicting signals from your inner ear and your other senses. This is why it is most common in new aircrew; the experience of flying in a dynamic three dimensional environment can often cause these conflicts and will usually improve as the inner ear adapts to the new flying environment.

Air sickness can also be a learned response; people who have been air sick or motion sick in the past may feel anxious and become sick in anticipation or fear of experiencing that environment again. Much like Pavlov trained his dog to salivate at the sound of a bell.

HOW TO PREVENT AIR SICKNESS IN AIRCREW INITIAL TRAINING

It is for this reason that it is critical that instructors must try to avoid getting their students airsick in the first flights of their training. Coping with air sickness is not something that can be simply taught to a student, but rather can be mitigated by allowing for a gradual increase of exposure to the adverse attitudes required to complete training. By following and briefing these guidelines you can help your students be more successful in coping with their new environment:

-ensure your students are well rested; fatigue will limit their ability to deal with the physiological symptoms they will experience on their first training missions

- do not allow them to consume alcohol in the days leading up to the flight; having even trace amounts of alcohol in the body can change the viscosity of the fluid in the inner ear, intensifying the sensitivity of ones detection of movement.

-ensure the aircraft temperature is regulated for comfort; increasing body temperature by just a few degrees can set the pre-conditions for the sense of anxiety associated with air sickness

-minimize head and body movement during adverse manoeuvres; quick head movements or fixating on an object that is not directly in front of the aircraft can increase the confusion your mind is trying to de-conflict

-have your student participate in the flight as much as possible; many students report being able to cope better when they are able to anticipate the manoeuvre

-start the flight calm, ensure your student knows what to expect and avoid manoeuvres that will catch the student off guard with regard to the attitude of the aircraft

These same rules are also effective for experienced aircrew who may feel airsick later on in their careers.

WHAT TO DO IF YOU START TO FEEL THE EFFECTS OF AIR SICKNESS?

- always have air sickness bags ready
- tell your crew immediately
- minimize head and body movement
- find a horizon
- cool air
- relax

MEDICATIONS

Aircrew are authorized to use medications under the direct supervision of a Flight Surgeon and in accordance with the Flight Surgeon Guidelines 1900-01 Medications and Aircrew.

The side effects of these medications act on the central nervous system and are known to increase the risk of aviation accidents, with that being said, they are safe to use if the right precautions are taken (for example: a student aircrew flying dual with an instructor). Use only authorized medications under the supervision of a Flight Surgeon and let your instructor and/or crew members know what you took and when you took it so they can make sure you are safe.

The goal of these "medicated flights" is to allow your inner ear to acclimatize more rapidly to the flight environment without the feeling of sickness. Often three of these medicated flights are enough to acclimatize your body, but can take longer if there is an inconsistency in the frequency of flights or if there is a break in flying.

If air sickness continues to affect your performance, The Canadian Forces Air Sickness Desensitization Program (CFASDP) is proven to prevent air sickness. To enter this program, the student must have failed to complete three missions due to air sickness.

The program is a medical treatment and is not a pass/fail test. It takes two to three weeks to complete and is similar to a physical fitness conditioning training program but for your inner ear. There are some myths out there that you spin until you vomit but it is quite the opposite; you spin and stop before you feel physically sick. This allows your body to acclimatize to the environment without the adverse affects of feeling sick.

Even the most seasoned aviator can succumb to air sickness throughout their careers; it is important that the situation is handled appropriately to ensure the safety of flight. Immediately after landing, complete a Flight safety report and report to the Flight Surgeon for assessment. Do not feel embarrassed, your body is having a normal reaction to the new and unfamiliar environment.

Air sickness is common but not exclusive to new aircrew. It is caused by the confliction of the inner ear and other senses trying to adjust to the aviation environment. The symptoms will usually disappear over time. Medications and 'spin training' are available to assist student aircrew adjust more rapidly and maintain performance so that they may continue their training.

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Flight Surgeon Guideline 1900-01 `Medication and Aircrew`

Maintenance IN FOCUS

The Big Picture

By Master Warrant Officer Gary Lacoursiere, Directorate of Flight Safety 2-5-2, Ottawa

Photos: Sgt Bill McLeod

As aircraft technicians, it has been drilled into us from the earliest training – pay attention to the details! In the aircraft maintenance trades, you must ensure that you get it right the first time, every time. We adhere strictly to our technical orders, going as far as having them open next to us as we conduct maintenance. We ensure perfection by utilizing checklists and procedures; if we have to interrupt a checklist, we'll restart it from the beginning to ensure thoroughness. As apprentices we have a minimum of two other sets of eyes checking everything we do, calling in a journeyman at all critical junctures as a minimum standard and even getting a third set of eyes for independent checks of critical systems. As journeymen; we double and triple-check not only our own work but also that of our trainees. If you sweat the small stuff, the big stuff will take care of itself, right?
Ummm…not always.

In addition to scrutinizing the minute details of our work, we must maintain an overall awareness of what else is going on with our aircraft, and within the entire maintenance area. What we don't know CAN hurt us.

Let's look at an example: two groups of techs were working on the aircraft. One group was changing engine filters, while the other was working on the R/H main gear. The engine guys had positioned a maintenance stand under the R/H nacelle. When the gear team finished up, they lowered their jack, wedging the stand under the nacelle, causing damage. Who was monitoring the BIG picture?

In another incident, the aircraft was outside, with a technician working on a fuel tank cap. He used the cockpit emergency hatch to gain access to the top of the aircraft. When it suddenly started to rain heavily, he returned to the hatch, only to find it had been closed. Unable to hail anyone for help, he used the external release ring, causing the hatch to fall into the cockpit, incurring damage. If any one person had been aware of what <u>everyone</u> was doing, would this incident have occurred?

One more: an apprentice was assisting another technician conduct an oil change in the flap screwjack gearboxes. The tech performed the oil change, while the apprentice followed behind and completed the task by lock-wiring the gearbox drain plug. The spoilers had been manually raised, allowing better access to the gearbox. Concurrently, maintenance was being conducted on the brakes of the same aircraft. In order bleed the brakes hydraulic power needed to be applied. A tech doing the brakes did a survey of the area, made some warning calls, then sounded a warning horn. Hidden among the flaps and spoilers, the apprentice did not hear the warnings, and was not seen by the tech applying hydraulics. Upon activation of the hydraulic system, the spoiler retracted, crushing the apprentice against the spoiler support web and causing serious injuries. Again, could we have avoided this accident if someone was aware of the BIG picture?
Yes, details are important. Yes, you should sweat the small stuff. But at the same time, you have to maintain situational awareness of all the other moving pieces of the maintenance activity and sometimes just step back and take a look at…

The BIG picture.

A Little White Lie

by Major T. Lee, Formerly of the Directorate of Flight Safety, Ottawa
Originally Published in Flight Comment Issue 4, 1982

Whiteout is a peculiar environmental phenomenon which in the last winter season made accident statistics out of two aircraft and caused much embarrassment for their crews. Both accidents came as a complete surprise to the pilots involved because they were convinced that everything appeared normal at the time. However, what they did not realize was that existing environmental conditions did not provide the visual cues normally used by pilots to fly aircraft using Visual Flight Rules (VFR). The recognition of this fact is crucial to understanding whiteout; with understanding comes the realization of the treacherous nature of the phenomenon and respect for it.

In one of the above mentioned cases the pilot was the wingman of a two plane tactical formation which was approaching a large ice and snow covered lake. The wingman thought to himself, "This looks like whiteout", and the lead even cautioned his wingman to watch out for the whiteout. During the next 30 seconds as they flew across the lake the wingman descended and hit the surface - fortunately, he survived.

How could he do it, you say? He did it because he thought he was OK. He had a distinct shoreline to look at for attitude reference and the white snow below him appeared to indicate where the ground was so he felt he had enough references to maintain the terrain clearance by putting "lead's aircraft on the horizon". However, when he slipped out of this position, there were no visual cues available for the snow surface to warn him and he descended till impact.

When flying in cloud it is obvious to pilots that conditions are Instrument Meterological Conditions (IMC) and they react accordingly by flying on instruments. In this case, NO outside references are available. In the case of whiteout, some references are available but possibly not the critical ones, inducing the pilot to feel that he can safely fly without reference to instruments. The point is, there are deceptive whiteout situations where, regardless of what you think you can handle at the time, you must resort to instruments to ensure safety of flight.

Three accidents since 1970, involving a CF5, an Argus and a CF101, resulted in the loss of portions of the landing gear when they struck snow banks just short of touchdown. The crews were not SPROGS here is what one Argus Pilot said about his approach:

"On completion of the test portion of the flight, I elected to carry out a visual circuit. The weather reported was more than adequate for this type of approach.

"Basically, the circuit and approach for landing was normal. Some difficulty in locating the exact position of the runway when turning final at two miles was experienced. The final approach appeared normal, although I did experience some difficulty in determining my height on the glide path. This was due to the fact that the airfield and runway were both covered with snow and provided no contrast for reference. To compensate, I used normal power settings and airspeeds for an approach into a wind gusting to 25 mph. As we approached the threshold, I had called for full flap and kept the power at 60 torque. With these settings, I was maintaining an airspeed 10K above that recommended to cross the threshold.


Photo: Pte Daisy Hiebert

"This first indication I had of any abnormality was when we struck what I thought to be the ground but what turned out to be a snow and ice drift short of the threshold. This drift had not been visible to us. I immediately pulled the aircraft airborne at which time the undercarriage warning horn sounded. I assumed we had damaged the nose wheel so I called for power off and landed on the main wheels."

"It is only natural that I personally try to assess the reason for this accident. In my opinion, both pilots experienced an often heard of condition known as 'whiteout'. The entire airfield was snow covered offering little or no contrast. The fact that the co-pilot did not observe that we were dangerously low would tend to verify my opinion."

Another senior pilot flying a CF5 had this to say:

"On the next circuit I was cleared for another touch-and-go landing. The circuit and approach appeared normal, the final approach speed being 170 KIAS. As I commenced reducing power and initiating the flare for landing my main wheels contacted the deep snow in the undershoot area, much to my surprise as until that point I had considered the approach to be perfectly normal. The aircraft pitched nose-down extremely and rapidly and uncontrollably, causing the nose wheel to contact the runway heavily and the aircraft to bounce back into the air."

More recently, a CF101 pilot described his loss of pair of main gear:

Q. "What was the runway condition?"

A. "Loose snow. Completely covered by loose snow."

Q. "When you transitioned did it look to you like you were on a normal glide path?"

A. "Like I said, I look for red over pink on VASIS when I do concentrate on the VASIS, and PAR will put me red over white. It looked like I was in the right spot for a PAR certainly and maybe just slightly high for a visual approach. With a very indistinct or non-existent horizon as such I might have thought I was… well, I obviously thought I was higher than I was, so I obviously pushed it down too far and didn't realize that I'd increased my rate of decent so much."

In these accidents there was the additional problem of a snow bank which had been allowed to develop at the approach end of the runway. On the other hand, why did these obstructions cause accidents only on particular days? All three pilots had flown their aircraft a little low on the PAR glide path which on a normal day they would not have allowed their aircraft to come in contact with an obstruction. However, on a whiteout day, with snow obscuring the runway and environment, and snow itself being the obstruction, the visual cues were not there to prevent the accidents from happening.


Photo: Sgt Matthew McGregor

Two fatal accidents from several years ago can only be guessed at, but they do show similarities. A *Kiowa* and a T-33 were both turning in whiteout conditions over a large snow covered lake when they crashed. Both had encountered increasingly bad weather conditions and one may have been in the process of a 180° turn to home plate. Whether or not instruments were used to establish the turns cannot be determined; however, it is likely that the turns were continued visually by both crew members of each aircraft and a crash was the result. The loss of horizon each pilot must have experienced makes it hard to understand why they did not react as if they were in IMC; although, the regaining of partial VMC and some sort of false horizon are suspected of impairing their judgement.

The pilots in these few examples all experienced the same total surprise when their accidents occurred, and understandably so. They were all convinced in their own minds that nothing was amiss and were not aware that portions of the normal sensory input were not being provided or were in fact false. Therefore, it is extremely important to know what to do to counter whiteout situations to ensure the safety of the flight. Some of the measures are quite simple.

In the case of the snow bank at the threshold, removal is the obvious answer. If immediate removal is not possible, distinguishing dye can be sprayed on the snow to give it some distinctive marking with respect to the surrounding area. (This dye technique is used successfully in Goose Bay for the tall snow banks which eventually build up and line the taxi and ramp areas).

Mission planning in view of anticipated weather will also help to keep pilots from falling into the whiteout trap. A camouflaged aircraft over a white lake is not tactically smart anyway, so that situation should be especially avoided in whiteout conditions. If it is unavoidable, then the only way to cross a large expanse of whiteness is by holding altitude with reference to the altimeter.

The loss of a good horizon because of whiteout requires immediate and total conversion to instruments until a good horizon is regained. If a 180° is made to return to good VMC, beware of the temptation to transition away from instruments early - searching in the murk has caused more than one crash when a turn was started on instruments but not maintained on instruments.

When breaking out in whiteout conditions below cloud following an instrument approach, avoid the tendency to continue strictly visually. A continuing cross check with the ILS glide path or the guidance of the PAR controller will save the embarrassment of slipping low and plowing through the undershoot area. (The second man of a two man crew can perform this invaluable function rather than both being fooled, as was related by the Argus pilot.)

Whiteout is treacherous and will deceive you if you give it half a chance. Don't let it. When you recognize the phenomenon closing in on you, take the only sure course of action - get on the dials and stay there until a good VMC can be regained.

Horse Play

By Master Corporal William Ashton, Aerospace and Telecommunications Engineering Support Squadron, 8 Wing Trenton

First of all, I must mention that this story is borrowed from a friend but I think it's a good lesson that everyone can learn from. We will call the technician Private (Pte) Joe Smith.

This story starts many years ago when Joe was posted to 419 Tactical Fighter Training Squadron in 4 Wing Cold Lake. It was a fun place to work but the horseplay, some days, seemed to get a little out of hand. You always had that question in the back of your mind "who was going to get pranked next," and, "is it going to be me?"

Joe was a young private, Aviation technican (AVN), who was qualified run-up. Having that qualification as a pte was quite the accomplishment, but that also meant on a day like the one in question, Pte Smith was going to be very busy. Today was the day that he would have to perform configuration run-ups on a large number of CF116 *Freedom Fighters* in a short period of time. This entailed running each aircraft to ensure that the removal of the wing tip fuel tanks and the installation of the centerline tank was performed correctly.

Joe was getting in and out of airplanes all day and had his ear defenders hanging from his belt with his headset on his head for the majority of the task. Later in the day, Joe looked down and noticed that one of the earpieces was missing from his ear defenders. The first thing he thought was, "which one of those jokers put my earpiece in the freezer"? This was a common occurrence around the squadron, but Joe did the responsible thing and proceeded to look for the missing earpiece anyway. However, being so busy meant he did not have all day to look, so after not finding the missing earpiece, he grabbed his spare pair of ear defenders from his locker and proceeded to carry on with his duties. Having such a busy day, Joe forgot to ask who the joker was that took the ear piece. He just wanted to go home after a hectic day.

A couple of days later, it was time to do test flights on all the planes that had the fuel tank configuration performed. When one of the CF116s was on a test flight and flying inverted, the pilot ended up with an ear piece in front of his face on the canopy. Written in big letters on it was the last name "SMITH". Luckily the flight went off without any other incident. The crew chief was handed the ear piece after the flight and Joe was called into the office for a very serious discussion of which he was lucky to escape without being charged.

This is an example of how unprofessional horseplay in the workplace can lead to even more dangerous form of complacency. Luckily the only thing injured was an innocent pair of ear defenders.

Photo: MCpl Norm Marion

Just Another Search & Rescue(SAR) Training Day

By Sergeant Stephane Clavette, 442 Transport and Rescue Squadron, 19 Wing Comox

Photo: MCpl Marc Gauvin

As per a normal SAR standby day, the crew met at 0730hrs to plan for a full day of training. After the weather brief, the Aircraft Commander (AC) asked me, as I was the CC115 *Buffalo* SAR Tech team leader for the day, if we had any training we needed to do for our currencies. I told the AC that we would like to do training in conjunction with the CH149 *Cormorant* SAR Techs. The plan would be to deploy the two CC115 SAR Tech teams into a confined area located in the interior of British Colombia, at an altitude of 2100 feet. We talked to the CH149 front end crew and requested that they go and find a nice big confined area on a river bed. The *Cormorant* AC, the First Officer (FO) and the Flight Engineer (FE) were more then happy to do so. At around 1000hrs the CH149 crew minus the SAR Techs took off for the ite reconnaissance. As SAR crews must be able to keep 30 minute launch readiness from 0800 to 1600, the *Buffalo* had to take off just behind the *Cormorant* to ensure the helicopter SAR Techs, that were now with us in the *Buffalo*, were able to abide by the SAR mandate.

10 minutes out from the selected area, all four SAR Techs were dressed for a full equipment confined area jump. SAR Jumpers carry about 60 lbs in the Sarpels (an equipment bag that houses a medical bag and equipment that a SAR Tech attaches in front of them) and 50 lb of parachute on their back.

Once over site, the four SAR Techs got in the bubble window and did a recce of the area. The CC115 was at 2500 feet and the area was a big open space with a small river running on the outside of it. The area was situated in a valley and surrounded by large, tall trees. The ground appeared very flat and smooth. We then contacted the *Cormorant*, which was shut down and waiting for us on the ground. The helicopter crew, told us that the area was big with lots of room to land our parachutes. Satisfied with the assessment, we then conducted the parachute insertion. We did two into wind passes, deploying two SAR Techs per pass. This would give lots of time for the first team to get to the ground and then the second team could come in safely with no issues.

The first SAR Team touched down with one person landing in the trees and the other one landing in the middle of the confined area. By this time, the second team, which I was a part of, was under canopy setting up for the final approach to the area. This consists of a down wind, cross wind and landing into wind to the area. I was the first SAR Tech into the area and landed very hard. Due to the calm winds and standard heavy equipment that I was wearing, I came into the area very fast. I flared and my parachute had a really slow reaction and I decided to do a parachute landing fall (PLF), onto the rocks on the ground. For the first time in all my parachute jumps, I could not stand up right away. I realized I was hurt and it took 5 to 10 minutes before I could stand and walk. Once on my feet, we boarded the awaiting helicopter and departed the area so we could go back to our aircraft. On my return to the shop, I debriefed every one that there about what had happened that day.

The take away for me was that if someone is going to do a recce for you, make sure that you brief them on everything you are looking for, and don't take anything for granted. They might be the best pilot or flight engineer, but they may not know anything about drop zone selection and what it is like to land in a confined area with 25 knots forward speed on unforgiving terrain.

The second lesson for that day was, I should get my binoculars out and take the time to conduct a good recce, do a few more passes, in order to get a very clear picture of the obstacles and problems that may present themselves on landing.

Photo: Pte Daisy Hiebert

On Track

What does it mean if a missed approach procedure ends with an altitude and the term Before Proceeding On Course (BPOC) but the altitude is lower than the adjoining Minimum Safe Altitude (MSA)?

The answer comes from Major Cameron Pow, Instrument Check Pilot (ICP) School, Flight Commander:

When approaching an airport in cloudy conditions, there is a chance that the pilot may not see the runway and be unable to land safely. When this happens, the pilot initiates a climb and follows a published routing to allow the aircraft to return for another approach or if necessary, proceed to an alternate airport where the weather will permit a successful approach and landing. But what if there are differing altitudes published which seem to contradict which altitude may be safe to fly at?

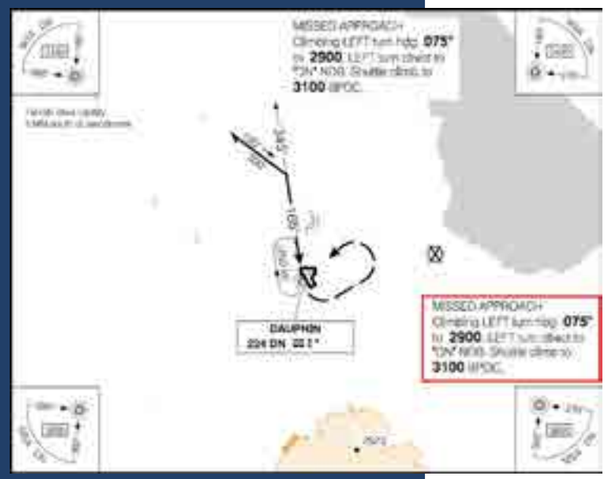

Figure 1 - Dauphin MB

For this question, we will be discussing the non-directional beacon (NDB) 14 approach in Dauphin Manitoba (left). Let's assume the pilot doesn't see the airport environment at the missed approach point, and elects to fly to the alternate airport in Brandon, which is south of Dauphin. During the missed approach procedure, the pilot must first climb to 3100 feet(ft) BPOC. The attentive pilot notices that if the aircraft is at 3100 ft, it is still below the southern MSA of 3600 ft. Does the pilot need to climb another 500 feet to 3600' before proceeding to the alternate airport?

The term BPOC is not used for a missed approach very often but it is becoming more common. When the approach designer uses this term, they have conducted detailed obstacle assessments of the area around the airport and calculated safety heights. Where the missed approach altitude is below an initial approach altitude or enroute altitude (3100 ft vice 3600 ft), the 40:1 Obstacle Identification slope (OIS) must be assessed beyond the missed approach holding fix. So, for our example in Dauphin, the approach designer has assessed this area for obstacles. Although there is a 500 ft difference between the missed approach and the MSA, the aircraft can cross the NDB at 3100 ft, continue the climb to an appropriate IFR altitude and safely proceed south towards Brandon.

The same principle applies when there is a more significant shuttle climb and then a BPOC. Here, the designer has determined that a higher altitude is required before allowing the aircraft to proceed on course. Port Hardy, British Columbia is an example of this procedure. The missed approach requires the pilot to shuttle climb over the NDB up to 4500' BPOC. At 4500', the aircraft is still below the MSA in all four quadrants but as long as the aircraft maintains a climb of 200 ft/NM, it is safe to proceed on course.

The term BPOC should be a sign to the pilot that the missed approach has been further assessed to allow the pilot to proceed to their alternate landing area. There are numerous variations to how a missed approach can be worded but the term BPOC should take some of the guesswork out of the equation for the pilot. As an example, there are missed approach procedures that ask the pilot to "As required, shuttle climb". In these situations, the climb to altitude is up to the pilot. This does not enable the pilot to quickly determine what altitude they would be able to safely proceed to their alternate. In these cases, the pilot would be correct to climb to the appropriate IFR altitude which might be MSA or the minimum enroute altitude (MEA).
To answer our original question we will return to the NDB approach in Dauphin. The pilot may proceed southbound from the altitude published in the missed approach (3100 ft) as long as they continue their climb at 200 ft/NM to the appropriate IFR altitude. The key to this procedure is the terminology of BPOC. If you fly a missed approach with the term BPOC but the corresponding altitude is below an adjoining MSA, you shall continue the climb as you proceed into that sector following the missed approach procedure.
In summary, obstacle clearance rests with the pilot and they may choose to climb to a higher altitude if so desired. But the term BPOC should make it easier for the pilot to make an educated decision to safely proceed from a missed approach at an altitude which is lower than what might appear for the published MSA.

Figure 2 - Port Hardy BC

IFR questions answered by the RCAF ICP School

This article is the other instalment of a continuous Flight Comment contribution from the RCAF Instrument Check Pilot School. With each "On Track" article, an ICP School instructor will reply to a question that the school received from students or from other aviation professionals in the RCAF. If you would like your question featured in a future "On Track" article, please contact the ICP School at: **+AF_Stds_APF@AFStds@Winnipeg**

Risk Management in Search & Rescue Operations

By Colonel Michel Brisebois, Chair of the Search & Rescue Capabilities Advisory Group, 1 Canadian Air Division, 17 Wing Winnipeg

Photo: Cpl Jean Archambault

On the night of October 27, 2011, one of our elite and most courageous members of the Search and Rescue (SAR) team lost his life in a tragic accident off Igloolik, Nunavut. I personally knew Sgt Janick Gilbert, having proudly served with him during my time at 442 Transport and Rescue Squadron in Comox, BC. The purpose of this article is not to review in detail the Flight Safety Investigation Report (FSIR) on this tragic accident, but rather to openly discuss one of the philosophical questions posed by the FSIR: Does the risk management or risk acceptance for SAR missions reside at the appropriate level?

To set the stage, one must first acknowledge that SAR operations in Canada can be complicated and very dangerous to conduct. To those familiar with them, factors like environmental conditions, terrain, time of day, and incident details available at the time of launch, are all potential sources of difficulty that can challenge SAR crews. That last point, available incident details or lack thereof, is of particular significance because in most instances SAR crews launch with only but the very basic of information at their disposal. Better situational awareness of the incident is normally achieved only when the crew arrives on scene, assesses the situation and determines the extent, severity and urgency of the situation.

These dynamic challenges are characteristic of SAR operations and confront SAR crews every day. As a consequence, one of the ways the SAR community mitigates the risk imparted by the above factors is to provide SAR crews with rigorous training and currency requirements, retain a certain level of experience within the units, and provide ample opportunities to practice their skills through regular and recurrent training based on realistic scenarios. This approach enables the SAR community to provide its crews, and more importantly its crew leaders, with sound knowledge, experience, confidence and exposure to a variety of dynamic environments in the hope of preparing them to face the unknown. As such, the SAR community has been comfortable delegating the management of the risk involved in SAR operations to the lowest level possible, the Aircraft Commander and his/her team.

As the RCAF moves through an era of fiscal restraint, personnel pressures and changing demographics, much of the approach described above is being challenged or questioned. In fact, the FSIR on the loss of our brave SAR Tech raises exactly these questions. Are we providing our crew leaders with the necessary exposure to reasonably face most situations? If not, is the management of risk associated with SAR operations delegated to the right level? Or, are the governing regulations, orders and Standard Operating Procedures (SOPs) detailed enough to provide our less experienced crews with the necessary guidance to assess risk at their level? These are all very good questions indeed, and are currently being considered by the Chain of Command!

I do not profess to know all the answers to these emerging questions but I acknowledge that they are relevant and warrant further dialogue and exploration. Some of the contributing factors are arguably transitional, like fiscal environment and demographics, and have a temporary impact on our ability to continue mitigating the risk (a.k.a. reduced ground and flight training opportunities). Other factors are totally under RCAF control and can help the SAR community mitigate some of these transitional influences: regulations, orders, SOPs, guidance on capability and ground training requirements, etc. The latter is an area of focus for the SAR Capability Advisory Group (SARCAG) as it tries to provide community-wide guidance and priorities on training requirements and the like. As an additional initiative, the RCAF is also examining the concepts of Mission Acceptance and Launch Authority (MALA) in SAR operations, both being part of a risk management strategy and risk assessment matrix aimed at helping crews mitigate risks. Yet, a pre-launch risk mitigation and mission acceptance matrix may not be practical in all instances as better situational awareness of incidents tends to occur upon arrival on scene, thus necessitating the crew to still make quick assessments of the situation and associated risks and react accordingly to effect the rescue, often facing time-critical constraints.

This article will, no doubt, stimulate a dialogue within the greater SAR community on risk management in SAR operations and where that risk should be dealt with or accepted Such a dialogue is, in my opinion is, healthy, warranted, and ultimately necessary to posture the SAR community for success in the future. I encourage you to engage your leadership team in such discussions.

"That others may live"

Epilogue

TYPE: SAR Technician- A Cat

LOCATION: Near Igloolik, Nunavut

DATE: 27 October 2011

In response to a distress call from two men in a small open boat in Hecla Strait, northeast of Igloolik, Nunavut, a Search and Rescue (SAR) CC130 aircraft from Trenton, call-sign Rescue 323 (R-323) was dispatched, arriving on scene at 1505 hours (hrs) local time. After assessing the men to be hypothermic and unresponsive, three SAR Technicians (SAR Techs) jumped at 1734 hrs to provide assistance; weather conditions were extreme with 25-35 knot (kts) winds and 10-15 foot (ft) waves with sea ice present. The first SAR Tech landed in the water, swam to the raft that the men were by now in, and assisted them. The second SAR Tech and the SAR Tech Team Leader (TL) both landed separately in the water and, unable to swim to the raft, initiated their own survival procedures. Approximately four hrs later a CH149 helicopter hoisted the two men and the first two SAR Techs aboard unharmed. One hour later, the helicopter crew located the unresponsive body of the SAR Tech TL; he was floating free of his parachute harness face up with his life preserver inflated. The TL was flown to the Igloolik airport and transported to the Health Center where attempts to resuscitate him were unsuccessful.

The circumstances surrounding the parachute jump were examined in order to improve the success of future open sea, cold water, parachute rescues. The investigation focussed on the TL's descent and post-landing activities and plausible theories that led to his drowning. SAR Tech life support equipment and the regulations governing rescue activities, including pre-jump planning, safety activities and SAR Tech dispatch decision-making, were also examined.

DFS Comment:

The aim of the CAF FS Program is to prevent the accidental loss of aviation resources while accomplishing the mission at an acceptable level of risk. As I mentioned in the Director's Comments within the FSIR, the cost of this mission was extreme. And while R-323's crew ultimately rescued the men in distress, we may ask ourselves if it was accomplished within an acceptable level of risk.

This accident and the subsequent investigation have created much discussion at all levels within the RCAF concerning our equipment, procedures, and risk management in SAR operations. Due to the wide range of opinions on these issues, I offered the SAR community an opportunity to comment on the FSIR and the way ahead with this article. Hopefully this will foster additional discussion as the operational and technical communities proceed to implement the report's recommendations, find ways to make our operations safer, and ensure that the risk of SAR operations are appropriate, mitigated and accepted at the proper level.

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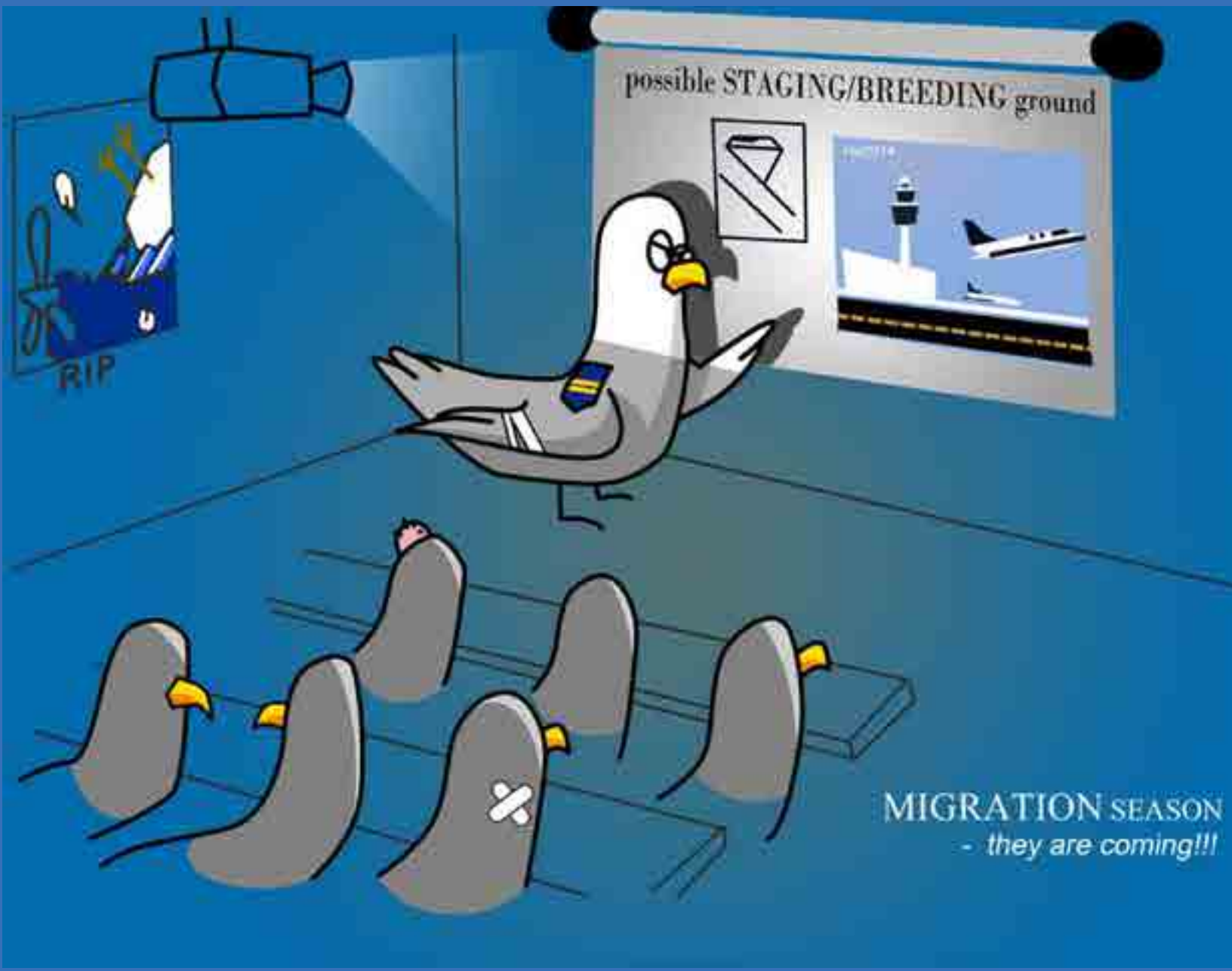

Submitted: 2Lt David He