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ISSUE 1, 2017

Flight Comment

DOSSIER

I shoot, therefore I am

MAINTENANCE IN FOCUS

Airmanship

VIEWS ON FLIGHT SAFETY

DFS Chief Warrant Officer

Canada 

Photo: MS Steeve Picard



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Flight Comment

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Photo: MCpl Amy Martin

Views on Flight Safety

by Chief Warrant Officer Ward Golden, Directorate of Flight Safety
Chief Warrant Officer, Ottawa

Back when I joined the Canadian Armed Forces in November 1981 my first experience as a qualified technician didn't materialise until 1984. In those days, our trades' training was quite extensive. It took just a little over two years to transition from the training system to the operational environment. I was posted to Cold Lake, Alberta in 1983 and was quickly indoctrinated into the world of aircraft maintenance working in the CF104 Starfighter and CF116 Freedom Fighter communication systems laboratory. I was one of 5 privates in the shop in those days and I worked directly for whatever Corporal (Cpl) that I was assigned to that week. I learned a lot about being a junior technician while repairing UHF, VHF radios or emergency locator transmitters. The first thing I noticed was how a Cpl was always with us at every step of the repair and how they ensured that the work we were doing was to their standard. They were also present to instill a sense of pride in our workmanship. I never took offense to their oversight and it was then that I realized that we (Privates) were the next generation of technicians in the air force. Later in that year, when the new bands of Privates (Pte) were entering into the laboratory, the senior Ptes (single chevron) were now responsible to teach and mentor them. Once again, the Cpls were ever present, making sure that the guidance we were giving to the junior technicians was correct and meaningful.

Later in my career as a Cpl working on the CF188 Hornet acceptance crew, I was being supervised yet again, this time by Master Corporals (MCpl). I remember working on a radio snag one day and the only supervisor that was available was a Sergeant (Sgt). His experience was strictly CF104s and had nil experience on the Hornet; nevertheless he enjoyed working on the floor with the junior technicians. It was only later in life that I realized that it was the mentoring aspect that he thoroughly enjoyed. Sometime later, my MCpl was posted out and was replaced by a MCpl from the Sea King (helicopter) community. He first went off for fleet-specific training and upon his return I was tasked with training him on the CF188. At first I was quite hesitant, but he took me aside and gave me a pep talk. He confided in me that he was still my boss, but while working on the aircraft, I was the one that was in charge of the maintenance activities. In 1999, I was promoted to Sgt and it was then that my literal tool kit was replaced with the figurative tool kit of leadership. I was posted back to the laboratory environment, this time as a senior supervisor. I made sure I would spend the better part of my day outside of the office imparting what I had learned about airmanship to the next generation of technicians.

With my well-learned experiences now behind me, my focus during the Directorate of Flight Safety Annual Roadshow visits has been on airmanship, pride of workmanship, pride in oneself and of course, being proud of the institution that I signed up for 35 years ago. Looking back on my career, I have seen many changes in how technicians are trained and what they need to go through in order to attain a Level A signing authority. The senior aircraft maintenance superintendent interview can be quite daunting, but the interview process is invaluable as we need to ensure that the technician understands the policies and procedures. I do understand that being a Level A technician can be quite stressful. We are expecting a lot from you but remember: your forefathers in the aircraft maintenance environment have already walked a mile in your shoes. Today's aircraft systems are more robust and are accompanied with a vast maintenance program. Maintenance manuals have become in-depth and can be quite onerous to comprehend.

In closing, I have the following words of advice: one should never be ashamed or afraid to ask a fellow Level A technician for technical advice; two sets of eyes are always better than one. Airmanship for all of us is not necessarily taught during formal training but is learned over years of working alongside senior technicians. Keep your eyes open, learn from others and embrace the *Technician's Creed*. ✎



The Editor's Corner

How many of you have or at one point, had that experienced supervisor that you came to trust and follow? A person that seemed to know the answer or have advice to every question you had? The one where the more you got to know and work with them, the more you thought of them as infallible.

Did something ever happen that made you think, even for a brief moment otherwise? In other words, did they surprise you with a decision or an act that seemed out of the ordinary? I have. But I must admit that I was too embarrassed or in denial to do anything about it. If this sounds familiar to you, it then begs the question: Who is supervising our supervisors?

Thinking back to my days as a standards pilot, I distinctly remember the day that I took a plane out on a solo proficiency flight where I beat up the traffic pattern, working on my take-offs and landings. Traffic was light so I was frequently getting clearances to land without having to do a low-approach or overshoot. On one approach however, a preceding aircraft was landing for the stop, thereby putting the runway out of use until it could taxi off of it.

I was given the 'continue' call from tower with the expectation that the aircraft on the runway would taxi off in time for him to give me clearance for the touch and go. Long story short, given my continuous clearances to land thus far, my attention was then focussed solely on perfecting my final turns and landings... and that is exactly what I did.

While taxiing in after the flight, I got a call from the ground controller to give tower a call on the phone. Huh? That was odd.

On the phone, the tower controller informed me that I had landed on one occasion without a clearance. In fact, the preceding aircraft was still on the runway when my wheels touched down. Although the risk of collision at that moment was low (around 4000' separation), this was obviously a clearance bust on my part. He never cleared me to land. In a very lenient fashion, the controller left it at that, but frankly, I was downright embarrassed.

Given my 'supervisory' position as a standards pilot and a mentor to students and instructors alike, how did this happen? Simply put, my experience – specifically my situational awareness – was put to the test against the adverse effects of routine. Clearly it lost, and the incident was a blunt reminder that nobody is infallible.

Routine in itself can be good thing – how else do we become proficient in our jobs over time? There is a point however that much like Superman's kryptonite, it can work against you. Although my story didn't amount to much, we'll see in this issue's "Check Six" article how routine can 'cloud' an experienced member's situational awareness. Unfortunately in this case, the consequence was fatal.

I would argue then that supervision doesn't necessarily have to come from the top down. Why not encourage our subordinates to keep an eye out on their supervisors and from a supervisory perspective, afford them that right without giving them grief for it. Time and again we've learned that even our brightest and most experienced are prone to making mistakes. Given that our jobs and the processes that come along with it are becoming more and more complex, let us look out for each other. Our lives are depending on it. 📌

Volare tute
Major Peter Butzphal

Good Show

For Excellence in Flight Safety

Mr. Dave Cross

On 4 January 2016 an incident occurred with an armed passenger evacuation door on Royal Canadian Air Force (RCAF) CC150 Polaris aircraft while on a stopover in Quebec City. The incident conveyed the potential for serious injury and/ or loss of life of multiple air and ground crew members.

The CC150 aircraft utilizes civilian aircraft mechanics that deploy with the aircraft to carry out required maintenance and servicing duties. Mr. Dave Cross, the L-3 Military Aviation Services aircraft maintenance engineer assigned to this flight was working in the cockpit when he heard a large amount of commotion coming from the front cabin area. He arrived to find an individual had opened an armed door, but that the door appeared to have been obstructed by the outside air stairs attached to the plane. Any further movement of the door could have resulted in the violent deployment of the evacuation slide which would have either deployed outwards striking the individual on the stairs or, being obstructed, expanded inside the cabin where multiple crew members were present. Understanding the life threatening danger present, Mr. Cross quickly ordered everyone away from the area while he simultaneously disconnected the slide mechanism under the aircraft door thereby preventing the emergency slide from deploying.

Due to his immediate response and expert systems knowledge, Mr. Cross was able to secure a dangerous situation and avert potential injury or loss of life. He demonstrated an extremely high degree of professionalism in the conduct of his duties putting the safety of the crew above that of his own. Mr. Cross's actions directly prevented the loss of valuable RCAF resources and are most deserving of this Good Show Award. 



Photo: Cpl Rod Doucet

For Professionalism

For commendable performance in flight safety

Sergeants Michael McGregor and Jason Porter

In November 2015, while serving as aircraft level-C releasers, Sgts Jason Porter and Michael McGregor demonstrated exceptional investigative prowess in determining that three CF188 Hornet aircraft had incorrect tracking of critical supplementary inspections (SI).

While conducting C release training in the CF188 Data Management System, Sgt Porter discovered that one aircraft was well outside the threshold of the No.2 SI called in the maintenance planner. Sgt McGregor subsequently conducted an extensive search of archived data and determined the root cause of the discrepancy to be the unserviceability record which had been recycled for another task. It was further discovered that a No.1 SI had been conducted outside the minimum threshold permitted by the maintenance program without proper authorization.

As a result of those findings, Sgts McGregor and Porter quickly initiated a full review of all CF188 aircraft to verify aircraft inspection timelines. They diligently evaluated and compared all airframe hour calculations to ensure the SI schedule was properly reflected in the maintenance planner. During the review, they further identified one other aircraft had overflowed their No.1 SI while a third, again had its No.1 SI conducted outside the allowable minimum limits without the proper authorization.

Sgts McGregor and Porter's meticulous attention to detail, quick response and teamwork ensured that all CF188 aircraft had the proper inspections conducted at the proper time.

Had the offset inspections cycles continued, it could have resulted in missed damage and undetected degradation of critical systems, potentially leading to failures and ultimately

to an aircraft incident or accident. Sgts McGregor and Porter are highly deserving of the For Professionalism Award. ✦



For Professionalism

For commendable performance in flight safety

Master Corporal Guillaume Bélanger

MCpl Guillaume Bélanger, an aircraft structure technician with 438 Tactical Helicopter Squadron was working in the aviation life support equipment (ALSE) section when he discovered an error with the registration of an emergency locator transmitter (ELT). When inspecting an aircraft's survival kit, it is necessary to disable the ELT. This deactivation requires entries to the website of the Canadian Beacon Registry. During his inspection, MCpl Bélanger noticed that the tag was already disabled and that the helicopter was flying with a tag whose information was incorrect on the national website.

Recognizing the critical importance of the missing info, MCpl Bélanger decided to double-check the number of active tags on the national site and compared it to the number of the squadron devices.

The audit showed that at least three other emergency beacons currently installed on other helicopters had not been activated. He informed his supervisor immediately and the inactive tags were found and activated according to the directives.

Although recently qualified as an ALSE technician, MCpl Bélanger showed a commendable thoroughness in his new role. His insistence to ensure the validity of past inspections made it possible to correct deficiencies in the emergency beacon registry; items that would prove critical in a potential emergency. MCpl Bélanger is highly deserving of the For Professionalism Award. 🇨🇦



Master Corporal Mike Buggie

On 6 June 2015, MCpl Mike Buggie, a flight engineer with 424 Transport and Rescue Squadron discovered the source of a recurring fuel leak on a CC130 Hercules aircraft. The incident aircraft had three previous maintenance workorders reporting fuel leaking from the upper surface of the left hand wing area during flight. In fact, on a previous mission the aircraft had returned to base after the fuel leak was observed from the ground. Due to the volume of fuel leaking over the wing, which initially had gone undetected, and due to its proximity to the No.4 engine, the leak was a significant hazard.

Previous maintenance troubleshooting could not find fault within the fuel system to explain the leak, and the fault could not be duplicated on

the ground. MCpl Buggie received authorization from higher authority to investigate the snag. After a thorough examination of the maintenance records, technical orders/parts requirements, and a systematic assessment of the leak area, MCpl Buggie determined that a missing O-ring was the root cause. Working with the maintenance personnel, an extensive FOD check was carried out and confirmed the O-ring on the No. 4 refueling port was missing. The O-ring was later found lying at the bottom of the No. 4 fuel tank.

MCpl Buggie acted above and beyond the area of his responsibility displaying determination and initiative to swiftly discover the root cause of the fuel leak as well as rectifying the unserviceability.

His actions eliminated the need for a hazardous fuel tank entry and prevented the re-occurrence of a potentially dangerous situation. MCpl Buggie is truly deserving of this For Professionalism Award. 🇨🇦



Master Corporal Robert Spicer

While troubleshooting a Powered Flight Control Surfaces (PFSC) position indication snag on CT142 Dash-8 aircraft, MCpl Robert Spicer noticed a visual drag on the pilot's control column. Upon further investigation, he found clearances between the control column chain and mount tube at the base of the pilot's pedestal to be insufficient, causing a binding condition. This sprocket and chain system operates the aircraft spoilers and had it failed in-flight, the pilot and co-pilot would be able to roll their control columns independently of each other, potentially creating a hazardous flight condition.

MCpl Spicer removed the control column chain to further examine the connecting assembly. He discovered abrasions from the chain rubbing inside the mount tube, resulting in the complete removal of protective paint. Further inspection

of the output shaft and interconnect lever attachment assembly identified a missing spacer suspected of reducing the gap between the two components.

Following a thorough review of all maintenance records, MCpl Spicer could not determine when the last work was carried out on this area. He did notice multiple entries were present for rigging however; this process does not contact the output shaft and interconnect lever attachment assembly. Suspecting the parts may have been improperly installed or missing, MCpl Spicer consulted the applicable technical orders then requisitioned a replacement assembly. Comparing the replacement to the parts installed, MCpl Spicer was able to confirm to that the spacer was indeed missing from the original installation.

Driven by his keen investigatory sense and comprehensive knowledge of the PFSC and displaying an exemplary level of diligence and professionalism, MCpl Spicer undoubtedly averted a significant follow-on occurrence which could have had disastrous consequences. MCpl Spicer's actions are certainly commendable and he is thus fully deserving of this For Professionalism Award. 🦅



Corporal Edward Graham

Cpl Edward Graham, a Flight Engineer (FE) with 440 Transport Squadron in Yellowknife was completing a pre-flight check on a CC138 Twin Otter when he noticed a problem with the flight controls.

While moving the flight controls through the full travel of the aileron system, he noticed they did not return to the center position. He also noticed that when moving the controls, a sawing or clicking noise could be heard through the floor of the aircraft. Further maintenance investigation revealed the source of the noise to be a flight control cable improperly routed over a guard on the forward aileron pulley, causing it to rub on the routing holes and fray. The aircraft operating instructions do not require the FE to check the full travel of the flight controls as part of the pre-flight check; this is done by the pilots

during their pre-take off check. However, given the amount of ambient noise in the aircraft with engines running, it is highly unlikely that they would have heard the sawing noise. It is thus possible that this condition could have gone undetected until the cable wore to the point of breaking. Had this occurred during flight the results would have been catastrophic. Cpl Graham's keen instinct and attention to detail allowed him to discover this fault before it could further develop into a situation with extreme consequences.

Cpl Graham went above and beyond the normal scope of the pre-flight inspection to ensure safe and proper operation of all systems. For this attention to detail and dedication to Flight Safety, Cpl Graham is most deserving of this For Professionalism Award. 🦅



For Professionalism

For commendable performance in flight safety

Corporal Sebastien Lavigne

On 19 August 2015, Cpl Sebastien Lavigne, an aircraft structures technician (ACS) with 439 Combat Support Squadron, was in the process of dismantling the hoist of a CH146 helicopter that was on a combined 300/600 hour second-line maintenance inspection.

As part of the hoist's inspection, the tube gasket was to be replaced. Being an experienced aircraft structures technician, he took it upon himself to remove the hoist tube cover that holds the rubber gasket to clearly inspect the entire structure.

He discovered some minor scratches on the hoist tube and decided to remove the tube to facilitate a better inspection. After liaising with the Life Cycle Material Manager and Bell Helicopter Textron Canada it was confirmed that there were 6 cracks that resulted in many of the hoist assembly components being sent to the Aerospace and Telecommunications Engineering Support Squadron for further testing.

During winching operations, the tube can support up to 272 kg hoisting technicians or equipment.

Had the tube failed during a hoist it could easily have led to disastrous consequences. Furthermore, this discovery initiated approved changes to the CH146 preventive maintenance program.

Cpl Lavigne's impeccable work ethic, professionalism and competence as a technician prevented this unsafe winch from being used in operations. Cpl Lavigne is highly deserving of the For Professionalism Award. 🇨🇦



Corporal Michael Watt

On 4 October 2015, Cpl Michael Watt, a technician crewmember, was onboard CC130 Hercules that was transiting from Trenton, Ontario to Bagotville, Quebec. In setting up for landing, the aircraft was positioned over runway 11 in preparation for an overhead break to the left (north of the runway). Immediately prior to the aircraft commencing the break, Cpl Watt announced that an aircraft was at the nine o'clock position and directly in the intended path of the CC130. The aircraft flight crew immediately requested and received clearance to break to the right (south of the runway) and landed without further incident.

Bagotville airspace shares its resources with civilian agencies and is often a very busy flying area. The aircrew were not warned of the circuit traffic and thus were not expecting traffic in their intended flight path.

Technician crewmembers are trained as ground crew and as such do not have any formal in-flight duties. Given this fact, it is remarkable that Cpl Watt had the presence of mind to proactively advise the aircrew of the impending danger. His actions were on par with standard airmanship principles employed by aircrew. Cpl Watt is highly deserving of the For Professionalism Award. 🇨🇦



Corporal Alexandra Wilkie

When carrying out a periodic maintenance record set entrance audit on a CH146 Griffon helicopter, Cpl Wilkie, an aviation technician at 400 Tactical Helicopter Squadron, discovered a discrepancy between the paper and electronic copies of the component data history record of a swashplate link rod end.

Cpl Wilkie noticed that on the component data record in the electronic record keeping system, the component was considered new on 1 August 2012 however; the paper copy component data record clearly identified there was history for the component originating on 26 April 2001. Cpl Wilkie initiated an extensive research of the electronic record keeping system and determined that this component was in fact not new. The swashplate, considered to be a critical flight component was missing 2,236 flying hours from the component's retirement life of 5,000 flying hours.



This airworthiness configuration audit practice was normally carried out during post periodic but due to issues of this nature and those discovered by Cpl Wilkie, this audit is now done during the aircraft periodic induction phase.

To find and investigate such a discrepancy on her first maintenance record set audit showcases Cpl Wilkie's exceptional situational awareness and attention to detail. Cpl Wilkie's thoroughness and tenacity to ensure documentation completeness is highly commendable and she is therefore well deserving of the For Professionalism Award. 🇨🇦

For Professionalism

For commendable performance in flight safety

Aviator Daniel Szordykowski

On 2 August 2015 Aviator Szordykowski, an aviation apprentice technician with 442 Transport and Rescue Squadron, was conducting a visual inspection of a T-64 engine assembly after installation on a CC115 Buffalo aircraft. While inspecting the aft portion of the engine compressor section that mates to the combustion section of the engine, one of the fifty four ¼ inch bolt heads protruding from the compressor/exhaust flange caught his eye. The location of the bolt and low ambient lighting makes this an easily overlooked area, as various fuel, oil, and bleed air lines and clamps make observation difficult. This area is further obscured by the presence of two fuel nozzle manifold lines.

On his own initiative, Aviator Szordykowski conducted a further tactile investigation and discovered that there was no nut securing the bolt at this location. Aviator Szordykowski immediately notified his supervisor and foreign object debris (FOD) check was initiated. Further investigation revealed that the engine had just been received from the overhaul contractor and that the bolt had not been secured. The engine had also been handled by the squadron engine bay where the speed decreasing gear box, intake and other accessories are added to form a complete engine assembly. At the time of the incident there were no technical instructions to direct the technician to examine the flange bolts and nuts for security.

Since then, the contractor has initiated changes to its engine build-up publications and further amended quality work instructions that will be used annually to train their personnel.

Aviator Szordykowski's keen attention to detail and thoroughness prevented the possibility of potential failure of the connection of the compressor to combustor casing of the engine and the hazard of FOD entering the engine compartment. His outstanding due diligence as an apprentice makes him a deserving recipient of the For Professionalism Award. ✈



Photo: Cpl Létourneau PJJ

Mr. Sean Askin

On 23 July 2016, Mr. Sean Askin was the crew lead on a CC150 Polaris while deployed on operation. A civilian contracted employee of L-3 Communications - Military Aviation Services, Mr. Askin was part of the team responsible for global Polaris maintenance operations. On the night in question, he went beyond his scope of duties and discovered a potentially serious defect on the trailing edge of the Polaris right hand elevator.

A year earlier, another Polaris aircraft had landed with a six-foot portion of its elevator flight control missing. This serious surface delamination had never before occurred on the fleet. Mr. Askin had been present during that event and ever since, he took it upon himself to conduct an extra verification of the flight controls; an inspection not expected nor required as part of his routine duties. Such an extended post-flight inspection is made even more difficult by the extreme heat, with night-time lows of 43°C on the ramp. Using his high powered flashlight, he examined the horizontal stabilizer from a distance and discovered an abnormality in the paint that was not duplicated on the opposite elevator. His interest piqued, Mr. Askin requisitioned a high-stand for a closer inspection only to discover a delaminated area of approximately 12 by 60 inches.

Had this aircraft flown as scheduled, the entire control surface could have delaminated in flight and potentially caused a very serious incident. Mr. Askin on his own initiative went above and beyond the expectations of his maintenance team.

Not only did his actions enable the continued support of Canadian Armed Forces refueling effort, it also led to the discovery of an additional delamination on a Polaris which may have otherwise been missed. For his great contributions to Flight Safety, Mr. Askin is truly deserving of the For Professionalism Award. 🏆



Photo: Cpl Ryan Moulton

For Professionalism

For commendable performance in flight safety

Mr. Sylvain Caron

During a Defence Resource Management Information System (DRMIS) data validation on CT142 Dash-8's miscellaneous maintenance plans, Mr. Sylvain Caron promptly realized that 14 of the plans were missing and no longer visible to 'C' level maintenance release personnel. He investigated the anomaly to ensure that there weren't 14 work orders carried out the previous day that would satisfy these maintenance activities in order for them to be removed from the maintenance planner report. After confirming that the 14 plans in fact had not been carried out he continued to explore each independently in order to clarify the reasoning for the omission. Further investigation concluded that the 14 maintenance plans had been completely disconnected from the aircraft's electronic maintenance file.

He quickly notified and advised the individual who had made the changes to correct the plans immediately.

Mr. Caron's actions likely saved numerous flight incidents. These maintenance plans had the potential to be drastically overflowed and not to be noticed for a lengthy period of time or possibly indefinitely as they were no longer visible to those using the electronic maintenance planner.



Mr. Caron's meticulous attention to detail and perseverance while performing his duties directly resulted in rectifying a situation that if left uncorrected could have led to serious damage to aircraft. Mr. Caron is truly deserving of the For Professionalism Award. 🦋



CLOSING ACTION REPORT¹

'D' Category Aircraft Accident (Fatal) – CF116723 Freedom Fighter, Hangar 20, CFB Trenton, Ontario, 19 August 1988

CF116723 was delivered to Field Aviation at CFB Trenton in November 1987 for a Number Four periodic inspection. Subsequently, during functional checks of the landing gear system, numerous problems were encountered with nose wheel unsafe indications and the hike/de-hike system for which both electrical and hydraulic remedies were attempted. Throughout this overhaul process, the aircraft remained on jacks.

On 19 August 1988 between 1430 hours and 1445 hours, CF116723 was lowered from the jacks to confirm the serviceability of the de-hike system with the aircraft weight on the landing gear. At approximately 1500 hours, the technician working on the problem requested assistance and advice from the electrical "lead hand" who stated that the problem was a "misadjusted nose landing gear (NLG) down lock switch" and that he would adjust it. He then proceeded under the aircraft in the nose wheel well area.

At 1505 hours, the NLG folded causing fatal injuries to the electrical lead hand. Another electrical technician was struck a glancing blow by the falling aircraft and suffered minor injuries. Other personnel in the immediate area were unharmed.

Investigation Results

The CF116A NLG incorporates a hike/de-hike system to improve take-off performance and is designed such that the landing gear strut is canted forward when extended and travels forward and up when retracting. To prevent the landing gear from retracting under the weight of the aircraft when hydraulic pressure is removed, a geometric or over-centre lock was designed into the system. Additional protection against inadvertent retraction is provided by a NLG safety pin which is installed shortly after

the aircraft is shut down and should not be removed except as directed by *Canadian Forces Technical Orders* (CFTOs).

The deceased was a 21-year employee of the contractor and had been the supervisor (lead hand) in charge of instrument and electrical (I&E) mechanics for five years and five months. Other workers held this individual in high regard for his professional knowledge and supervisory skills. There was no record of him having been involved in any other safety occurrences.

"Other workers held this individual in high regard for his professional knowledge and supervisory skills. There was no record of him having been involved in any other safety occurrences."

Landing gear system functional checks had been ongoing for the previous six weeks and had involved changing or adjusting numerous hydraulic and electrical components. The deceased had been actively involved in this troubleshooting process and had corrected a hike/de-hike problem on the aircraft within the previous two days. This had involved adjusting the NLG down lock switch. To check the switch adjustment, with the aircraft on jacks and without hydraulic power, the NLG pin must be removed and the geometric lock disengaged to manually move the NLG out of the down and locked position. The NLG is then moved back into the down and locked position, thus confirming the adjustment of the switch. The final functional check

on the CF116A NLG hike/de-hike system involves ensuring a hiked nose gear will automatically de-hike when the weight of the aircraft is on the wheels and the arresting hook is dropped. Ref B includes a caution to ensure the landing gear safety pins are installed before attempting this step.

CF116723 had been on jacks in the same position in the hangar since its arrival some nine months earlier. Less than 35 minutes before the accident, the aircraft had been lowered to the floor in order to perform the functional check on the hike/de-hike system. The "Aircraft on Jacks" signs had been removed, the "Hydraulic Functions in Progress" signs were left in place and the landing gear pins had been properly installed. Following the failure of the system to de-hike, it was decided during a discussion amongst the airframe and I&E technicians who had been working on the aircraft that the fault was in the electrical system of the NLG. Having made this decision, the correct procedure should have been to refer to CFTO C-12-116-AAO, page 5-1-54, Adjustment of Nose Landing Gear", the first step of which is "(a) Jack aircraft".

At this time, the electrical lead hand or floor supervisor, happened by and was called over to the aircraft by one of his men. The ensuing discussion centered around the fact that, with the aircraft removed from the jacks, the de-hike system did not function properly. The deceased said that he knew what was wrong and since he had previously adjusted the NLG down lock switch, he would do so again. Without having the aircraft put back on jacks, the deceased positioned himself under the nose of the aircraft sitting in a roller chair. He began adjusting the

Continued on next page



CHECK SIX

NLG down lock switch as evidenced by changes to both the cockpit NLG indications and by indications on a multi-meter attached to the undercarriage actuating valve. When the deceased moved into position, it was observed that the nose landing gear pin was installed. Immediately before the nose landing gear collapsed, the deceased was seen pushing upwards in the area of the geometric lock. After the accident, the nose gear pin was found on the floor near the nose gear. During that time, the deceased was the only person who could have removed the safety pin.

Later, after the aircraft was lifted by a crane and set back onto jacks, both the NLG and the gear pin were examined. The undercarriage pin was serviceable and, when installed in the NLG, the safety pin locked in securely. The NLG retraction mechanism and the geometric lock were serviceable. The NLG could not have retracted without having had the safety pin removed and sufficient pressure (32 pounds force) deliberately applied to cause the geometric lock to release.

DFS' Comments²

There were three previous Canadian Forces (CF) occurrences in which a CF116A NLG collapsed during maintenance. In each of these cases, an individual committed the same act as the deceased, i.e. removed the safety pin and deliberately pushed the geometric lock in contravention of CFTOs. Fortunately, in these earlier cases the aircraft was supported, twice by centreline tanks and once by a stool, which prevented the full weight of the aircraft nose from falling onto the technicians thus inflicting only minor injuries. Worldwide research of F-5 [CF116] NLG accidents revealed three more similar occurrences, two resulting in injuries and one in a fatality. In all cases, it was determined that the technician did not follow correct procedures. In other words, a delicate but hazardous shortcut was taken to trouble-shoot a nose landing gear problem. Preventive measures prior to this accident included changes to training, publicizing the incident, adding



Photo: Cpl Marc-Andre Gaudreault

warnings to the applicable maintenance documents, tightening supervision and the production of a Canadian Forces video illustrating the danger.

The Board of Inquiry and subsequent investigations were concerned about the possibility of the lead hand not being aware or not recognizing the fact that the aircraft was not on jacks as it had been in the previous 8 months, and hence, unwittingly carrying out unauthorized maintenance procedures. However, the Board of Inquiry listed seven cues, any one of which should have alerted the lead hand to the fact that the aircraft had been lowered from the jacks. These cues were:

- a. the jacks were no longer present under aircraft;
- b. the general appearance of aircraft - lower;
- c. the wheels were on the ground;
- d. the distance from ground to inside the wheel well was decreased;
- e. since distance into wheel well was decreased, the technician was able to use a mechanics chair on casters (if the aircraft was on jacks, the technician would have had difficulty reaching the switch from the mechanics chair);
- f. the nose wheel oleo was compressed; and
- g. the "Aircraft on Jacks" warning signs were no longer present.

Notwithstanding the above cues, there was positive testimony by the third witness that would indicate the lead hand knew the aircraft was off jacks when he proceeded to work on the nose landing gear down lock switch; quote "...the deceased came over and realized at the time, along with myself and another electrical technician that we had the aircraft on the ground..."

From the above two paragraphs, it is therefore reasonable to assume the deceased was aware that the aircraft was resting on its wheels when he attempted to adjust the NLG down



lock switch. Further, it is possible that he had previously been successful with this unauthorized procedure. While this may never be known, it is clear that the deceased was the electrical floor supervisor, and the very individual who should have interceded when this unsafe procedure was initiated.

Injury-producing accidents due to the F-5 [CF116] nose landing gear have been extremely rare worldwide and in each case the individual involved did not follow established procedures. As a result of this accident, the Aerospace Maintenance Development Unit (AMDU) has designed and prototyped a modification to the NLG system which hydraulically locks the NLG in the down position unless the aircraft weight is off the wheels and electrical power is available. This modification will be evaluated and flight tested by Aerospace Engineering Test Establishment (AETE), and if these tests are favourable, consideration will be given to CF116A fleet modification. While this design will hopefully prevent similar incidents, it will still not prevent failures when individuals do not follow established procedures.

Final Cause Factor Assessment

PERSONNEL MAINTENANCE/ NON-CANADIAN FORCES - NON COMPLIANCE WITH ORDERS - in that the deceased initiated maintenance procedures on the nose landing gear of CF116723 without first having the aircraft placed on jacks contrary to the direction in CFTO C-12-116-AAO.

Preventive Actions Initiated

The following actions have been initiated by the indicated agencies as a result of recommendations made during the investigation and review process. Because the cause of this accident can be classified in the Human Factors area, many of these actions address education and awareness of maintenance personnel with the aim of reducing the potential of reoccurrence.

- a. The contractor is responsible for safety under Labour Canada and other applicable civilian statutes and is only

contractually responsible to the Canadian Forces. Nevertheless, AMDU which performs the functions normally carried out by a Canadian Forces Technical Services Detachment, has suggested to the contractor that supervisors responsibilities must be clearly defined to ensure that work continuity and awareness of aircraft state are maintained on the work site.

- b. While CFTO C-12-116-AAO did contain direction which required the aircraft to be placed on jacks prior to working on the landing gear systems, additional warnings to this effect have been added to the text of this document.
- c. To ensure personnel are fully aware of the maintenance being performed on an aircraft, the contractor has implemented the use of an "Aircraft Status Board". This board is located at the front of each aircraft and indicates the aircraft's status, which supervisor has control over the aircraft, and provides appropriate cautions and warnings. The aircraft is also cordoned off with yellow tape when dangerous activities such as hydraulic functional checks are being carried out.
- d. A warning decal has been placed on all DFTEM CF116 nose gear doors which states "WARNING - DO NOT REMOVE NLG SAFETY PIN FOR MAINTENANCE PURPOSES UNLESS AIRCRAFT IS ON JACKS. SERIOUS INJURY OR DEATH MAY RESULT".

Further Action Required

Director Aerospace Support Engineering 2 will be issuing a contract to a consulting firm in the Summer of 1991 to research and produce a CFTO on maintenance safety. Part of the contract will include evaluating the possibility of replacing the old maintenance hazard warning signs with a new style which will conform to internationally adopted symbols.

AMDU has designed and prototyped a modification to provide a hydraulic down lock on the NLG. This modification will be evaluated and test flown at AETE before fleet implementation can be considered.

VCDS' Comments³

This accident was preventable. It is tragic that, despite specific direction contained within CFTO's and widespread knowledge within the CF116 community of the danger of performing landing gear maintenance on an un-jacked aircraft, a trained, highly experienced technician and supervisor lost his life performing what should have been a routine task.

I am satisfied that the actions detailed within this report will prevent recurrence of this accident. This Closing Action Report shall receive wide distribution. ✈

References

1. Closing Action Reports (CARs) at that time were derived from Flight Safety Board of Inquiry reports. In brief, they covered a synopsis of the accident and indicated cause factors from which preventive measures were then raised. It was prepared for the chain of command and used to document the actions taken by the units or groups responsible for the implementation of those preventive measures (PM). They are no longer in use today and have since been replaced by the Epilogue which essentially contains the same information as a CAR minus the list of actions taken in response to the PMs. These are now located in a separate document called an Action Directive, which is sent out by the Airworthiness Authority and gives direction to various Action Organizations to implement the PMs assigned.
2. Then Colonel J. David, Director of Flight Safety from 1989-1992.
3. Then Lieutenant-General J.A. Fox, acting Vice Chief of the Defence Staff (1991).

Maintenance

IN FOCUS



Photo: DND

by Chief Warrant Officer Dan Campbell, Canadian Forces School of Aerospace Technology and Engineering Chief Warrant Officer, Borden

The development of today's Royal Canadian Air Force (RCAF) aviation technicians involves more than the core competencies and skills of aircraft maintenance — it involves airmanship. While airmanship is typically used to describe a pilot's ability to combine knowledge, discipline and skill in making safe and

accurate decisions in the *air*, airmanship is likewise a vital trait to have amongst our military aircraft technicians on the *ground*.

At the Canadian Forces School of Aerospace Technology and Engineering (CFSATE), apprentice technicians learn the fundamental skills required to operate in today's fast-paced, demanding operational environment. Whereas theory of flight, gyroscopic precession, basic

aircraft systems and troubleshooting are all core skills taught, it is airmanship that is the most critical attribute needed by our airman and airwomen to be successful on flight lines and in maintenance shops throughout the RCAF. Simply stated, airmanship is the application of expertise, consistent good judgement, communication and self-discipline.



Today's airman/airwomen are challenged with complicated, highly-advanced aircraft that require hours of maintenance to produce a single hour of flight. Combined with an increased operational tempo, the stresses on a young airman/airwoman to make the correct decision under stressful circumstances is a real challenge in today's air force. A reoccurring issue amongst technicians is both the perceived and real pressure to produce serviceable aircraft. The human factor, perceived stress or psychological pressure to produce a serviceable aircraft misleads many junior technicians to believe that every mission is critical whereas what is truly critical is airworthiness. Responding to maintenance pressures in the correct way is more a facet of airmanship than skill-based training and it's a shared responsibility amongst both technicians and maintenance officers to ensure that airworthiness is the objective of airmanship. We have all seen the experienced, steadfast technician who never wavered from professional judgment, not afraid to voice a concern, who commanded the respect of both the aircrew and maintenance officers. That technician learned from years of practical experience and mentorship and it is his use of knowledge, skill, discipline and judgment that produces airworthy aircraft.

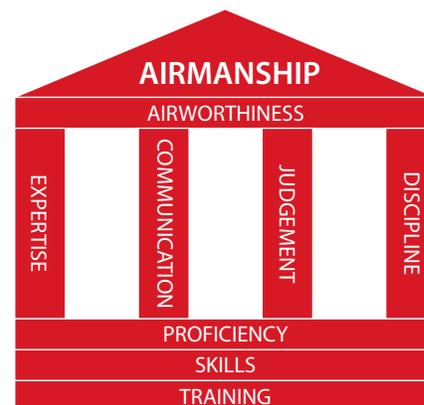
Recognizing the need to develop airmanship at CFSATE, a new performance objective that all students are required to meet is the Professional Qualities Objective, which focuses on discipline

and professional qualities expected of an airman/airwomen. The importance of attention to detail, self-discipline, time management and military values make up the foundation to which skill-based training is applied. The ultimate goal is to produce a technician with the theory/skill-based training and the airmanship to succeed at the beginning of his or her career as an aircraft technician in the RCAF.

Training does not end once apprentice aviators arrive on squadron; in fact, this is where the concepts of good airmanship really take hold. It can be a daunting experience for the newly arrived apprentice, stepping into an operational squadron already surging towards an upcoming deployment or evaluation, working in a new province or even a second language. Mentorship is key: employment training officers and senior aircraft maintenance superintendents need to be proactive with continuing the growth of apprentices and maintenance training in operational units needs to become a priority.

As recruiting increases, CFSATE can have a large number of personnel awaiting training. A new program initiated and supported by 2 Canadian Air Division is the On the Job Education Program where students awaiting their ab initio training have an opportunity to work and train at operational units throughout the RCAF. This program has been a great success, by introducing students to their trade, allowing them to complete portions

of their Qualification Level 4 log book and gain authorizations in servicing and elementary tasks. The airmanship that they gain from the operational units puts them ahead of the curve: the training has improved knowledge, motivation and retention and it is not unusual for students to request a return to the same unit that invested in them, creating a winning situation for both the RCAF and the member.



Airmanship defines everything we do as aircraft maintenance technicians, from the self-discipline it takes to ensure proper procedures are being followed and documented to the judgement it takes to slow down and manage stressful situations. As our technicians combine airmanship, knowledge and experience we can continue to achieve our mission of providing responsive and effective airpower to the RCAF.

Scientia A Principio

Maintenance

IN FOCUS



Photo: DND

by Master Warrant Officer Carmen Bear, Director Aerospace Equipment Program Management 2-2-3, Ottawa

As supervisors, we have most likely asked ourselves during a FS incident, “Why did this occur...this shouldn’t have happened! This is basic airmanship!”

What does airmanship mean to you? Who teaches airmanship? Is it one of those things learned by osmosis? There is no course code or authorization/qualification code for it.

In the technician’s world, the definition doesn’t change much. Airmanship covers a broad range of desirable behaviors and abilities. I asked numerous personnel ranging from retired technicians to the younger ones now employed in first line maintenance operations on their perception of airmanship. The common denominator tends to be a few key items: trade skills, professionalism, trust and consistency. For each one of those traits,

discussions can lead to many different aspects in many different work environments. But has anyone really discussed how to develop and sustain these attributes? Sure, we have our trades training and classroom courses specializing in human behavior – but who is responsible to cultivate an airmanship environment?



In my experience there are few things that I have brought into the work place to help develop these attributes. One is to approach the squadron aircraft maintenance engineering officer (SAMEO) and the senior aircraft maintenance superintendent (SAMS) to seek support in developing and expanding trade skills through a planned maintenance training day. A unit training day filled with qualification training required to help fill gaps for day-to-day aircraft maintenance activities. Included with these training days is the reinforcement of current skills that are not normal to the normal work day, but are essential nevertheless to the maintenance cycle. These training days, held once a month, begin with a few words of wisdom from the flight safety representatives with respect to stats and trends and thereafter, the aircraft maintenance control and repair office would highlight concerns with paperwork. Finally, a combined effort from the unit SAMS and SAMEO would round out the day explaining the responsibilities of a technician and supervisors on how each of them play an important role in airworthiness. Sound familiar? Not much different than the pilots who require proficiencies to maintain their skills to sustain a safe flying environment, ultimately enabling an effective fighting instrument of the Government of Canada. However if the instrument of choice is not working as a capable trained group, effectiveness degrades.

Supervision carries a huge impact on airmanship at every level in the unit. In the beginning of the young technician's career, these traits are initially molded by his/her immediate peers and can have the biggest impact. How we teach them will unquestionably mold how they teach the next group of technicians new to the Canadian Armed Forces. Master Corporals and Sergeants are not just the experience to get the job done on a technical level, but are also the backstop and safety net to provide a safe and effective work environment. I feel this is the core to any effective unit maintenance program with respect to maintenance; airmanship lives and dies here. Unquestionably the chain of command must foster this environment but more importantly, they must give the technician the time to bind this skill alongside their technical ones.

In my previous workplace the effects of this cycle of training created over 200 new authorizations and more knowledgeable, consistently-capable technicians over the course of 6 months. Flight safety incidents were also on the decrease creating a safe, robust flying schedule. This was no easy task to get done and took several months before the positive outcome of this initiative began to crystallize.

The support of the unit Commanding Officer and the Operations Officer to forego flying for one day a month was a huge step in cultivating airmanship. Occasionally the chain of command would push to inject other unit ground training into the schedule but the SAMS and SAMEO showed great leadership in nullifying such proposals and keep the maintenance training to just that.

The long-term effects may not be immediately noticeable however; at the early stages in their careers, they will remember how they were taught to become able-bodied technicians. Airmanship nurtured in the forum of their workplace supported by the chain of command is a concept that can never be achieved in a trade-specific or human behavior training classroom.

So to say airmanship covers a broad range of behaviors and skills is true. Let's not forget however that airmanship also encompasses an entire career and does not distinguish between ranks. Ask yourself and your troops: What does airmanship mean? How will *you* foster airmanship development within your unit? ✈

ON TRACK

Circling Procedures

This article is the next instalment of a continuous *Flight Comment* contribution from the Royal Canadian Air Force (RCAF) Instrument Check Pilot (ICP) 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.

This edition of “On Track” will address some questions about Circling Procedures. The answer comes from Captain Iain Cummings, ICP Instructor.

Rats! You’ve just received an update of the weather at destination and unfortunately the new landing runway does not have a straight-in instrument approach procedure (IAP) associated with it. The ceiling and visibility are lowering... Time to circle! Unfortunately, you rarely practice circling approaches, and never to minimum weather limits. Worse than that, you can’t remember where the circling radii are published on the approach plates... Uh-oh!

The situation as described above is not entirely uncommon. Sometimes, the odds of conducting a circling approach procedure only become evident in the descent phase after receiving updated weather information. Yet, considering that circling is one of the most demanding aspects of instrument flying, the General Procedures Handbook (GPH 204), Transport Canada’s Aeronautical Information Manual (TC AIM) and the Canadian Armed Forces Manual of Instrument Flying provide only rudimentary information regarding circling approaches: “[...] keep the runway in sight after initial visual contact, and remain

at the circling minimum descent altitude (MDA) until a normal landing is assured” (TC AIM RAC 9.24). Let’s delve deeper, shall we?

Fig. 1 details how the visual manoeuvring (circling) area is constructed using terminal instrument procedures (TERPS). For a given aircraft category, maintaining circling MDA within the radii listed in Fig. 2 will ensure 300 ft. of required obstacle clearance (ROC). Seems simple enough, but there are other factors to consider in order to fly a safe and effective circling approach procedure.

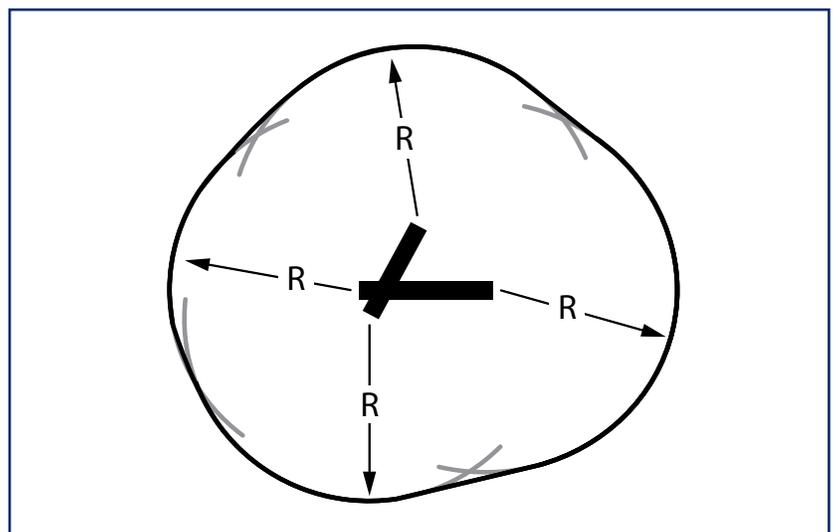


Figure 1. Visual Manoeuvring Area



IAS vs TAS

Navigation aids such as on-field distance measuring equipment (DME) or global navigation satellite system (GNSS) can help us determine a visual descent point as well as maintain the required distance from the runway when circling. However, don't be surprised if you exceed your turn radius for your approach category. The airspeeds in Fig. 2 are for indicated airspeeds (IAS) and not true airspeeds (TAS), which translates to an increase in the aircraft's turn radius when circling at higher MDAs at mean sea level (MSL). This is a definite design oversight.

The International Civil Aviation Organization (PANS-OPS) designed circling procedures take TAS into consideration, and their design criterion is more conservative than TERPS. Since 2012, some circling procedures in the United States have also incorporated TAS into their designs as the MDA increases above MSL (see Fig. 3). The application of this chart is indicated by the 'negative C' (black background with white lettering) on the approach plate. Make sure you are aware of the difference and where to find the chart if this type of approach is a possible option!

Continued on next page

| Approach Category | A | B | C | D | E |
|---------------------------|------|--------|---------|---------|------|
| Airspeed (KIAS) | < 90 | 91-120 | 121-140 | 141-165 | >165 |
| Required HAA (AGL) | 500 | 500 | 500 | 600 | 600 |
| Visibility (SM) | 1.5 | 1.5 | 2 | 2 | 2 |
| Circling Area Radius (NM) | 1.3 | 1.5 | 1.7 | 2.3 | 4.5 |

Figure 2. Design Criteria

| Circling MDA in feet MSL | Approach Category and Circling Radius (NM) | | | | |
|--------------------------|--|-------|-------|-------|-------|
| | CAT A | CAT B | CAT C | CAT D | CAT E |
| 1000 or less | 1.3 | 1.7 | 2.7 | 3.6 | 4.5 |
| 1001 - 3000 | 1.3 | 1.8 | 2.8 | 3.7 | 4.6 |
| 3001 - 5000 | 1.3 | 1.8 | 2.9 | 3.8 | 4.8 |
| 5001 - 7000 | 1.3 | 1.9 | 3.0 | 4.0 | 5.0 |
| 7001 - 9000 | 1.4 | 2.0 | 3.2 | 4.2 | 5.3 |
| 9001 and above | 1.4 | 2.1 | 3.3 | 4.4 | 5.5 |

Figure 3. Circling radii adjusted for MDA

Ceiling And Visibility

Fig. 2 also shows an inconsistency between circling radius and visibility. What are the odds of a successful approach for a category E aircraft, positioned 4.5 NM from the airport with a prevailing visibility of 2 SM? Flying close to the edge of the circling area can cause pilots to lose sight of the runway, which is why it is better to stay within the visibility listed on the IAP. Note that the prevailing visibility is the greatest over 180° of the horizon and not necessarily a continuous 180°, which can potentially lower your odds of successfully maintaining visual reference with the runway.

At airports with low circling MDAs in visual meteorological conditions (VMC), consider flying a normal traffic pattern altitude or, as a minimum, fly a higher category MDA. There's no reason to manoeuvre low to the ground other than for practice purposes (or to meet the intent of the approach on your instrument rating test).

Air Traffic Control

Circling procedures may vary somewhat depending on whether the destination aerodrome is controlled or uncontrolled. With a control tower, air traffic control (ATC) may specify the direction of a circling procedure i.e. "Circle North of RWY 27". You must comply with ATC only if you can remain

within the protected area, but keep in mind that they are probably directing you to one side or the other for a reason. If in doubt, ask for more details. Pilots are also cautioned against following ATC restrictions such as "Extend Downwind" or "I'll call your base." As per the TC AIM, RAC 9.24, "... the selection of the procedure required to remain within the protected area and to accomplish a safe landing rests with the pilot".

At uncontrolled aerodromes, especially in marginal VMC, there may be visual flight rules (VFR) aircraft operating and the potential for conflict is high. As instrument flight rule (IFR) traffic does not necessarily have priority over VFR aircraft, when determining the circling procedure, consider the VFR procedures laid out in the Canada Flight Supplement (CFS). Why plan to circle in the opposite direction to potential VFR traffic? Be a good neighbour.

Missed Approach

The GPH 204 (823) *recommends* that, in the event of a missed approach from a circling procedure, you climb, turn towards the center of the aerodrome and carry out as closely as possible the missed approach procedure for the approach flown. The importance of turning back to the airport is illustrated in Fig. 4. The pilot is on a right downwind, loses visual with the runway environment and commences a climb.

Even though it is more expedient to turn left to intercept the MA track, this may put you outside of protected airspace. In contrast, if you are flying a circling approach in the US, it is procedure to make a climbing turn towards the landing runway, then carry out the missed approach procedure for the approach flown; you are not authorized (or safe) to do any other manoeuvre.

Your ROC is now determined by the missed approach segment for the IAP flown. The 40:1 obstacle identification surface slope commences at the missed approach point (MAP), which is likely the threshold of the runway. A category D aircraft could be up to 2.3 NM plus the length of the runway beyond the MAP. Are you protected? Good luck.

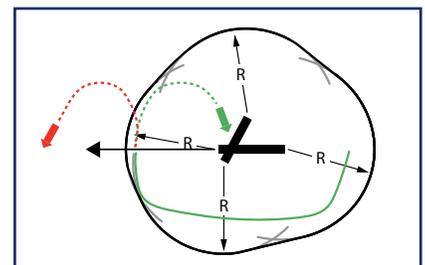


Figure 4.

I SHOOT, THEREFORE I AM

Generation #selfie in the cockpit

Originally published in *Flight Safety Bulletin 2-2016*, Official Publication of the Swiss Confederation Flight Safety Branch

Regardless of what people are doing at a given moment – playing sports, relaxing, going out with friends, etc. – it has become more and more common to take a quick photo and post it online. The enthusiasm for taking selfies in the most flattering poses possible and posting them on Twitter, Instagram or Facebook continues to grow.

Although the technology is new, the impulse is as old as humanity. Humans have always liked to portray themselves, whether in petroglyphs, clay, marble, or oil paintings.

But what makes selfies different from older forms of self-portraits is the clear intent to elicit a response. Blogger Erin Gloria Ryan, writing on the website *Jezebel*, says that selfies do not express self-confidence or pride; rather, they are a way of seeking approval.

For purely statistical reasons, the selfie generation will certainly also be present in the cockpit. A representative study conducted in Austria in 2014 by the Institut für Jugendforschung found that 57% of young people ages 14-29 take photos of themselves with their portable phones, then upload them to Web 2.0 platforms (Facebook, Whatsapp, Instagram, Twitter, etc).

The lessons learned were presented at the 2014 meeting of the Air Force Flight Safety Committee: "In addition, the committee discussed the proliferation of Portable Electronic Devices, especially Smart Phones with camera capability, and their misuse in the cockpits. A new trend that has developed with the social media is the "selfie". The members of the committee are concerned about the high level of distraction this new craze has caused and plan to launch individual PR campaigns in their own flight safety in order to educate the staff on the dangers involved."

Employees should know that their employer does not want photos – especially selfies – to be taken in the workplace. But that does not fall under the jurisdiction of flight safety.

However, bringing unauthorized objects into the cockpit (FOD) and taking the risk of breaking one's concentration while using them poses problems for flight safety. Taking increasingly spectacular photographs or even video footage in order to create a montage may lead to catastrophe. During one flight aboard a PC 7 in 1990, encouraged by their peers and eager to outdo them in shooting impressive footage, the two pilots were busy filming when their aircraft crashed, killing them instantly. The consequences are not always fatal: video footage shot by one of the pilots' friends showed that the gun was not secured during the attack on the firing location. Would that have happened if the pilot had been focused on his tasks of flying and firing? None of us can say for sure, but it is entirely possible.

Photo: Capt Andrew Jakubaitis

Outlook

After selfies, what's next? According to Beate Grossegger, the selfie trend has been buoyed by the fact that, for most Internet users, protecting their privacy is not a priority. That is still the case, but there are already signs that the trend is reversing. Among young people, there is a growing digital avant-garde who no longer count how many Facebook friends they have or how many "likes" they receive for a strategic selfie. Their priorities lie elsewhere. The new trend is to have fewer contacts, not waste time and energy on using a plethora of features, and pay more attention to the quality of relationships.

The private sphere will become more and more important, as the "digital natives" assert their right to live more for themselves without being obliged to maintain an image while under constant observation by others.

Take a picture

When passengers are transported by helicopter, taking photos is often a hazardous activity. This is true not only for civilian passengers, but also when transporting troops or during training flights with partners (police, border guards, etc): when the helicopter

"The new trend is to have fewer contacts, not waste time and energy on using a plethora of features, and pay more attention to the quality of relationships."

lands, people are already taking pictures, and they hold up their phones during the entire deplaning procedure. Sometimes passengers

move to the rear of the helicopter to take selfies, or they take them when disembarking from the aircraft, while the rotor is still turning. Some also use GoPro cameras attached to their harness or helmet.

Even if it is not possible to brief the crew onsite, it is a good idea to remind individuals in training that they must behave with professionalism. It has been demonstrated that if the aircraft commander clearly explains at the beginning of the briefing that he or she does not want to see any portable cameras on board, crew members will generally comply with that request. ✦



Photo: Cpl Mark Schombs

SKY KINGS:

Why Some Pilots Are Bad Risk Managers

by Martha King
Originally published in the December 2015 issue of *Flying Magazine*

Effectively manage risk by maintaining situational awareness and coming up with mitigation strategies for the risks you have thought of beforehand.

"You can't teach judgment." "I'm afraid no amount of 'risk management' training is going to change your attitude." These comments were in response to John's May column, "Double Trouble at Denver." John had revealed our incredible series of risk-management failures on a trip in the early '70s — getting caught in a snowstorm in two separate airplanes with mechanical problems. John then expressed our fond hope that other pilots could learn from our mistakes and practice the habit of risk management.

Then here in the pages of *Flying*, another columnist opined, "I am rather skeptical about whether risk management (judgment) is something that can be taught and tested."

The readers and the columnist are to be excused. A lot of people confuse risk management with judgment and attitude.

Actually, the practice of risk management, as John and I see it, has two main components. The first is a habit of maintaining situational awareness by systematically thinking about risks. The second is coming up with mitigation strategies for the risks you have thought of. On our trip to Denver, John and I clearly failed at both.

Regarding situational awareness, we were in the category of "fat, dumb and happy." As we were approaching Denver from the east, the weather was forecast to be good. We didn't have any concerns.

Suddenly, the weather got worse with abundant snow and ice. We had been caught by the fickle system known as an upslope condition. We had never heard of an upslope condition. We were very surprised.

We had, of course, been taught about counter-clockwise circulation around lows (in the Northern Hemisphere) and orographic lift. What we had not been taught was where the topside of a low might combine with rising terrain to create orographic lift with copious snow and ice. That "where" is in eastern Colorado.

Many pilots who get into trouble in their flying are, like us, the most surprised people on Earth. The problem is that we don't know what we don't know. In many cases regarding risk management, we are sent out the door as we leave flight training with, "Y'all be careful, hear?" but no systematic training on how to identify and mitigate risks.

An ideal way for a learning pilot to develop the habit of maintaining situational awareness is with scenario-based training during which they develop the habit of active risk identification. Much of our aviation knowledge, like counterclockwise flow around a low in the Northern Hemisphere and orographic lift, is an abstraction until we apply it in a practical scenario.

A lot of flight instruction is about learning to develop habits like meticulously inspecting our aircraft before taking it into the air, using checklists, fastening seat belts and many, many more. Risk management is just another one of those habits that, once learned, will serve us well for the rest of our flying.

These habits are often supported with mnemonics and memory aids such as GUMP, CIGAR TIP and "Black square —you're there." Pilots find them helpful.

Risk management comes with its own mnemonics. There's PAVE for putting risks into the categories of Pilot, Aircraft, enVironment and External/internal pressures. Plus, there's C-CARE for Changes, Consequences, Alternatives, Reality and External/internal pressures.

The cures to the "fat, dumb and happy" status, like John and I were in on the way to Denver, is relatively simple — learn to use habit patterns and tools to help maintain situational awareness and identify risks. The cure to the risk-mitigation component is more complicated. Many pilots are, like John and I previously were, resistant to mitigating the risks.

We've all seen pilots who came to grief after continuing in the face of one mounting risk after another. You had to ask: What were they thinking?

What made them accept risks that, in retrospect at least, were unacceptable to everyone else?

When other pilots see this they tend to call the offending pilot names like "idiot," "stupid" or "arrogant." But that response is not an adequate explanation or helpful in understanding their behavior. The answer, I believe, lies in the last "E" in both PAVE and C-CARE. It stands for the external and internal pressures that impinge on pilots. These pressures and how they affect pilots vary with the individual, but they fall into at least two identifiable groups.

"Many pilots who get into trouble in their flying are, like us, the most surprised people on Earth. The problem is that we don't know what we don't know. In many cases regarding risk management, we are sent out the door as we leave flight training with, 'Y'all be careful, hear?' but no systematic training on how to identify and mitigate risks."

The first group is, fortunately, relatively small. It is the big-shot/showoff/thrill-seeker group. They step into risk. Taking risk is a part of the fun of flying for them. This group knows they are taking risks but are sure they can get away with it.

They think risk-taking makes them look like superior pilots. There is a tendency for these pilots to keep on enjoying risk-taking until they, and their passengers, pay the ultimate price. A pilot who lost his pilot's license twice, first for buzzing the Santa Monica Pier and later for illegally selling rides to the public,

was eventually killed along with his very unfortunate passenger while attempting to touch his aircraft's tires on the water to produce a water-skiing effect for a video.¹

A Baron pilot killed himself and four passengers attempting the aerobatics he saw performed in a Twin Beech at Sun 'n Fun. He had attempted to do the same maneuvers on an earlier flight, but a pilot-passenger in the front seat had prevented him.²

These showoff pilots see professionals do things and think they can do them too. They fail to understand that the professionals have worked up to a high level after years of careful training and practice. Plus, professional show pilots are keenly aware of the risks and see risk mitigation as integral to what they do for a living. The best hope for the showoff/thrill-seeker is to realize that to be anything less than equally focused on risk management is a sign of a rank amateur.

The second group potentially includes most pilots, including, I believe, John and me in the '70s. We all became pilots because we were willing to take on a very tough challenge over an extended period of time. We studied a body of knowledge and then submitted to a test on it. We learned difficult skills that we weren't certain, in the beginning, we could master. Nearly every learning pilot says at one time or another, "You know, I'm not sure I'm going to be able to do this." Then we soloed and took our lives into our own hands thousands of feet above the ground. We persisted, presented ourselves for evaluation and became certificated pilots.

Flying self-selects people who are willing to do all this. They are good at almost everything they do. They are the movers and shakers of every community they belong to. They are

Continued on next page

DOSSIER

hard-wired to complete what they set out to do. This goal orientation is a wonderful characteristic in almost all of life, but as a pilot it can be a risk factor. It tends to make us want to keep on going when good risk mitigation says we should change our plan.

An Episcopalian priest who took one of our ground-school classes in the '70s was also a physician. He died on a solo cross-country after being begged by the FBO to come in to talk before he turned around and flew the second leg in worsening weather. He had to get back in time to give a speech to a large crowd.

A friend of ours who owned a ski resort was leaving the resort in the evening in his Cardinal when he became disoriented and flew back into the ground. He was late for a meeting back in town.

And, of course, John and I continued into worsening weather to maintain our schedule into Denver. We weren't courting risk or showing off. We were simply hard-wired to complete what we set out to do and resistant to anything that reduced the utility of our flying.

Like the showoffs, the goal-oriented pilots know they are taking some risk, but they think they can get away with it and they hate to give up on goals.

After we had our subsequent accident, John and I spent considerable time reflecting on what it was that made us in particular resistant to mitigating risk. As a result, we came to terms with the concept that while in GA we don't want or need to be as rigid as the airlines, we have to accept reasonable limitations on our utility. We consider our introspection on the subject time well spent and highly recommend it to anyone who flies. ✈

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Photo: MCpl VanPutten

LESSONS LEARNED



Photo: DND

“If you can keep your head...”

by Major Trevor Lantz, 1 Canadian Air Division Flight Safety (Rotary Wing)

Flight Comment articles normally relate the tales of aviators, technicians and controllers on what they learned at some point when flight safety (FS) was compromised. Unfortunately, I have not come across an article relating the experience of any FS investigators having to respond to catastrophic occurrences. I am not referring to reports that are delivered on the findings, and recommendation on preventative measures. What I would like to relate to you is what I have learned during my time as a FS Officer about initially responding to catastrophic occurrences. However, in order to give advice on that, I need to quote the advice of someone else.

A famous British poet named Rudyard Kipling wrote the poem “If” in 1895. It takes the form of a father giving advice to his son, and the first two lines of the poem read:

*If you can keep your head when all about you
Are losing theirs and blaming it on you.*

This superb work espouses the critical importance of self-discipline and stoicism when faced with chaotic and traumatic events.

I recommend this excellent guidance to anyone and everyone. But especially I would endorse its applicability to FS personnel.

“The Wing’s Emergency Response Plan does not belong to FS (or rather it shouldn’t). FS personnel are advisors only until all the fires are out, the people have been taken care of, and the area made safe.”

The first and most important guidance relates to preparation! The reality of aviation is that - it is not a matter of if a catastrophe will happen, but a matter of when. Unless your team asks all the “what ifs” before an occurrence, you won’t have the answer for your boss when asked “What do we do now?”

My next recommendation: let the experts do their job! The Wing’s Emergency Response Plan does not belong to FS (or rather it shouldn’t). FS personnel are advisors only until all the fires are out, the people have been taken care of, and the area made safe

FS provides information to the emergency responders, and reports to command what is taking place. Only after all of those things are completed will a site be turned over to FS for the investigation.

The last bit of information I would like to pass along is relate the facts, not opinions! If a FS team has properly prepared themselves, the information they convey to emergency responders and command will be exactly what they need, the facts about what is going on. “What are the hazards in the area?”, “What was supposed to be taking place?” and “What really did take place?”

If you can be the rock of calm competence when disaster strikes, then you will be exactly what your comrades and commander need you to be. When you can achieve that, Rudyard Kipling would say that:

*Yours is the Earth and everything that’s in it,
And—which is more—you’ll be a Man, my son!* 🇨🇦

Jack of All Trades

by Master Corporal Noel Miller, Helicopter Operational Test and Evaluation Facility, Shearwater

In the fall of 2014, I was a student on the CH148 Cyclone Helicopter Servicing Course taking place at the Maritime Helicopter Training Centre (MHTC) in Shearwater, Nova Scotia. I had spent 8 years in Cold Lake in 1 Air Maintenance Squadron (AMS) Avionics Labs and then a posting to 12 AMS Avionics Labs. Up to that point, I was a career lab rat. After 13 years in the CF, my experience with 1st line operations was limited to my 14 month apprenticeship as a Private. I had very little experience servicing a helicopter. But one thing I remember doing as a Private numerous times was jacking an aircraft.

This particular Friday afternoon, our instructors demonstrated the jacking of the Cyclone. The first group of students carried out the job, completing the raising and lowering in short order. Once it was our group's turn, another student and I were tasked with jacking the nose. We grabbed the jack, placed it in position and started the jacking process. When we checked all the locking rings to ensure all were free moving we noticed the third stage was jammed. It was as if someone had spun it all the way up the ram and it was jammed against its stop. From past experience, I thought the jam ring should have a stop peened into the threads of the jack. While trying to unjam the lock ring, my partner managed to spin the lock ring completely

off the ram. At that point, the jack was unserviceable and should have been replaced. At the very least, the instructors should have been notified. My partner, a Sergeant, spun the lock ring back on and proceeded to get the jack settled, level and even on the floor. The jack was not sitting evenly just as it was starting to take the weight of the aircraft.

"The jack was not sitting evenly just as it was starting to take the weight of the aircraft. My partner gave the jack a good kick, a common practice to shift the jack slightly, and the jack suddenly collapsed."

My partner gave the jack a good kick, a common practice to shift the jack slightly, and the jack suddenly collapsed. Hydraulic fluid flew everywhere and the aircraft dropped about 2 inches. No one was hurt, however. If the aircraft had been up on jacks at full extension, I'm sure there would have been injuries or something worse. We were lucky.

After some reflection of this particular incident, I have learned the need to carry out all tasks with a methodical attention to detail. And when something doesn't seem right, speak up. That's always been important regardless of the fleet you maintain or operate. I found that it's especially important in a program like the Cyclone, where the corporate knowledge base is just developing. The same could be said with new and inexperienced technicians or aircrew.

After a year in the Helicopter Operational Test and Evaluation Facility and in the Maritime Helicopter Program, we transitioned through the difficult process of accepting the helicopter in June 2015. Now it's the everyday struggle of an immature maintenance program. This reinforces the requirement to approach every task with critical eyes, to slow down and if something is not right, speak up. 🚩

Photo: LS Dan Bard



LOST in Translation

by Captain Dean Saroop, 414 Electronic Warfare Support Squadron, Ottawa

Most flight safety stories don't occur on beautiful, clear-sky days with a well-rested crew qualified to conduct the mission they are assigned; but on one fateful day that's exactly what happened.

I'd previously had some issues with air sickness. Since another crew member was going to the medical inspection room to get some medication, I figured I might as well go get some myself. So together, off we went to the flight surgeon in order to get air sickness medication prescribed to us. We got our prescription and headed over to the pharmacy. I was on temporary duty at a French language base and the pharmacist spoke no English. Being primarily Anglophone but thinking that my French language comprehension was functional enough, I saw no issue with her giving us the medication and listening to the requisite guidance that came along with it.

She told me that they didn't have the exact medication that the doctor had prescribed but that they would be able to give me a substitute for one day and that I could come back tomorrow to get the rest.

After taking the meds as "advised", I started to feel extremely tired and ended up falling asleep in the aviation life support equipment room while waiting for our flight. After a short nap I woke up, put on my gear and went flying. The next day when we went to the pharmacist to



Photo: Canadian Forces Combat Camera

get the rest of the medication I was surprised when she only gave me one set of "uppers" – the medication that is commonly issued with airsickness pills. I asked where the actual air sickness medication (the 'downers') was.

"Being primarily Anglophone but thinking that my French language comprehension was functional enough, I saw no issue with her giving us the medication and listening to the requisite guidance that came along with it."

She explained that yesterday she had given me four days' worth of "downers" and one day's worth of 'uppers' which I had misconstrued the day prior thus explaining my drowsiness.

In hindsight, I should have asked someone more comfortable with speaking French to translate the pharmacist's direction for me. Second, I should have also caught the error when I felt far more tired than I normally would have after having a good night's rest. The take away lesson? Ask when you don't fully understand a question and when you use the "I-M-S-A-F-E" checklist before flight, take a moment to assess if at that moment you truly are *safe!*

Pushing the *Weather*

by Captain Steve Pellerin, 408 Tactical Helicopter Squadron, Edmonton



As a brand new co-pilot on the CH146 Griffon helicopter in February 2011, I was tasked to transit an aircraft from Edmonton, Alberta to Mirabel, Quebec where it would undergo a heavy maintenance periodical inspection. My crew was comprised of a newly upgraded Aircraft Captain (AC) who had recently returned from Afghanistan and a senior Flight Engineer (FE). This trip from Edmonton to Mirabel was going to be my first cross country with the unit and I was very excited to travel across Canada at low altitudes.

We originally set a goal to leave early and make the city of Winnipeg, but on the day of our departure, our aircraft required maintenance, thereby delaying our departure from Edmonton until noon.

We arrived in Saskatoon 2.5 hours later for fuel and planned to make Dauphin for another fuel stop along our route. Unfortunately, this time we encountered deteriorating weather below 250 feet AGL and decided to divert south to Regina, where we eventually spent the night. This weather call and follow-on actions were done at the right time and place on our trip.

Arriving at the fixed base operator at 0800 local the following day, we planned to fly to Winnipeg but the weather along this route was marginal at best, so we elected to wait. At 1600, based on the METARs/TAFs from airports along the route and the GFAs, we decided to launch. The ceilings started at around 3,000 feet AGL, but as we continued east they progressively deteriorated.

By 1700, the ceilings were lower than 1,000 feet AGL with light precipitation. We moved down to 500 feet AGL and continued. By that point, the AC made the call to stop in Brandon with the deteriorating

"As a seasoned AC looking back at this scenario, I believe that in our case the mitigating factor would have been honesty with ourselves and taking appropriate action when and where we had earlier briefed to do so."



Photo: Cpl Jonathan Barrette

weather as the sun was setting. Our FE mounted his Night Vision Goggles (NVGs) and then assisted the two pilots. At this time my NVG experience was limited, so mounting and adjusting while flying during a day to night transition was new and challenging. Soon after, the weather worsened and we descended to 250 feet AGL while slowing to 90 knots. Approximately 30 miles short of Brandon I distinctively remember seeing wind turbines along the highway. We altered course to fly around them and my AC was cursing that these were not on his map.

To make matters worse, the ceilings dropped to around 250 feet AGL and we adjusted our flight path to stay below. It started to rain and both pilots noticed ice building on the lower windshield. Not long after being turned on, the right

hand windshield wiper seized. The only way to clear my side of the cockpit was with full hot air defrost. For the remainder of the trip, the AC had control of the aircraft and all three crewmembers were looking out and calling obstacles as they appeared. We found ourselves following the Trans-Canada Highway at speeds below 80 knots and looking for possible places to land. The rain showers were on and off and the windshield barely had time to melt before ice started to accumulate again. We frequently did cockpit and controllability checks to make educated assumptions about the amount of accumulation on the airframe.

The best part of this trip was when we heard the Brandon ATC clearing us to enter their airspace under the Special VFR procedure.

After landing, shutdown and changing my pants, we did our post flight drills as a crew and unanimously called it a day. The remainder of our cross country to Mirabel was uneventful.

As a seasoned AC looking back at this scenario, I believe that in our case the mitigating factor would have been honesty with ourselves and taking appropriate action when and where we had earlier briefed to do so. In essence this "Conditions Check" of the weather would have cemented a contingency plan and the crew would have acted once our weather minimums were no longer met. Aviators should always be prepared to react to changing situations and alter their original plans instead of taking it with them down the rabbit hole. 🐇

Red Flags

by Master Corporal Thomas Underwood, Lord Strathcona's Horse (Royal Canadians), Edmonton

Every now and again each one of us senses that “this isn’t right” feeling. Whether you call it your conscience, *Spidey Sense*, or a mental red flag: they all indicate something is contradicting your instincts or training.

I was a newly qualified Detachment Commander for the Raven B mini unmanned aircraft system (MUAS). Eager to practice, I deployed to the field for a few days during a major training exercise. The rest of my unit had been in the field for a few weeks and had developed some standard operating procedures read: “habits”. On one of the first missions, the other MUAS operators wanted to show off their skill and suggested we use a new method for launching the aircraft. This “method” involved parking the armoured vehicles deep into a thick wood line then launching the aircraft from atop the vehicles.

After they proposed this idea, the first little red flag went up in my mind. Great idea tactically, I thought although it doesn’t leave any room for a failed launch. The rest of the team assured me this wouldn’t be a problem. So far I hadn’t witnessed a bad launch (except that one time my instructor threw the Raven B straight into the ground instead of into the sky). Also, they assured me they would chop down any trees too close in proximity to the direction of the launch. At this point I had less experience flying the Raven B than the other guys and as far as I gathered, they knew what they were doing. With everyone in agreement, the plan was set.

When we arrived at the launch site I saw that it was a really great spot to hide, but the trees were much higher than I had expected.



Photo: Lt. Mike Forestell

“When we arrived at the launch site I saw that it was a really great spot to hide, but the trees were much higher than I had expected. It wasn’t an ideal launch site and another red flag went up: the other operators and Detachment Commanders assured me they had been doing this the whole exercise.”

It wasn’t an ideal launch site and another red flag went up: the other operators and Detachment Commanders assured me they had been doing this the whole exercise. Their confidence did little to assure me. This was still my mission, I was in control, and I could have done it the correct way if I chose to.

There was another factor influencing my decisions that day. We had a Joint Terminal Attack Controller attached to us and an Alpha Jet on station for a limited period of time.

We were training to integrate reconnaissance and aerial surveillance with a fast-air attack capability. The clock was ticking.

I had to decide if we would launch where we were. I thought to myself, we are already here, the troops already chopped down all the trees that could get in the way and the others are confident this will work; ok, let’s get this thing in the air. Immediately after the pre-flight was completed, I gave the order to launch. The Raven B climbed aggressively like it always does and banked hard right into a tree.

When we recovered the aircraft it had some minor damage to a wing and several consumable parts were broken. Now the mission would have to wait for us to repair, reset, and launch the correct way. I had a feeling this might happen so why didn’t I avoid it? We should always pay attention to those mental red flags. When your instincts tell you “this is less than ideal” don’t become complacent – abide by your better judgment and training. 4

Wobble Bubble

by Captain Pat Mercier, 2 Air Expeditionary Squadron, Bagotville

The Canadian North is a great area to fly in, with its beautiful landscape and wide expanses of uninhabited land. Such remoteness however has its drawbacks and for an aviator, a sparse populace and limited radio communication can be worrisome. Any risks that are associated with operations in isolated areas can be mitigated by good planning and good equipment.

On one particular day, we were scheduled for a long flight in the Northwest Territories from Norman Wells (CYVQ) to Wrigley (CYWY) to Whati (CEM3) and return – all of it on a flight itinerary. We were planning to refuel at Whati using the manual fuel pump, aka the ‘wobble pump’ from a fuel cache that had been recently prepositioned there. With the North being as vast as it is, we landed with not much more than the required minimum fuel; for the remainder of the trip we would depend on fuel located at the cache. We rolled a fuel barrel next to the helicopter, and dropped the rigid intake tube of the pump into it. Next we put the pump’s flexible hose in the helicopter and started pumping. We got the typical wobble sound, but no flow whatsoever. We pumped and pumped and pumped, but all we got was the wobble sound. Finally, we heard a faint bubble sound. We then discovered that the bubbles came from the fuel barrel, and were generated by the pump, which is abnormal because the pipe in the barrel is obviously supposed to suck in, not blow out. We investigated further and found that the exit point, the hose, was in fact sucking air in. The pump was functioning, but in reverse. With no spare pump, no tools to fix the one we had, not a living soul within radio range to give us a hand



Photo: MCpl Angela Abbey

let alone no cellular service or SATCOM, we had very few options. We elected to try to install the pump upside down, with the rigid intake pipe in the aircraft and the hose in the barrel.

"Afterwards, the pump was disassembled at the squadron. It was found that the check valve in it was installed upside down. Since the pump is rarely used, it went unnoticed for a long time – that is until it was desperately needed."

Needless to say, as it was not designed to operate in that fashion, the evolution proved very awkward and the results not very

efficient. Nevertheless, it was better than nothing and it eventually worked. After what seemed an eternity, we finally had enough fuel in the helicopter to make it back. We returned home without further incident.

Afterwards, the pump was disassembled at the squadron. It was found that the check valve in it was installed upside down. Since the pump is rarely used, it went unnoticed for a long time – that is until it was desperately needed.

In the end, had we not been able to leave on our own, help would have reached us eventually in the form of a SAR response triggered by an overdue flight itinerary. However, all of this could have been avoided by a simple functional check of the equipment at home-base long before the exercise even started. 🚩

Epilogue

TYPE: CT114058 Tutor
LOCATION: Moncton Airport, NB
DATE: 25 August 2015

A Snowbird aircraft (CT114058) was diverted from the rest of the deployed team due to an in-flight emergency. The aircraft was repaired, including a successful maintenance test flight, and was refuelled for a later departure to re-join the Snowbird team. As the aircraft was being prepared by a technician, the pilot was showing it to students from the local Flight College on Tuesday 25 Aug 15. At approximately 1750 local in Moncton, NB, the technician was topping up the right hand main tire with a borrowed nitrogen cart, the technician misread the gauge and the tire was over pressurized causing it to explode.

The investigation focused on why an experienced technician would misread a gauge and the reasons why technicians across the Royal Canadian Air Force (RCAF) forgo the use of the inflator assembly kit which prevents the over inflation of tires. The investigation also looked into the practice of conducting servicing on an aircraft while being showcased to civilians.

The investigation concluded that all reasons why technicians elect to deviate from the Approved Maintenance Program by not using the inflator assembly kit, either because of lack of availability or familiarity with the kit, are avoidable. Preventive measures are recommended to alleviate those circumstances.

The investigation also put forth safety recommendations with respect to showcasing aircraft that are being maintained and that the inflating procedure manual be clarified to alleviate any potential confusion. ✦



RCAF completes flight safety training for second group of Ukrainian Officers

By Mr. Jacques Michaud and Major Barry Devereux

After an intensive 15-day course, 30 Ukraine Armed Forces (UAF) officers from the Air Force, Navy and Army graduated from Ukraine Flight Safety Course (UFSC) at the Hetman Petro Sahaidachny National Army Academy in L'viv, Ukraine on February 24, 2017.

This is the second course of its kind to be run by the Royal Canadian Air Force (RCAF) under the auspices of Operation Unifier. The previous course ran in November 2016, with 34 officers graduating.

The UFSC RCAF staff was supported by Joint Task Force–Ukraine, and augmented for the delivery of the training by three officers from the UAF, one from the Polish air force and one



Photo: Cpl Daisy Hlebert

The Ukraine Flight Safety Course crash exercise scenario was set up at the L'viv Airport. The scenario involved the crash of a helicopter near a Joint NATO/Ukraine detachment at an international airport not located in Ukraine or in a NATO country. Course candidates were divided into four groups; members of each carried out the immediate crash response procedures they had developed in the classroom earlier.

from the Czech air force. The graduates successfully completed a recognized International Civil Aviation Organization (ICAO) Aviation Safety Management training and were granted an ICAO certificate. In addition, the course was complemented by multiple RCAF lectures on how safety management is implemented in Canada and an RCAF certificate was also granted “My team is very proud of the results achieved,” said course director Jacques Michaud, a member of the RCAF’s Directorate of Flight Safety. “The course critique has been excellent, more so for the second course, where our establishment was increased to meet the logistic requirements and the course material translated entirely, printed and made available to the candidates at the beginning of the course.

“The simulated crash exercise designed to practise immediate crash response was extremely well received by candidates,” he continued. “Overall, these officers have shown a keen interest in the material presented, and asked numerous questions. The ICAO aviation safety management standards and practices provide any nation wanting to build a modern aviation safety program with a sound doctrinal base. This is why this course was proposed to, and ultimately endorsed by, the UAF.”

The second serial also benefited by the vibrant presence of the Director of the Ukraine Aviation University, Professor Galyna Suslova, an ICAO expert involved in the coordination of ICAO safety and security management in



Photo: Cpl Daisy Hlebert

Colonel Steve Charpentier, Director Flight Safety, briefs course candidates on “flight safety in combat” during the first week of the Ukraine Flight Safety Course.

Ukraine. She gave a forceful lecture on the merit of ICAO standards and practices, and participated in the international panel which discussed the challenges faced by a state to implement a performance-based aviation safety program.

This course completes the mandate given to the RCAF to train 60 officers in aviation safety management in Ukraine. Moreover, four of the graduates, including two of the UAF augmentee instructors, had previously attended the RCAF Flight Safety Course in Winnipeg, Manitoba, through which they gained a deeper understanding of the RCAF Flight Safety program. Colonel Zhydkov, the UAF Air Force chief of flight safety, is exploring avenues for future training in areas that would be aligned with the UFSC course syllabus or in other aviation safety topics including airworthiness and risk management. ✦