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Flight Comment

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Canada

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BRAKES NOW!!

Many years ago, while stationed in Lahr, we were towing a CC-137 Boeing aircraft in preparation for a trans-Atlantic return trip. Due to construction on the inner ramp, we only had one runway cut-off — essentially, only one way in and one way out. To add to the cramped quarters, the ramp itself had a fairly steep incline, which allowed for reasonably fast run-off during rainstorms. In the case of the Boeing, this presented some unique challenges when it came time for the start, reposition, and taxi sequence.

The aircraft was already fuelled and the cargo was loaded and the passengers were just beginning to board as a fairly intense downpour swept through the valley and across the airfield. The maintenance crew positioned the tow-tractor in front of the aircraft in preparation for the tow job needed to reposition the aircraft to the crest of the ramp. As we reached the top, the weight of the fully loaded aircraft caused it to begin to roll down the other side. That's when "it" happened. A combination of the slick ramp plus the problem of the aircraft not being directly positioned behind the mule caused an uncontrollable jackknife that resulted in the tow bar snapping and the mule heading off approximately sixty degrees from the nose. The technician in charge of the start crew calmly, but rather forcefully, repeated over the intercom to the pilot "BRAKES NOW!!"

Miraculously, there was no resulting damage to the aircraft, nor was anybody injured. I can personally attest though, the technician behind the wheel learned a valuable lesson that day about forethought and planning.

At the risk of this sounding like just another "war story," I would like you to stop and answer the following questions. When you prepped and recovered your aircraft today, were conditions safe?…did you rush too much?…was everyone on the start crew focused and prepared to react to the unforeseen? With the potential deployments we face, we must remember to be vigilant and stay safe in every way. ◆

Master Warrant Officer Hamon

A Cross-Country, LOCK-WIRE Trip

In my time as a maintenance technician, I have learned many lessons: some small and some big, and some that have stayed with me throughout my career. Early in my years as a technician, I was asked to perform a main rotor-head torque check on a CH-124 Sea King helicopter. The aircraft was late in leaving for a cross-country ferry trip to CFB Shearwater and the push was on to get the plane on the ramp. Being a relatively new guy to the hangar, I was keen to make a good impression so I set off, CFTO's under my arm, to do my assigned job. I stopped by the tool crib to get the appropriate toolboxes and signed them out as per our SOP's. As I passed by the rag counter I picked up ten rags, signed for them also and carried on towards the helicopter. On my way across the hangar floor, I passed by the lock-wire station and grabbed a roll of .040 lock-wire.

At the helicopter, I set to work and took the fairings off. Then I removed the hydraulic components and the lock-wire from the main motor head retention bolts. I carried out the torque check as per the book and found it to be serviceable. After reinstalling the lock-wire, I got the independent check completed, installed the hydraulic components, and carried out the functional test and the leak check on the fold system. After I finished with the rotor head fairing, I signed in my tools and did the proper paper work. The aircraft left for Shearwater shortly after I was finished. The rest of the week went by just as any other week until the time when I was called to the servicing desk to receive a phone call. To my surprise, it was the flight engineer from the cross-country ferry flight. He was nice enough to inform me that a roll of .040 lock wire came across the country with him. He found it sitting in the upper star of the rotor-head, under the fairing.

As you can imagine, I was quite surprised and shocked that I could have allowed this to happen. It has been a lesson that has stayed with me throughout my time in the Air Force. I don't consider it to be an embarrassment but, rather, I use it as an experience to make me a better technician. I am passing this story on to you, my fellow technicians, in hopes that reading this will allow you to avert a potentially serious event and to not make the same mistake. ◆

Master Corporal Whitford

ASSERTIVENESS Could Make the Difference

The way people interact with each other can vary from one extreme to the other, from passive to aggressive. Some of us will go the whole range from time to time, while most of us will tend towards one end or the other. The balance between passive and aggressive is assertiveness. A lack of assertiveness can lead us into situations that are uncomfortable and unsafe. At the beginning of my training, regardless of my normal character, I found it very difficult to assert myself because I was well aware that I was nowhere near as knowledgeable or as qualified as the people I was working with. I once accompanied a corporal to change a part that I had already changed that day with another technician.

The corporal removed the "unserviceable" component and began to replace it. I had thought from the beginning that he had removed the wrong part but was not completely sure. I began to doubt myself because I was sure the experienced corporal knew what he was doing. But, then he started having problems hooking up the part. I gave him a couple of minutes of struggling and then asked meekly "are you sure it's not supposed to be changed with this part instead?" He took a deep breath and I thought he was about to roll his eyes and say something cruel. Instead, he just stood back a bit and took another look at the whole thing. I was right! He then got on with the correct job.

Following that, he asked me not to say too much to "the boys" because they would give him a really hard time if they knew I had corrected him. So then, not only was I unassertive in pointing out his error to him, I was also unassertive in reporting it. All too often we keep quiet and don't let people know what we are thinking. If you find yourself saying, "I knew something was going to happen" then perhaps you should instead ask yourself "why didn't I say anything?" It could make the difference. ◆

Lieutenant Miedema

CAN DO or NO, CAN'T DO

This happened quite a few years ago. An Aurora had flown into a flock of ducks while doing touch and goes in Summerside, PEI. The aircraft landed safely but had sustained significant damage requiring a mobile repair party (MRP) from CFB Greenwood. The crew chief informed me that I was part of the team being sent to repair this aircraft. Our task was simple; carry out a temporary fix and get the aircraft back to Greenwood. We had five days to get it done.

The next morning we flew to Summerside and started to assess the damage on the aircraft. The damage was quite extensive and the time frame that was given to us for the completion of the job seemed unrealistic. But, as always, the "can do" attitude prevailed and we went to work. Parts were ordered and within 24 hours they were delivered. By day three, the #2 propeller and the starboard leading edge were replaced. A temporary fix was carried out on a wire bundle. The aircraft was ready for a ground run and it seemed as if we were going to make our timings. Our sergeant was happy.

At about that time, our airframe tech noticed a very small amount of blood in one of the heat exchangers intake. A duck had gone in, made a 90-degree turn and impaled itself through the heat exchanger. Well, two days later, we were again ready for a ground run and still thought we might make our timings. We towed the aircraft out and, for some reason, we were given a run-up spot at the far end of the airfield. When doing a run-up on an Aurora, we use large, heavy-duty, roll-on type chocks to lock the aircraft into position. Unfortunately, the only run-up chocks available belonged to the Tracker and they were too small. The "can do" attitude showed up again and a decision was made to run with no chocks. The ground run was going well and we were finishing our last check when the brakeman called out "we're moving." I retired the power levers and a combination of reverse thrust and resetting the brakes stopped the aircraft twenty feet away from its original run-up spot. Well, a few more days work and a brake compensator later, the aircraft was flown back to Greenwood.

Some might look at this and say "what's the big deal; nothing happened" and in a sense they're right. But…what if we were parked closer to a hangar or another aircraft was taxiing by at the time? The outcome could have been very different. Run-up chocks could have been sent from Greenwood and it would have only delayed us by a day. But, the Sergeant was under pressure to get the aircraft back to base and we all had the "can do" attitude. As a crew chief, I'm well aware of pressure that is imposed on you. You finish one priority job only to find out that two more are waiting. Lack of qualified technicians, high operational tempo, and the "can do" attitude may cause some technicians to cut corners. As a supervisor, it's our responsibility to identify when too much pressure is being imposed on the technician. We can reduce the pressure by slowing down the tempo or by just saying "no, can't do it sir (ma'am)." ◆

Sergeant Friolet

TO or NOT TO Teach!

The events of which I speak took place one afternoon while I was monitoring an air traffic controller in the control tower. The tower staff that day included our regular complement — a tower assistant, ground controller, tower controller, a second tower controller, and a shift supervisor (me!). As posting season had just passed, there were new personnel in each position under checkout.

As shift supervisor, my duties involved supervising the overall operation of tower staff, as well as the handling of traffic in my position. While monitoring the controller under checkout, Barry, my responsibilities were primarily the operation, and, secondly, education — aiding Barry in the process of achieving facility qualification. I was also responsible for evaluation — I had to rate how Barry was progressing. Barry was an experienced controller who I had worked with in the past, and he was progressing well at our unit.

The afternoon traffic was rather light and we soon fell into our regular pattern discussing various scenarios and tower procedures. The second qualified controller on duty was also experienced and soon joined in our discussions. We were both enthusiastically showering Barry with sound advice on how things should be done. While this was going on, traffic was slowly starting to build up. VFR traffic in the circuit was mixing with IFR traffic and Barry was doing a good job. Scenario discussions between myself and the other controller continued with zeal until I realized that I wasn't paying close enough attention to Barry, who was getting quite busy. For a moment I had to sit back and take in what Barry was doing in order to reacquire my "picture." Barry did his usual competent job and traffic dwindled down to nothing.

I realized the errors in our ways and decided to discuss them with the rest of the tower staff at that time, as there was no longer any traffic. First of all, I was too confident of the abilities of my trainee. As long as he wasn't yet unit-qualified, he was operating on my license. He deserved all of my attention and in my eagerness to educate, I let off on actual monitoring, which leads to the second lesson. Number one priority is operation, not education. Had Barry made a mistake, or gotten in over his head when we got busy, I would not have been in a position to bail him out. I had gotten so engrossed in "education" that I had allowed myself to lose my situational awareness. Thirdly, my confidence in Barry's abilities caused me to lower my guard, and thus jeopardize the operation.

The responsibilities of monitoring are many and deserve full attention. While work related discussions are of great benefit in training, they should not come at the expense of operations. Concentration on the job at hand is paramount, and should not take a back seat to anything. ◆

Capt. VanBerkel

Santa Avoids Catastrophe —

NORTH POLE — A catastrophe with worldwide implications was recently avoided here, thanks to the timely incorporation of the five steps of risk management. St. Nicholas "Santa" Claus, president of Jolly Old Elf Enterprises and head of the world's largest toy making elf cartel, had been considering the cancellation of Christmas due to inclement weather prior to implementing risk management (RM) practices.

"Flying around in a sleigh pulled by eight tiny reindeer is a risky operation even under the best conditions," explained Claus, whose considerable weight adds even more risk to the equation. "When you throw bad weather like we've been experiencing into the mix," he added, "it would have been easy to make a snap decision and say, forget it, this is too risky".

Claus said that he and his crew have a checklist to follow, and that Claus himself even checks the list twice. However, there was no standard operating procedure (SOP) in place for dealing with the unexpected, like this year's blizzards. Fortunately for good little boys and girls everywhere, prior to making a final decision on Christmas' fate, Claus checked with his safety elf, who recommended implementing the five-step RM procedure. This procedure required Claus to gather input from all personnel — from the tiniest eleven workers to Mrs. Claus — then discuss that input with all hands.

The first step was to identify the hazards. "Many risks had already been identified and had been included in our SOP since the first Christmas," Claus said with a nostalgic smile, "There are always the slick rooftops, the breakneck timetable, and the risk of fire when I'm going down a chimney. But, due to the severe weather, new hazards were identified which required us to put a temporary hold on operations while we moved to the next step."

That second step was to assess the hazards, something Claus did with help from his reindeer flight crew. "Visibility was practically zero," said Donner, the wingman, "and that was one of the critical factors we identified during the assessment. I mean, our crew is good, but we're not infallible. We fly in visual flight rules (VFR) weather — if we can't see, we can't fly." The poor visibility hazard was assessed for severity of potential outcome as well as its probability of happening, and Claus and his safety staff came to the conclusion that a catastrophic outcome was probable (given his age and gradually failing vision), so the assessment resulted in an "extremely high" risk category; mitigating action was clearly required.

Once the hazards were identified and assessed, Claus tackled step three: developing risk control measures. "If we were grounded, that would mean cancelling Christmas and breaking all those little hearts," Mrs. Claus pointed out. "Nobody else in the North Pole chain of command could make a decision like that. That responsibility rests solely with the big guy."

Before proceeding to step four: making control decisions, Claus called a meeting to discuss the decision… a move that proved provident. "One of our junior elves came up with the idea that saved Christmas," Claus said. "It just proves the value of getting advice from all quarters." The elf, a stable attendant named Lotsa Hay, pointed out to the assembly that a young reindeer in training had an olfactory anomaly — a very shiny nose (VSN) — that might be bright enough to penetrate the whiteout, making it possible to go ahead with flight operations. A subsequent practical test of the VSN proved that it shined — you could even say it glowed — with such intensity that visibility was markedly improved. "I was a little nervous getting called up to perform in front of the old man on short notice like that," said Rudolph

A Risk Management Success Story

Reindeer, owner/operator of the VSN, "but when he patted me on the back and said, 'won't you guide my sleigh tonight?' Well, it's a moment I'll never forget."

With the decision made to reduce the risk via the VSN and to accept the residual risk (which although managed, still existed) and fly, Claus ordered the implementation of that decision by having Rudolph and his VSN hitched to the front of the team. Claus knew he must continue to supervise and review, the fifth step of Risk Management, throughout the flight in order to re-evaluate in case conditions changed. "There was still a chance we might have to abort at any time," Claus said of step five. "As important as the Christmas gifts are, the safety of my elves and reindeer will always be my primary concern. After all, as long as they're healthy, there will always be a 'next Christmas.'" Claus knew that the purpose of Risk Management is to preserve operational capability.

Like so many Christmas stories, this one has a happy ending. Jolly Old Elf Enterprises updated their SOP's to include changes in the weather and to set guidelines for maximum acceptable risk. The toys were all delivered ("if your readers didn't get one," Claus said with a wink, "it wasn't because of the weather.") and Rudolph went down in history. Since then, Claus has been traveling the lecture circuit singing the praises of Risk Management. In fact, I heard him exclaim as he drove through the storm, 'Merry Christmas to all, and to all a safe flight'." ◆

Lance Lindley
Winton "Winky" White

With USAF adaptation by Mrs. Karen Kinkle

Amended by DFS, with kind permission of Mrs. Kinkle, to fit the Canadian model

A SHOCKING Tale!

As an avionics instructor in 406 Helicopter Training Squadron in Shearwater, my duties included the maintenance of the benches in the labs where the courses were run. This was generally not a very taxing duty and, in the Warrant Officer's eyes, it kept me gainfully employed when the instructional workload was not that heavy.

On one particular Monday morning, after returning to work from what I believed was a well-deserved two weeks leave, I was informed by the senior instructor (SI) that the renovations in the east wing of the building had been completed while I was away. He also told me that the bench for an upcoming maintenance course had been moved into one of the newly renovated labs. My job was to set up the lab and ensure that everything was operating serviceably before the start of the course on the following Monday.

At first glance, the new lab appeared to be a big improvement over the older, circa-1950 labs to which we were accustomed but, as expected, the bench was unserviceable and would require some work. The problem, luckily, did not appear to be a showstopper and, in a short time, I realized that the problem was not with the bench but with the power supply to the bench. The three phase circuit breaker located beside the bench confirmed that power was indeed coming into the lab and, after cycling the breakers and taking a couple of quick measurements, I verified the serviceability of the panel itself. I was confident that I had isolated the snag down to the receptacle that the bench was plugged into, but it was already five minutes into coffee-break and I decided to get my caffeine fix before fixing the problem.

When I returned from my break, and after a quick check of the breaker panel to ensure power was indeed off, I began dismantling the receptacle. I felt the screwdriver flying out of my hand and my shoulder blades digging into the bench behind me, not to mention the jolt from the 400 Hz. It took me a while to realize what had just happened, although it didn't seem possible. I couldn't have been zapped, because I had checked the breaker before I started. But, then again, I hadn't checked the plug or I would have discovered that it was live. Apparently, while I was on break, the class in the lab next door powered up their benches which, as I later found out, also supplied power to the receptacle on which I was working.

During the renovations, some of the walls were moved. In fact, four rooms had been made into three and, as it turned out, the receptacle on which I was working and the breaker next door had previously been located in the same room. Luckily for me, I was not seriously injured nor was anyone else hurt by my flying screwdriver. However, the possibility of serious injury and/or damage to equipment existed. After working on the same equipment doing the same job for a number of years, I had become complacent and over-confident in my abilities, disregarding basic safety rules I had learned early in my trades training. Complacency and over-confidence are demons that everyone must deal with when they become too comfortable in their jobs. I learned the hard way, but I got off easy. ◆

Sergeant McLeod

EPILOGUE

TYPE: **SAR Tech**

LOCATION: **Midway, BC**

DATE: **09 August 2001**

The accident crew departed 19 Wing Comox at approximately 0900 hrs with a plan to conduct SAR training at the Midway airport.

A bundle drop went as planned, except that one of the bundles landed in the middle of the runway. Although there was a bare minimum of unobstructed runway available for the Buffalo to land on safely, the crew decided to dispatch the SAR Techs to clear away the bundle.

The elevation at Midway airport is 1896 feet ASL. The weather at the time of the jump was Sky Condition Clear, wind 2-3 kts, and temperature 31° C, producing a density attitude of approximately 4200 feet.

The Team Member exited the aircraft first, followed by the Team Lead, for a planned crosswind pattern to the drop zone.

From an altitude of approximately 500 feet AGL, the Team Lead observed the Team Member hit the ground feet first, fall back on his buttocks, and then lay, unmoving, on the ground. As the Team Member complained of pain in his back and was unable to raise himself, the Team Lead directed the Team Member to lay still and await further assistance.

An ambulance arrived on scene within 15 minutes of the accident. The ambulance crew stabilized the Team Member and placed him in a back brace.

The Buffalo landed once the Team Member was clear of the runway. The Team Member was loaded on board and then flown to 19 Wing Comox where he was examined at the local hospital. He was later transferred by CH-113 to Vancouver General Hospital's Spinal Centre.

Causes and Contributing Factors

Cause

The Team Member flared too high on landing and stalled the parachute's canopy close to the ground. The TM then hit the ground heels first with his legs slightly apart and sustained a serious injury.

Contributing Factor

The Team Member was pre-conditioned to flare higher than normal due to the high density altitude and low wind speed at the time of the jump.

Safety Measures Taken

Due to a faster-than-anticipated rate of canopy deterioration noted in the CSAR-4 parachute fleet, the CF is in the process of acquiring a replacement for the CSAR-4 parachute.

The unit of occurrence has briefed its SAR Techs on the risks of high density altitude operations and the requirement to always be prepared to carry out a PLF.

A new parachute simulator has been approved and funded for the CFSSAR. ◆

EPILOGUE

TYPE: **Schweizer 2-33 Glider C-GCLY**

LOCATION: **Nanaimo, BC**

DATE: **10 June 2001**

The glider was being flown in support of the Pacific Region Spring Familiarization Flying Program at the Nanaimo Airport near Nanaimo, BC. The pilot, a Civilian Instructor, was a familiarization pilot. The passenger was an Air Cadet. After a normal tow to 2600 feet above sea level (ASL) (airfield elevation is 97 ft ASL) followed by some upper air work, the pilot joined a right downwind at 1300 feet ASL (1200 feet AGL) in 10 Kt winds. After turning final, she noted that she was low and well short of her intended landing area. The glider made a hard landing on the grass between the runway and taxiway, approximately 1900' short of the intended landing area.

The pilot unstrapped and egressed unhurt. The passenger complained of a sore back. After a local ambulance arrived on scene, the passenger was placed on a backboard and transported to hospital. The passenger was released from hospital later that day. The glider suffered extensive damage to its wings and internal structures.

The investigation revealed that due to task overload, the pilot failed to properly correct for a slightly higher than ideal altitude abeam the landing area by employing three separate yet concurrent altitude correction methods. These corrections placed the glider beyond the point of being able to land at the intended area.

The pilot chose to overfly a suitable landing surface and attempted to stretch a glide in order to land at the launch site and prevent disruption to the gliding schedule.

The performance of the pilot was impeded by fatigue related to inadequate rest and nutrition before assuming her duties.

The investigation recommended that clear and effective crew rest orders be inserted into the A-CR-CCP-242/PT-005. ◆

FROM THE INVESTIGATOR

TYPE: **Jet Ranger CH139314**
LOCATION: **Southport, MB**
DATE: **27 June 2002**

The instructor and student were conducting a Night 1 Lesson Plan. Following some initial circuit work in Area North they proceeded to 'Grabber Green' autorotation landing area. The instructor was demonstrating a '500 foot' straight ahead autorotation to touchdown. An aggressive collective check at the bottom of the flare resulted in low rotor RPM (RRPM) and a higher than normal termination height. The instructor applied throttle and collective but the aircraft impacted the ground before sufficient lift could be developed. The crew received minor back strain injuries. The aircraft sustained "B" category damage

Initial assessment shows the skid gear slightly splayed, flexion of the tail boom in both directions of the vertical plane, the spike box on the underside of the transmission was sheared and both pitch horns were gouged from contact with the aft transmission housing. The aircraft will be sent to third line contractor to ensure alignment of the airframe.

The investigation is focusing on instructor technique and the syllabus requirements for night autorotations. ◆

FROM THE INVESTIGATOR

TYPE: **CH-113 SAR Tech Serious Injury**
LOCATION: **Gander, NF**
DATE: **30 May 2002**

On 30 May 2002, the Standby Labrador Search and Rescue (SAR) crew from 103 Rescue Squadron was conducting a training mission at the Gander airport.

At 1210Z a team of two SAR Technicians (SAR Techs) performed a parachute descent to the airport. The SAR Techs were deployed from 3000 feet above ground level (AGL) into a flat and open area adjacent to the 103 Sqn hangar.

The first SAR Tech, the Team Member, landed safely and immediately began to secure his parachute. The second SAR Tech, the Team Lead, encountered a shift in the wind direction at 30-40 feet AGL. The Team Lead's parachute was observed to partially collapse, and his rate of descent subsequently increased.

He impacted the ground on his left side in a Parachute Landing Fall (PLF) position and sustained serious injuries to his lower back. The 103 Sqn Servicing crew, under the medical direction of the Team Member, evacuated the Team Lead to the James Patton Memorial Hospital in Gander.

The accident is under investigation. ◆

FROM THE INVESTIGATOR

TYPE: **Schweizer 2-33 C-GCLN**
LOCATION: **Miramichi, NB**
DATE: **1 September 2002**

The glider and glider instructor pilot were participating in the Air Cadet Fall familiarization program. This was the first launch of the day and the objective of the flight was to position the glider at the other end of the runway in order to set up for the day's activities. The glider took off with a slight tailwind and experienced poor climb performance even though the tow vehicle was being driven at full power. The glider had travelled a fair distance down the runway and had only climbed approximately 350 feet when the pilot elected to release the towrope. Initially, the pilot tried to land straight ahead by using forward slip but soon realized that there was not enough distance remaining before the airfield boundary fence. The pilot then attempted to complete a 180-degree turn and land into wind beside the runway. The glider had nearly completed the turn when it impacted the ground. The pilot was the sole occupant and received minor injuries.

The aircraft received A Category damage. Both wingtips contacted the ground, the right wing broke in two at the inboard end of the aileron and the underside of the nose cone was pushed inward. The left wing rear spar attachment point sheared and allowed the wing to rotate forward causing damage to the canopy frame and to the skylight. The rear fuselage bent at the midpoint and the tail wheel broke-off.

The investigation is focussing on the tailwind experienced by the pilot on take-off. This tailwind, although within limits near the ground, most likely increased rapidly with altitude and markedly reduced the glider's climb performance. ◆

FROM THE INVESTIGATOR

TYPE: **Griffon CH146420**

LOCATION: **40 NM North of Goose Bay, Labrador**

DATE: **18 July 2002**

The crew was conducting a SAR mission about 100 NM from Goose Bay when RCC Halifax cancelled the mission. The weather was marginal VFR and the crew started the return leg to 5 Wing. At about 350°M at 40 NM from Goose Bay, while in normal cruise flight at 200-300 feet AGL, the tail rotor departed the aircraft. About 400 meters down track, the aircraft crashed into hilly, tree-covered terrain. Both pilots were killed instantly and the SAR Technician was seriously injured when the aircraft struck the ground with high vertical speed. Although the Flight Engineer was seriously injured, he was able to render first aid to his crewmates. He used a satellite phone to report the accident to RCC Halifax. A 444 Squadron rescue helicopter arrived on scene to evacuate the survivors to medical facilities within 3 hours. The aircraft was destroyed.

The main tail rotor section was found 280 meters up track from the crash site with one complete tail rotor blade attached while the other blade was missing the outboard 18.5 inches. The 18.5-inch section had fragmented into one large piece and two smaller pieces that were found a further 100 meters up track. Examination and analysis of the tail rotor pieces by QETE identified the tail rotor had failed due to fatigue. Further, the initiation site for the fatigue failure was a 0.008-inch dent or nick that exceeded the 0.003-inch tolerance identified in the maintenance manual common to all Bell 412 operators. It is unknown at this time whether the dent existed before the last maintenance inspection.

Preventative measures taken to date include Special Inspections (SIs) on the tail rotor blades for all CH146s, changes to CH146 tail rotor inspection methods and frequency, daily download of CH146 HUMS (Health Usage and Monitoring System) data, aircrew and ground crew briefings on CH146 airworthiness aspects of the tail rotor and aircrew briefings on emergency procedures. All tail rotor blades on the CH146 Griffon fleet had to successfully pass the SIs in order to be declared serviceable for flying operations. Finally, the Director of Technical Airworthiness (DTA) and DFS will continue to liaise with outside agencies that are concerned with the safe operations of Bell 412 type aircraft, such as Transport Canada Civil Aviation and the American Federal Aviation Authority. Since the aircraft is made entirely of composite material, repairing it is not expected to be economical.

Future investigation will focus on tail rotor blade damage detection, fatigue crack growth rates, and validation of the CH146 maintenance program. Operators of the Bell 412 type aircraft will be consulted on a Worldwide basis in an attempt to consolidate information on this type of tail rotor blade failure. Additionally, the autorotation training policy within the Griffon fleet will be examined and "lessons learned" will be promulgated. ◆

FROM THE INVESTIGATOR

TYPE: **Jet Ranger CH139308**
LOCATION: **Southport, MB**
DATE: **2 July 2002**

The 3 CFFTS Standards Officer was conducting a proficiency check ride on one of the instructors from the Basic Helicopter School in Southport. The focus of the flight was to assess the instructor's proficiency in autorotations. Following a brief warm up in Area North the crew proceeded to 'Grabber Green' autorotation landing area. After a number of successful straight-ahead and 500 foot turning autorotations, the aircraft struck the ground during the landing portion of a 250-foot turning auto. One crew received minor back strain injuries, the other suffered a very serious back injury. The aircraft sustained "A" category damage.

The accident manoeuvre was the Instructor's second attempt at the 250 foot turning auto. As the nose of the aircraft was pulled up for the flare, both pilots stated that the airspeed dropped right off and the aircraft developed an excessive descent rate. The Standards Pilot took control at this point (30 ft AGL) and concentrated on levelling the aircraft. Throttle was applied but seemed to have no effect in arresting the rate of descent. The helicopter hit the ground extremely hard in a relatively level attitude. The skid gear collapsed resulting in belly contact with the ground. The tail boom was severed at the attachment point to the fuselage. As the tail boom departed the aircraft, the vertical fin was cut by the main rotor blades in two places. The helicopter became airborne again due to impact forces and the collective and throttle position the Standards Officer had initiated for the overshoot. With the loss of the tail rotor, the aircraft rotated through several revolutions due to the main rotor torque. The Standards Officer closed the throttle to minimize the spinning and the helicopter came to rest in an upright position facing the original direction of flight. The crew shut down the aircraft and were evacuated by rescue personnel.

The investigation is focusing on the wind conditions at "Grabber Green" and the syllabus requirements for low level autorotations. ◆

"FLIGHT COMMENT" DISTRIBUTION INFORMATION

Several inquiries in the past have suggested a need for some comments on how we get your magazine to you and who to contact if we don't.

A. Supply and Services Canada (SSC) mails the magazine:

- **On a "free" distribution list to those who qualify (i.e. certain libraries, universities, MP's, embassies, international agencies…)**
- **On a "paid" distribution list to those who do not qualify in above, or who wish to receive a personal copy.**

"Flight Comment" has no control over nor involvement with the SSC distribution lists.

B. Canadian Forces Publication Depot (CFPD) mails the magazine on a "free" distribution list (based upon your unit/wing/requirements, as submitted by you and approved by DFS) to military addressees (Canadian and some foreign), editors of other Flight Safety publications, civilian aerospace contractors, some embassies, and some Canadian Federal Government departments and agencies who have an interest and/or a need to know.

"Flight Comment" controls and is responsible for assigning addressees to the CFPD distribution list.

FROM THE INVESTIGATOR

TYPE: **Katana DA-20 C1 C-GEQF**

LOCATION: **St-Lambert de Lévis, Quebec**

DATE: **25 June 2002**

The Air Cadet student pilot was on his second flight as part of the Flying Scholarship Program. He and his instructor departed the Quebec City airport for the local training area. Once in the area, they performed basic manoeuvres and the instructor demonstrated circuit procedures by using a farmer's field as a simulated airport. Once established on final for the chosen field, the instructor demonstrated and had the student practice approach path control.

When the aircraft reached approximately 400 feet AGL, the instructor took control and initiated the missed approach. While establishing the aircraft in the climb, he felt pressure on the flight controls to the point that he did not have complete control of the aircraft. He noticed that the student, apparently unaware of what he was doing, was pulling the control stick back and to the left. The instructor repeatedly instructed the student to release the controls while he tried to lower the nose in order to increase the airspeed and avoid the stall. The student did not release the controls and the aircraft, with the nose too high and the airspeed too low for the power available, quickly lost altitude and the right wing contacted the ground. It then yawed 180 degrees to the right and landed backward in a recently planted cornfield and came to rest upright beside a large pile of rocks.

The student and instructor exited the aircraft normally and were uninjured. They walked a short distance to a farmhouse and used the phone to contact the flying school.

The aircraft received A Category damage. The rear fuselage separated midway between the tail and the cockpit and the right wing was pushed up, damaging the spar and control rods. The nose gear separated and the engine was pushed up, damaging the engine mount and causing a sudden engine stoppage. Since the aircraft is made entirely of composite material, repairing it is not expected to be economical.

The investigation is focussing on the student's interference with the controls. ◆

C. The Directorate of Flight Safety, DFS, mails copies of the magazine to selected addressees on a "free" editor's private distribution list. This includes "Good Show" and "For Professionalism" recipients, magazine contributors, some public relations agencies and special friends of the magazine for services rendered, or in recognition of their valuable association with the editor and/or support to the Flight Safety cause.

D. The remaining over-run is distributed equitably to the Air Cadet regions in Canada for the benefit of the leaders of tomorrow.

If your magazine is delayed, or missing completely, or if you are not on a distribution list but want to be, *YOU SHOULD:*

- **Deal directly with SSC if *A* applies;**
- **Deal with CFPD if *B* applies (CF personnel should first check with their local Flight Safety Officer, Administrative Officer, or Supply Publications Section); or**
- **Deal with us if *C* applies.**

If you are unsure, write or call us at "Flight Comment" magazine and we'll be happy to help you. ◆

Captain Tammy Newman
Editor

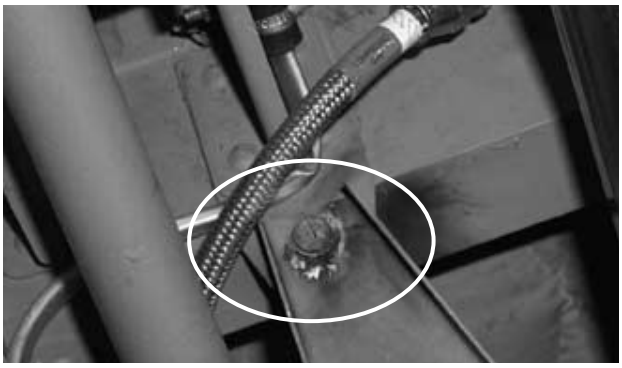
MAINTAINER'S CORNER

UNDOCUMENTED MAINTENANCE CAN LEAD TO DISASTER.

THE INCIDENT

Smoke in cockpit/electrical failure: During shake out (brief inverted flight to check for loose objects), both inverter fail lights illuminated while under negative "G". Aircraft rolled upright and lights extinguished. Approximately 20 seconds later, arcing noises were heard from the circuit breaker panel followed by smoke in the cockpit. Smoke immediately cleared but was followed by a series of electrical system failures. Checklist procedures were then carried out. Aircraft proceeded to a high key position and landing gear was lowered manually. Forced landing was carried out without further incident.

THE RESULT



Circuit breaker panel mount

Upon recovery of the aircraft, a visual inspection of the cockpit revealed that the centre console circuit breaker panel was not secured. It was determined that arcing had occurred between a bus bar and the circuit breaker panel mount. There were also signs of arcing on the circuit breaker panel channel mount and the aft pressure bulkhead beam attachment point. The left and right hand battery and generator circuit breakers were also popped.

WHY DID IT HAPPEN?

Technician no 1 decided to troubleshoot a snag on the fuel system without raising a CF 349 because the snag would be quick to fix. The technician meant to complete the paperwork once the problem was rectified. As things got busier, technician no 1 was called away from this job, and the paperwork was never initiated.

Technician no 2 continued to work on the snag — still without any CF 349.

Technician no 3, assigned to work on this task, proceeded to document the work he/she had completed and noticed that a CF 349 had not been raised. Technician no 3 then opened a CF 349 to document the work done. A CF 349 was eventually raised for the fuel snag but no CF 349B[1] was ever opened to keep track of the support work. There was no record that the circuit breaker panel had been removed for access.

THE LESSON LEARNED

There was no disaster in this case; however, there was certainly great potential for one. Nobody likes to hear arcing noises, see a series of electrical system failures, smell smoke, lower the landing gear manually or carry out a forced landing. Least of all during an air show practice! Five minutes to open up a CF 349 and maybe another five to open a CF 349B and this incident could have been avoided.

These days, with the shortage of personnel experienced by each unit, we cannot afford **not** to take the time to fill out the appropriate maintenance documentation. This is the only record of work that has been carried out as well as the work remaining to be done. Besides, we have an obligation to maintain proper maintenance records.

THE LAW

Maintenance records are not kept because they are nice to have, or the boss wants them

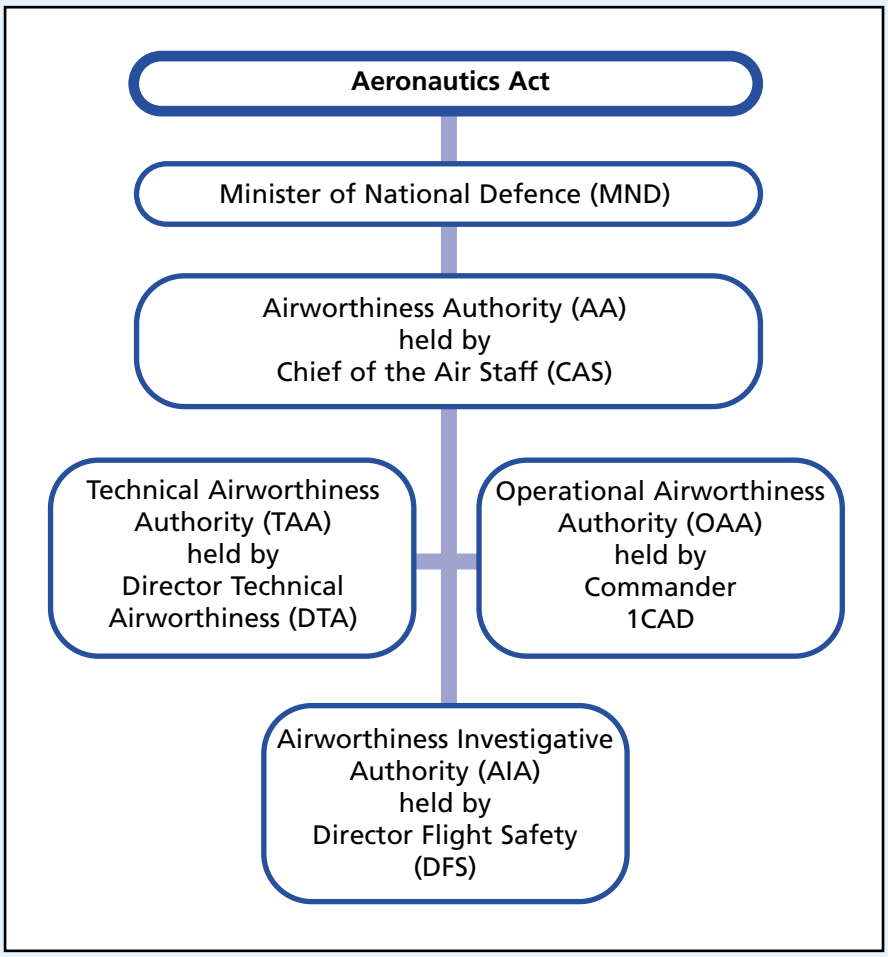
1 *C-05-005-P03/AM-001 page 1-7, para 20*

or HQ says so. The obligation to keep records comes from our CF Basic Maintenance Policy (C-05-005-P02/AM-001), that is driven by the rules in the TAM — Technical Airworthiness Manual (C-05-005-001/AG-001[2]), and the TAM is a product of the Aeronautics Act.

"The authoritative document for both civil and military aviation safety in Canada is the Aeronautics Act. As a statute of Canada, the Act is a law that places upon the Minister of Transport (MOT), the Minister of National Defence (MND) and the Chief of Defence Staff under the direction of the MND, the responsibility for the development and regulation of aeronautics and the supervision of all matters related to aeronautics. **Implementation of its provisions is not optional; it is a legal responsibility for the Department of National Defence and the Canadian Forces.**" The Aeronautics Act details requirements for all aspects of aeronautics including the following: promotion of aeronautics; design, manufacture and maintenance of aeronautical products; facilities and services; investigation of aviation safety matters including preservation of evidence, ***record keeping*** and Boards of Inquiry; and other matters relating to the safety of aviation in Canada.[3]

The Aeronautics Act is the legal foundation of the DND/CF Airworthiness Program[4]. The MND has delegated powers and responsibilities of the DND/CF Airworthiness Program into four specific roles and assigned those roles to specific individuals within the CF, as indicated in the chart below.

The AA has overall responsibility for the DND/CF Airworthiness Program. To enable effective implementation and management of the program, three key roles have been defined and assigned to individuals. The TAA is responsible for the regulation of the technical airworthiness aspects of design, manufacture, maintenance and materiel support of aeronautical products (weapon systems) and the determination of the airworthiness acceptability of those products prior to operational service. The OAA is responsible for the regulation of all flying operations. The AIA is responsible for the regulation of the airworthiness aspects of the Flight Safety Program, for the investigation of airworthiness-related occurrences and for the monitoring of the Technical and Operational Airworthiness Programs to identify deficiencies.[5]



Thus, the Technical Airworthiness Authority (TAA) is responsible for technical aspects of airworthiness, and the Technical Airworthiness Manual (TAM) is the document in which the rules of the Technical Airworthiness Program are published. According to the TAM, there is a requirement to provide traceability[6] through the documentation of

2 *The TAM is available on the DIN at http://admmat220nt.ottawa-hull.mil.ca/aepm/subsites/DTA/DTA_e.asp*
3 *C-05-005-001/AG-001, page 1-1-1-1, para 1.1.1.1, sub-para 1 and 2*
4 *C-05-005-001/AG-001, page 1-3-1-1, para 1.3.1.2, sub-para 1*
5 *C-05-005-001/AG-001, page 1-1-1-2, para 1.1.1.2, sub-para 4*
6 *C-05-005-001/AG-001, page 1-3-1-10, para 1.3.1.11, sub-para 6*

airworthiness-related activities, and maintenance tasks are airworthiness-related activities. Therefore, these tasks need to be documented.

As the TAM only states the regulations, our CF organizations need standardized policies and procedures that meet them. These CF procedures are found in the CFTOs commonly referred to as the "P Series". Every technician should be thoroughly familiar with these CFTOs[7]. The "P Series" is comprised of 10 CFTOs detailing policy and procedures for aircraft weapon systems maintenance activities. The "P Series" explains how, where, when and by whom aircraft maintenance activities are to be carried out in the CF.

Since the CAS is the AA, the CAS is also the OPI for the highest level maintenance and engineering policy statements. As I mentioned earlier, these basic policy statements are found in the P02 and form the foundation for the procedures throughout the rest of the "P Series". In this CFTO, we find that the primary objective of aircraft maintenance shall be to preserve airworthiness[8]. Also, the state of airworthiness of CF aircraft shall at all times be known, documented and understood[9]. That's how filling out CF 349s and all other forms ties the procedures in the "P Series" to the rules in the TAM and the requirements of the Aeronautics Act. Now, you have it: A direct link between the Aeronautics Act and responsibilities of personnel conducting weapons system maintenance activities.

THE FUNDAMENTALS AND RESPONSIBILITIES

The fundamental principles of the Airworthiness Program are that airworthiness-related activities are:

a. completed to accepted standards;

b. performed by authorized individuals;

c. accomplished within accredited organizations; and

d. done using approved procedures.[10]

The P03 describes weapon system maintenance authorizations and their associated responsibilities at every level, from the journeyman to the Senior Maintenance Manager (SMM). As a trained, qualified and authorized technician, it is your responsibility to ensure that appropriate and accurate documentation is completed following maintenance activities. The certification (signing and dating) for the Performance of Maintenance (POM) on a maintenance record affirms that an individual has completed (or supervised[11]) the maintenance task in accordance with the applicable technical publications and data, that the serviceability state of the equipment has been recorded, and that any outstanding work has been documented[12]. This certification also includes the responsibility to complete the data (ie: airframe hours) on all records associated with the maintenance activity[13].

The technician conducting the airworthiness function of "Maintenance Release (Level A)" is responsible to ensure that the data entries are correct[14], but as stated above, the individual who performs the work is responsible to make the entries.

THE END

Do you think that the incident mentioned at the beginning of the article is a rare occurrence? Think again! There was a cockpit FLIR screen panel that came loose in flight, un-tagged unserviceable ALSE equipment used by a pilot for a flight, holes drilled to stop cracks in engine fire walls (against CFTO regulations), burnt electrical wires, and a trim panel hanging by electrical wires during inverted flight. These were all results of undocumented maintenance, and they are only a sample of what has been reported in the Flight Safety Information System (FSIS). Furthermore, these incidents were reported only because something went wrong. Unfortunately, it is reasonable to assume that many more cases of undocumented maintenance have gone undetected because no incidents have brought them to light.

I will leave you with this thought: Our actions, or inactions, can have far-reaching implications — stop and check that proper documentation has been initiated before carrying out airworthiness-related activities. As professionals in our field, it is our responsibility to ensure the weapon system that the flight crews will be flying in is airworthy. ◆

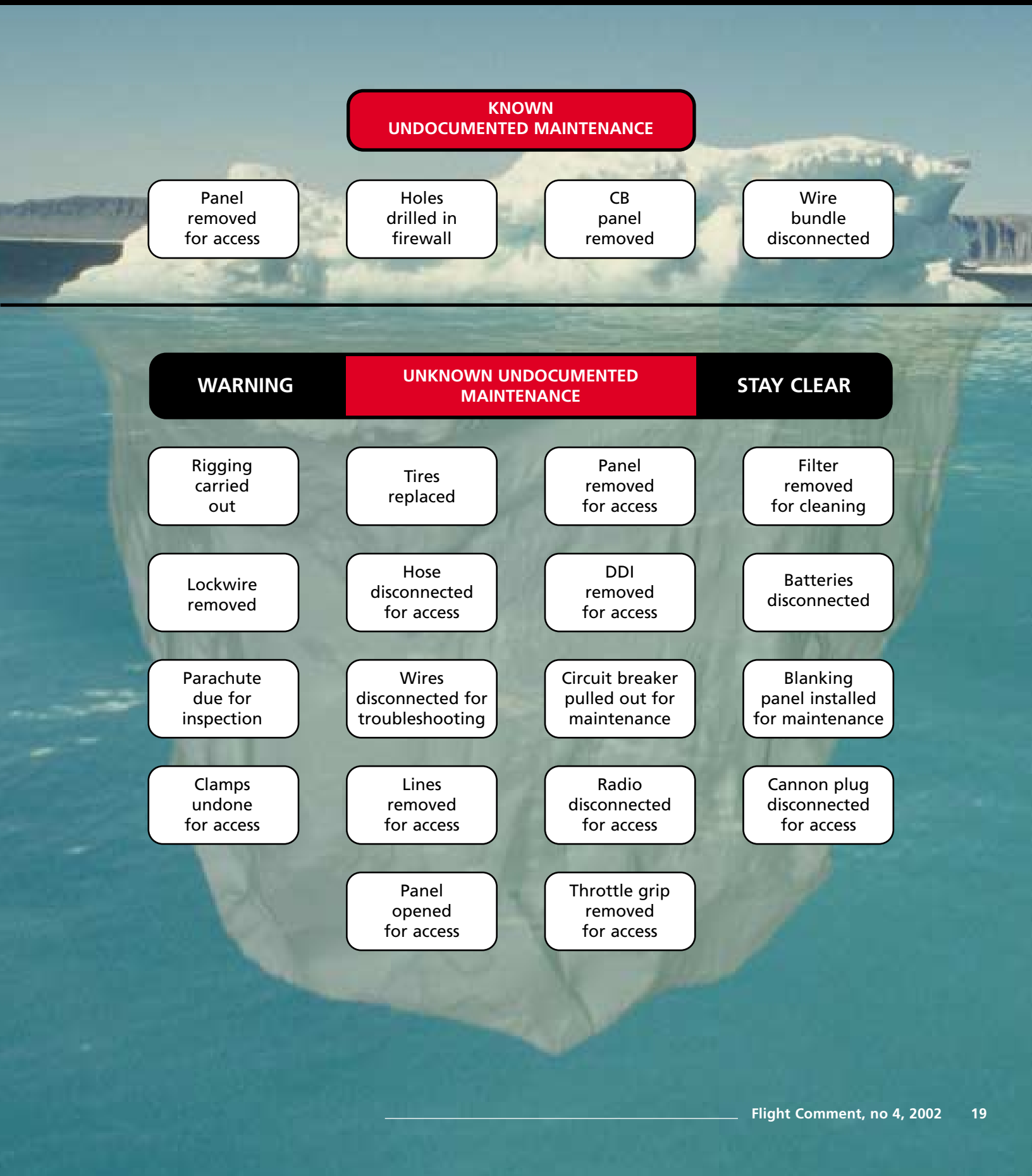
I would like to thank MWO D. Alex (A4 Maint), Maj J.P. Gagné (DTA) and Maj D. Hurst (DTA) for their invaluable inputs while I was writing this article.

By Sgt Anne Gale
DFS 2-5-4

7 C-05-005-P01/AM-001 to C-05-005-P10/AM-001 (The "P01" is being incorporated into a revised P02 presently being drafted by CAS staff)
8 C-05-005-P02/AM-001, page 4-6, para 12
9 C-05-005-P02/AM-001, page 4-6, para 14
10 C-05-005-001/AG-001, page 1-1-1-4, para 1.1.1.4, sub-para 1
11 C-05-005-P03/AM-001, Part 1, for description of responsibilities
12 C-05-005-P02/AM-001, page 5-2, para 5
13 C-05-005-P04/AM-001, page 1-3, para 13
14 C-05-005-P03/AM-001, page 1-9, para 26

WHAT WE DON'T KNOW COULD KILL US!

by Sgt Gale




what

is the Bottom Line?

On 28 January 1998 a complete circuit, including a touch & go on Runway 24, was flown at Trenton without any communication between the aircraft pilot and the control tower. The crew consisted of a supervisor pilot overseeing the Aircraft Commander's (AC's) instructional capability on a First Officer (FO) who was flying from the right seat. The weather was clear and only one CC-130 was in the Trenton Terminal Area.

After completing an instrument approach on terminal frequency, the CC-130 entered the circuit. The checks were completed and the simulated engine-out was brought to normal use. The aircraft continued with the rest of the circuit, completing all the checks, keeping good vigilance for other aircraft and executing the touch & go without a call to terminal or tower. It was after the touch & go that terminal asked for a frequency change to tower.

Initially, let us examine each individual's duties at that particular time. The Flight Engineer was doing his duties and was not cognizant of frequency change requirements. The FO was diligently flying the aircraft, totally engrossed in performing to a high standard to impress the training officer and the supervisor with his skills. The FO trusted that the AC would handle the radio duties adequately and that was not the priority for him. The AC was under pressure to perform well because he was being monitored. He had to be vigilant for aircraft, monitor the FO's actions for correct procedures, write comments of previous actions for debriefing points, and carry out the aircraft checks. The switching of frequencies and the radio calls downwind/landing escaped his mind. The supervisor was observing and listening to both pilots and trusting their actions as things were progressing very well. The supervisor's mind transgressed to a preoccupation of other issues far from the cockpit. The repetition of circuits, and the checks and procedures were very familiar and become inherent. The peacefulness of flying with no radio transmissions and being far away from the hectic, administration "rat race" lulled the supervisor into concentrating and solving problems far from the cockpit.

But there is a more underlying factor in this perceived complacency. After examining the work schedule of the AC and supervisor, other factors become apparent. The AC had four and one half days off since 5 Jan 98. The supervisor had two days off since the 12 Jan 98. Certain key positions on the squadron, for which the two individuals were responsible, dictate an extended workday to complete all the duties. Proper rest had not been achieved. In both cases, proper rest was not obtained the night before because the mind was subconsciously overstressed with the work ahead. The "bottom line" is that training had to be accomplished and upgrades achieved to ensure the squadron's capability in a world of continuing pilot attrition.

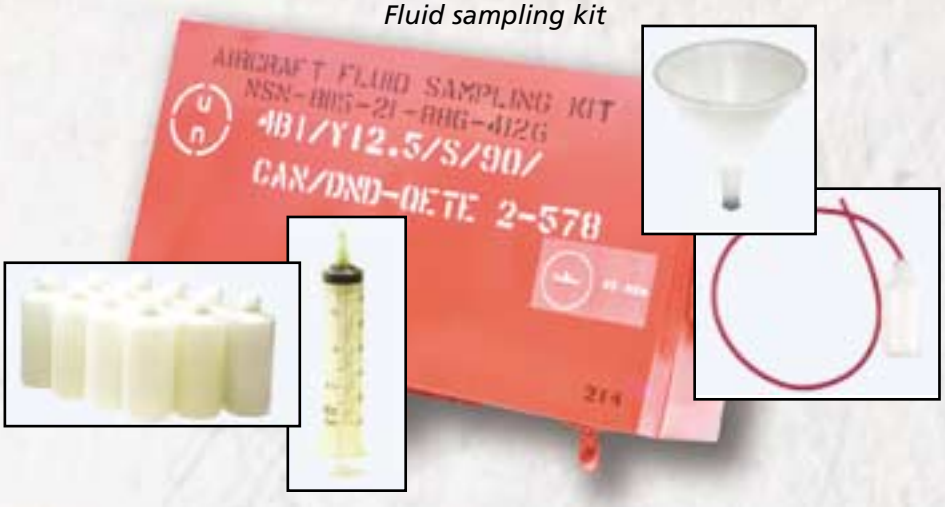
What did we learn from this infraction? I learned that rest is important to keep the mind sharp. All the "brush fires" that preoccupy daily activity are inconsequential if pilot duties in the cockpit aren't completed to a high standard. Pre-occupancy with administrative pressures that hinder sleep and are unsolvable at the working level, are big obstacles in the cockpit. Whatever cannot be completed in the time period from 0800 to 1600 will have to wait. Keeping alert during flying is a priority. ◆

AIRCRAFT FLUID SAMPLING KIT

A button is pressed in the control tower, activating the crash alarm and setting in motion a series of events that everyone hopes will never happen. An aircraft crash response has begun and, as anyone associated with flying operations knows, it can be a highly stressful situation even when it is only a practice scenario. New to the unit's Flight Safety (FS) organisation, you appreciate the time you had spent running through the processes and familiarizing yourself with both the duties of a Fluid Sampling NCM and the contents of one of the unit's Sampling Kits (NSN 8115-21-886-4126) that you had found under the Unit FS Officer's (UFSO's) desk. While waiting your turn as the process of events unfolds, you run over in your mind the information you recently gathered while attending the Basic FS Course in Winnipeg.

From your lecture, you remember that the kits were designed and maintained at the Quality Engineering Test Establishment (QETE) in Hull, QC. They contain sampling instructions, twelve 500-ml "plastic" bottles, four SOAP bottles, a plastic funnel, and a disposable syringe all neatly packaged in a red painted aluminium box. **The twelve bottles at one time had been made of glass, but have since been replaced by special fluorinated high-density polyethylene (FLPE).** The reason for the replacement was that a bottle was needed that could safely contain aircraft fuels and which conformed to Transport Canada (TC) "Dangerous Cargo" transportation requirements. These bottles could be identified by the triangle with FLPE marked on their bottom. You were pleased to find out that all of your units' kits had the proper FLPE bottles, as had not been the case with some of the other units attending the course. As well, recent changes to the identification markings on the case had **required the addition of a decal showing a symbol of an aircraft followed by the lettering "95Kpa".** This new decal indicates, again, that the kits conform to TC regulations and were tested to withstand atmospheric pressure changes while being shipped by air. These decals could be obtained from QETE if they were not already held at the unit.

Fluid sampling kit



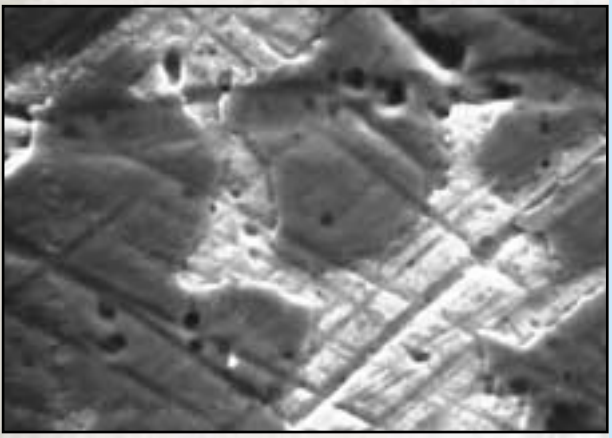
Recalling the aim of fluid sampling, you remind yourself to properly label the bottles with the fluids' source, section or system (location), date, time and nature of any known or suspected contaminants. Though only a "dry run-through" where you wouldn't be actually taking samples, you knew that at a real crash site the more fluid taken for testing — the better it would be for the QETE laboratory. Taking samples of all systems and keeping samples separate

Fluid sampling flasks

(no mixing of sources) was also stressed during the course. From the samples taken, QETE would be able to confirm the fluid identity, confirm any contaminants that may be present, and give an indication to the health state of a particular aircraft system.

Noticing the Unit FS Officer gesturing for you to approach the simulated crash site perimeter, you hurriedly pick up your sampling and tool kits. You know that in an actual crash, the quality of the sample taken for analysis might make the difference in easily determining the cause of the accident. With this resolve in mind, you head out to do your job. ◆

Warrant Officer Horvat
QETE



Collective actuator cylinder wall

CRM BELONGS EVERYWHERE

As aircrew some of us might feel that CRM is found only on the flight deck. Through personal experience, I know that it can be found at anytime, anywhere. We were a CP-140 Aurora, tasked to do a "Christmas run" to Fredericton, and Saint John and then return to Greenwood. Upon landing in Fredericton, we knew we had only one passenger to pick up, but he had not yet arrived. Tower would only allow us to stay parked with engines running for a short time before we had to taxi to another spot due to an incoming aircraft. During this time our passenger still hadn't arrived and we had a "chips" light on one of our engines.

We decided that we would have to shut down all engines, investigate the "chips" light and carry on from there. I did a penalty run on the offending engine, resolved the problem, and proceeded to close up the cowling and start the paper work. We were only supposed to be on the ground for a short time (funny how things change!) In discussion with the Aircraft Commander (AC), we decided that we needed more fuel before returning to Greenwood.

Since there was only one Flight Engineer (me) to take care of re-fueling and the pre-flight, I elected to start my pre-flight and worry about the fuel when it showed up. Finally our passenger showed up. At about this time, the fuel bowser arrived and we started refueling and I carried on with my pre-flight. The AC came down at this time and inquired about how much longer before we could start engines. I finished my pre-flight and the paperwork and proceeded to get ready for the trip home.

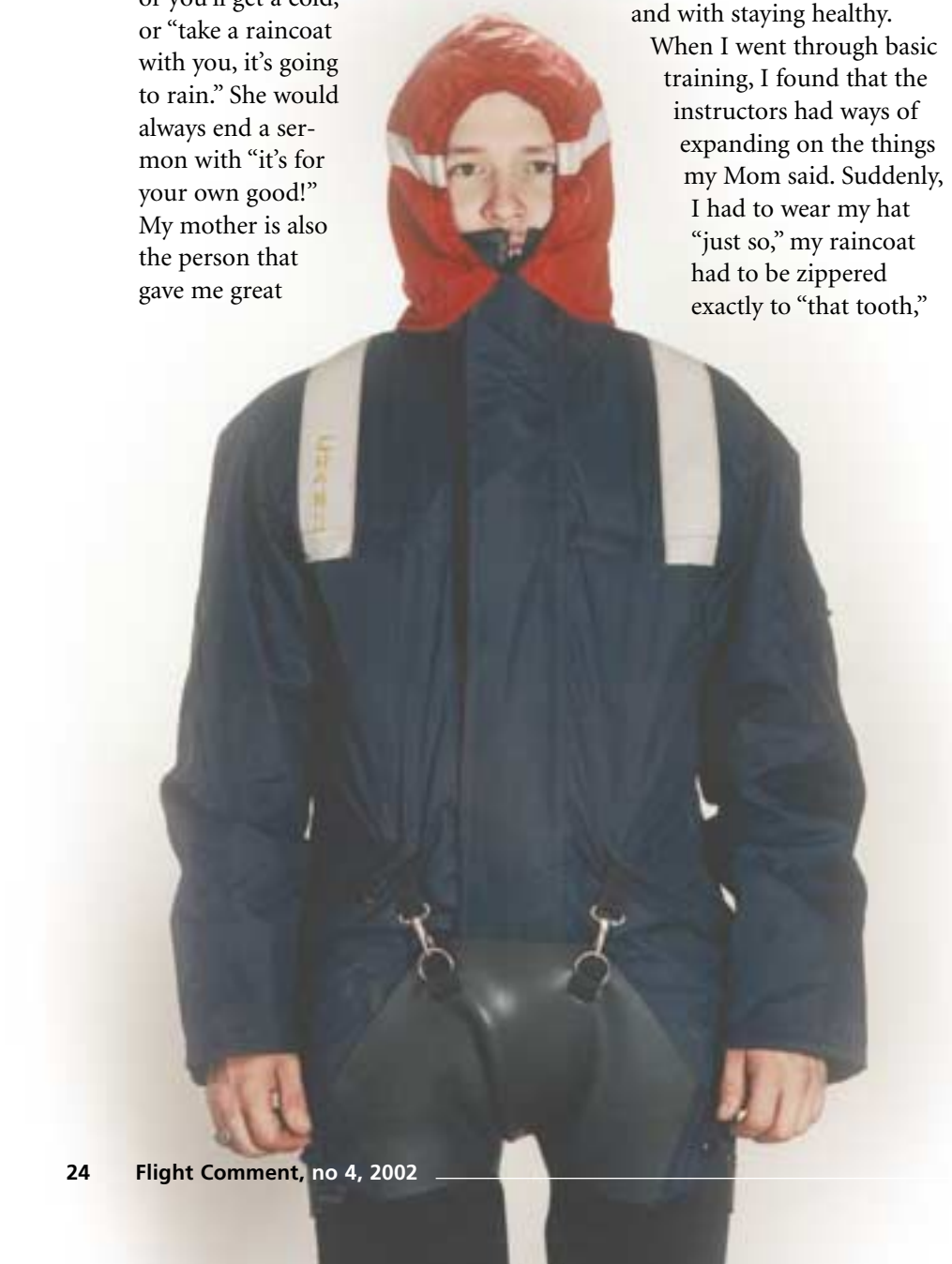
With all checks complete (or so I thought), we started engines. The AC went off headset and asked me if I had remembered to close the re-fueling door. I thought I had and he gently told me that no I hadn't.

Our pilot was an exchange Aussie who had, early on in his flying career, started doing mini walk-arounds, and I was very thankful that he did. As aircrew we like to think that "it will never happen to us" or "how could we miss that?" It is always nice to have a second set of eyes because you can't do it all. ◆

Sergeant Krugger

Things my Mom told Me!!

As I sit here, I find I have time to reflect on life and the advice that's been given to me that has helped me the most. The biggest advice-giver in my life, of course, has been my Mom. For as long as I remember, she's the one who has told me to "put your hat on or you'll get a cold," or "take a raincoat with you, it's going to rain." She would always end a sermon with "it's for your own good!" My mother is also the person that gave me great relationship advice, such as "you'll catch more flies with honey then lemon," or "treat people the way you want them to treat you."



You know, until I joined the Air Force, the stuff my Mom told me had saved my hide multiple times, both with dealing with people and with staying healthy.

When I went through basic training, I found that the instructors had ways of expanding on the things my Mom said. Suddenly, I had to wear my hat "just so," my raincoat had to be zippered exactly to "that tooth," and the pockets had to be buttoned closed. As well, I learned that treating people nice was not good enough any more; I also had to address them by rank and even salute some of them. "It was for my own good!" they told me. It seemed to me that they were stealing my mother's line.

Well, I completed all my training and got posted to my first operational unit. There, my supervisors tried taking over from my Mom and started telling me new things that I had never heard before. Things like "wear your coveralls when you're fuelling the jet," and "wear face protection when you're using that machinery." My new supervisors also told me that it was "for my own good," but I often wondered if my Mom would agree with these new things.

As I grew older, I gained a passion for restoring old cars. I got pretty proud and cocky on how good I was at doing it. Now though, as I sit here at the hospital, reflecting and waiting for the doctor to remove the piece of steel from my eye, I realize that I wouldn't be here if I had worn my face protection. I also realize that, yes, my mother would definitely agree with my new supervisors and tell me to wear the proper personal protection equipment (PPE) for the job. When she sees me with this patch over my eye, I can already hear what she's going to say to me…" Kevin, why weren't you wearing your PPE? *It's for your own good, you know!*" ◆

Sergeant Griffin

WITH THE BEST INTENTIONS

The Canadian Forces tool control system has come a long way since we first began repairing aircraft. There are, however, some cases where everything will still go wrong. This is the true story of a technician in my unit (let's call him Gus), who learned the hard way that tool control procedures are created for a reason.

Gus was tasked to perform a repair on a Labrador helicopter. As he was taught and had done many times before, he made the entry in the Lab's servicing set and also signed for the mobile tool kit key in the blue-binder register at the servicing desk. He, along with several other technicians in the squadron, had always wondered why there was a need for duplication, but never questioned anyone.

When Gus had finished working on the helicopter, he returned to the servicing desk to inform the shift supervisor and to close his entries in the books. As soon as he arrived at the desk, he was told of a Buffalo aircraft that was one snag away from departing for an over-night trip to the Northwest Territories. The Buffalo flight-crew had planned to leave earlier that day but were delayed due to maintenance problems. Gus wanted to help and knew that he could, so he quickly sprung into action.

Still in possession of the same tool kit that he had used on the Lab, Gus headed out to the waiting Buffalo, after having entered his intentions in the Buffalo's servicing set, of course! Gus was very careful with his work in the engine compartment, knowing very well the dangers of being rushed to complete a task. He finished the job and returned to servicing, feeling proud and relieved that the Buffalo and crew could finally be on their way. Gus then closed up the tool kit and, soon thereafter, headed home for a well-deserved four day rest.

A few days passed and the incoming servicing day-crew were working on some of the snags that had been handed over by Gus' crew. One of the technicians, who I'll call Cindy, signed for the same tool kit that Gus had used on his last day. Unfortunately, Cindy had some bad news to report to her supervisor upon opening the kit: there was a wrench missing. The wrench was only about three inches long and is difficult to see in its grey foam slot in the kit, but it was definitely not there. Cindy checked the blue binder to find out who had last worked with the tool kit, and on what aircraft. She quickly discovered that it was Gus who had last signed for the key, and he was working on the Labrador. A phone call to Gus' house was unsuccessful. Gus had left town to visit some friends.

An extensive search of the suspect area in Gus' Labrador revealed nothing. The other two Labs were grounded and searched as well, to no avail. Needless to say, the maintenance staff was not in a good mood that day. Nevertheless, the Labradors were cleared to fly and things returned to a somewhat normal state. However, we were left with just the tiniest inkling of discomfort in the pit of our stomachs when we couldn't find a tool that we suspected was lost on an aircraft.

Meanwhile, the Squadron hadn't heard from the Buffalo that had headed up north a few days ago. Usually, no news means good news but, just when we were starting to wonder, the phone rang. I'm sure you can guess what came next…"Hi" said the pilot, "we just found a wrench in the number-one engine compartment…any idea where it came from?" At the very least, the mystery was solved and no one was hurt.

Gus, on the other hand, felt lower than dirt. No punishment he would receive could make him feel worse than he already did. He had taken those tools out to the Buffalo with the best of intentions, but could have caused a dangerous accident. Gus will now never forget why the tool control entries are duplicated. Also, thanks to the very informative brief that he subsequently prepared, neither will any other member of the SAMEO section! ◆

Captain Giguère

Another Link in the Chain

It was a typical morning in Moose Jaw. As part of the "Snags" section, we came in at 0700 and everyone grabbed a list of aircraft that needed before-flight ("B") checks completed. The list that I had grabbed had five planes scheduled on it, which was not so unusual. I did all of my "B" checks and then got a supervisor to verify them and sign them off as being completed. After the checks, we towed all of the jets onto the ramp in preparation for the day's flying. After we finished the towing, I went back to the section to see what other work had to be done.

The morning was going well, or so I thought! Mid-morning, I was called into my crew chief's office and he told me that one of the aircraft that I had performed a "B" check on that morning had gone flying with the battery compartment doors not completely fastened. I didn't know what to say! I had only been in the unit for two months and I had just recently been qualified to perform all servicing functions. This was no excuse and I knew it. I had missed the panel on my check and had let an unsafe jet fly.

There were several events that happened, all of which contributed to the outcome. To start with, on the previous night, the other crew (there's ***always*** another crew to blame, right??) had performed a battery 'out of sequence' inspection (OSI) on this particular aircraft. It was a routine task for the night shift and the technician had changed the batteries and closed the panels, but only did up one fastener on each panel. He knew, after all, that the job required an inspection and he figured that whoever checked it would close the panel. Somehow, the technician doing the second inspection was "too busy" and decided that the first technician was competent and proceeded to sign off the paperwork without verifying it. The problem with this (aside from the obvious) was that he didn't tell the other technician and the panels remained insecure. In the morning, I came in and proceeded to carry out my own "B" checks and missed the insecure panels. Later that morning, the start crew and the aircrew also missed the panels on their walk-around. It was the technician that parked the jet and did the turnaround check who finally found the panels insecure.

In this case, everyone was lucky as no damage occurred to the aircraft. However, numerous factors contributed to this incident and the potential for an accident was certainly there. With all these links, the chain of events could have (and should have!) been broken. ◆

Master Corporal Gullacher

A Model Mentor

It was around 10pm on the final evening of a hectic shift for the servicing crew and things were beginning to wind down. We had been carrying out what was referred to as "musical aircraft" — towing aircraft from one spot to another over and over as the priorities changed. Inside the crew room, anticipation of the three-day weekend could be felt in the air as people were discussing their weekend plans. There was even some talk of having our crew gather together after work for a celebration. Around 10:30 pm, a call was received from the maintenance dispatch centre for two separate taskings. One was to tow an aircraft from outside the hangar to inside, and the other was to top up a fuel load.

There were enough people to carry out both jobs simultaneously, so I decided to participate on the tow job with a particular person who I thought of as our crew mentor and model leader. I really respected and admired him for his excellent leadership ability and self-confidence. He always carried out his duties professionally; he was intelligent, and was able to remedy, fix, or stare down any problem, situation, or challenge with the utmost ease. I thought he was a natural leader and was invincible; a perfect model to learn by.

While my assistant and I proceeded to hook the tow bar to the aircraft, my mentor and his assistant proceeded to tow the ground power unit away from the aircraft. All of a sudden, I could hear the desperate cries "STOP! STOP! STOPPP!!!!" …but it was too late. I looked up in the direction of the yells and at first didn't realize anything unusual. Then I saw the power cord dangling from the power unit and stretched out in a straight line on the tarmac. When my mentor drove the power unit away, the power cord was still connected to the aircraft. I was in a mild state of disbelief and it seemed like it was just a dream. I said to myself "how could this happen to our crew mentor?" He never makes mistakes and he's done this routine over and over without incident. "This would never happen to me," I thought, "so, how could it happen to him?"

The power receptacle was badly damaged and it would take most of the midnight shift to replace it. I saw the look of disbelief and a helpless humbleness on his face and knew it was a shock for him too. After reporting the incident, very few felt like gathering, so we went quietly home. The following day shift, our mentor gave the crew a briefing on the correct procedures for removing the ground power unit from the aircraft. He emphasized taking your time and ensuring that the power cord is disconnected from the aircraft before driving the power unit away. Then, he talked about the reasons it happened. He told us that although he was a little tired that night, it was not the cause. He said it was his complacency and attitude of over-confidence, and his habit of saying to himself over and over "that will never happen to me." He assumed the power cord was disconnected and didn't check before driving away. Then he gave us some advice — "whenever you say to yourself "that will never happen to me," stand back, take a deep breath and realize that you are now at the point where it WILL happen to you…it happened to me."

After taking a moment to reflect, I suddenly realized that I had also thought those dreadful words… "not to me!" I recognized that I too must change my attitude and I have never used that phrase again. I often reflect on that lecture and now, more than ever, I thank him for being a true model mentor. ◆

Sergeant Wetmore

Yes... I Know The Rules!

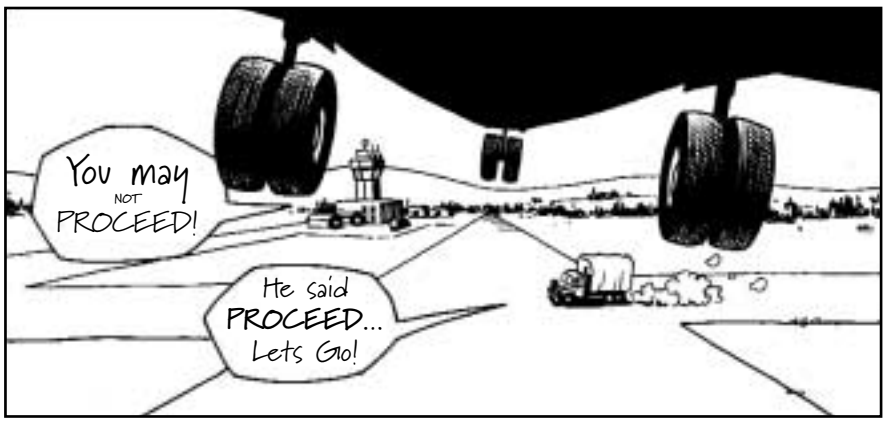
I know…I know!! How many times do I have to be briefed on this? I know that read-backs must be obtained when you issue any sort of clearance with a restriction. This is one of Air Traffic Control's (ATC's) most basic rules: it is contained in all of our ATC Manuals, and it gets reiterated at all of our training days and flight safety meetings. It gets covered during our quarterly proficiency checks and during our monthly continuation training exams. In addition, I have been doing this job for fifteen years. I know what the rules are and I know that whenever I issue a restriction to an aircraft or vehicle on the airfield, a read-back of that restriction is required. This ensures that there has been no misunderstanding or confusion regarding the clearance that I have given.

So then, how did I end up with a serious flight safety incident regarding a vehicle crossing an active runway with an aircraft sitting on the button waiting for departure? Easy…I did not obtain the proper read-back of the restriction I had just issued. What is not so easy to understand is how I allowed myself to fall into such a sense of complacency that I jeopardized the lives of those depending on my expertise, training, and professionalism?

In retrospect, there were several causes leading up to this incident. We were in the middle of an emergency and were very busy; the noise level was above normal and I assumed that the vehicle driver, being a common call-sign, was familiar with the airfield layout and airfield operating procedures. But the mistakes were all mine. I did not apply the rules that I knew so well, or follow the proper radio transmission (R/T).

A vehicle entered the airfield and requested clearance across an active runway. I responded with a clearance to proceed on the taxiway but to "hold short" of the active runway. The vehicle driver responded with a "roger," which, in effect, means nothing more than he has heard my transmission (or what he *thinks* is my transmission). At this point, I should have insisted on a read-back of the restriction to "hold short" and not have allowed the vehicle to proceed until one was obtained. Instead, I took his "roger" as an indication that he would follow my direction. In addition, all restrictive clearances should be preceded with the word "negative." For example, "negative, proceed taxiway Bravo, hold short runway 31." The vehicle ended up driving across the active runway and proceeding to his destination. Luckily, the aircraft witting on the button of the runway had a "hold." Discussion with the driver later revealed that he was a new driver, was unfamiliar with the airfield, and was not sure of his clearance. However, he had heard the word "proceed."

To say this was a lesson learned for me would be an understatement. Today I am so careful of each transmission I make. I apply the rules that I have been taught and realize that even though I may make the same transmission ten times a day, each transmission is no less important than the one previous. There is a reason these procedures are drilled and repeated and repeated again. Lives depend on them being properly applied. So, yes, I know the rules, and today I am enforcing them without fail. ◆



GOOD SHOW

MISTER JOHN HICKS AND MISTER JOHN HUDGINS

Mr. John Hicks and Mr. John Hudgins are employed at 14 Wing Greenwood as Wildlife Control Officers. During the course of a routine aerodrome wildlife patrol, Mr. Hicks noticed a slight depression that had formed on "Bravo" taxiway. The depression was located in an area where a tunnel had been bored under the taxiway the previous year. Realising that a problem may be developing, Mr. Hicks immediately passed this information on to Air Traffic Control (ATC) personnel. A follow-up inspection of the area failed to find the depression.

After a subsequent wildlife patrol, Mr. John Hudgins reported the same problem to ATC. This time, the follow-up inspection located a two-foot diameter depression, which had formed three feet from the taxiway centreline. The area was promptly excavated to determine the scope of the problem. Once the asphalt had been removed, it was quickly realised that the problem was much larger than expected. An extended area of sand had collapsed across the entire width of the taxiway along the tunnelled out area. It was determined that the depression would have continued to deepen and expand over time. The possibility of the taxiway collapsing under the weight of aircraft was considered to be great. The contractor was recalled to repair the taxiway.

Inspecting aerodrome facilities and grounds is not part of the primary duties of Wildlife Control Officers. Mr. Hicks' and Mr. Hudgins' ability to recognise a potential dangerous situation and their prompt actions were instrumental in preventing potential injury to personnel and damage to aircraft; quite possibly, a taxiing aircraft could have sunk into the hole as it collapsed from underneath. Their outstanding attentiveness and dedication clearly demonstrates their professionalism and commitment to flight safety. ◆

CORPORAL DARREN BROADWELL

On 14 June 2001, Corporal Broadwell, an aviation technician, was working on a phase inspection of CF-18 #757. He was removing components from the right hand airframe-mounted accessory drive (AMAD) bay for access to implement a planned modification. Because these components are not normally removed during phase for inspection, Corporal Broadwell seized the opportunity to conduct a meticulous inspection of components and lines not normally visible when the AMAD is installed. His exceptional initiative and diligence paid off as he discovered a fuel line from the fuel pump was rubbing on a fuel line going to the heat exchanger. Failure of the heat exchanger line was imminent which would have allowed fuel to flow into the AMAD bay and then onto the #2 engine, which could have resulted in an explosion or fire.

Corporal Broadwell's findings led to a Flight Safety report and 441 Squadron carried out an inspection of all unit aircraft. The results of this inspection led to a fleet-wide immediate special inspection (SI) and the grounding of a large number of aircraft in both Cold Lake and Bagotville. Furthermore, the SI was carried out in other countries, including Australia who had aircraft in Cold Lake at the time, and the same fault was found.

Without Corporal Broadwell's outstanding initiative and attention to detail, this condition would have remained undetected and most likely would have resulted in the loss of one or more aircraft and more importantly the loss of aircrew lives. He is to be commended for his outstanding display of professionalism, alertness, and dedication. ◆

FOR PROFESSIONALISM

MASTER CORPORAL DAVID MURPHY

Master Corporal Murphy, a Flight Engineer (FE) attached posted to the Task Force Bosnia Herzegovina Helicopter Detachment, was conducting a pre-flight walk-around on a Griffon helicopter after a modification that required the dismantlement of the tail-rotor assembly. While checking the flapping axis on the tail rotor blades, he noticed that the travel of the blades was not exactly as it should have been. Investigating further, he discovered that the tail-rotor flap-stop had been installed backwards. This effectively limited the amount of tail-rotor travel available.

The tail-rotor flap-stop is not easily observed from the ground and confirmation of improper installation is particularly difficult. Had the improper installation gone unnoticed, it is highly probable that a loss of tail-rotor authority would have occurred during a critical flight regime.

Master Corporal Murphy's superior attention to detail and his outstanding job knowledge resulted in the detection and elimination of a significant safety hazard. ◆

MASTER CORPORAL SERGE BERTRAND

On 29 June 2001, during his shift at the Valcartier Air Traffic Control (ATC) tower, Master Corporal Bertrand noticed that a liquid substance had accumulated on the parking area of a Griffon that had just departed for an instrument (IFR) flight. The stain was visible from the top of the tower and, in Master Corporal Bertrand's view, was large enough to warrant notifying the maintenance staff. When he learned that the liquid was transmission oil and seemed to have been recently spilled, Master Corporal Bertrand, on the advice of the maintenance staff, contacted the aircraft on guard frequency and advised them of this major oil loss. The crew immediately contacted Quebec City ATC terminal and returned to CFB Valcartier where, after shutting down the engines, they noticed that their transmission oil levels had fallen significantly since their pre-flight inspection.

The aircraft parking areas are often stained with puddles of oil that are spilled during refilling of the tanks. This makes it extremely difficult to distinguish a fresh loss of oil, given the abundance of similar stains on the tarmac. Master Corporal Bertrand's attention to detail and his decision to take immediate action after observing an unusual detail prevented what might have become a serious incident.

In the performance of his duties, Master Corporal Bertrand displayed a superb spirit of initiative and professional expertise worthy of commendation. His professionalism and sense of duty do him honour. ◆

CORPORAL KEVIN MARSTON

Corporal Marston is an avionics technician who, in August 2001, was temporarily assigned from Comox to Greenwood. While in Greenwood, Corporal Marston was helping to repair a new strobe light system on Aurora aircraft #140-111. While troubleshooting the lights, the floorboard in front of the main door was removed for access to the strobe power supply.

A missing floorboard screw led to a foreign object (FOD) check, during which he discovered a rudder boost control cable being off its roller assembly. The affected control cable and roller were under an adjacent floorboard that had not been removed. A closer inspection revealed that the roller assembly was cracked, necessitating immediate rectification by aviation technicians.

Corporal Marston's diligence and subsequent follow-up while deployed in support of another unit almost certainly prevented a future incident. His professionalism while conducting a routine FOD check and towards all aspects of aircraft maintenance, not merely those directly applicable to his trade, prevented the potential loss of life had the rudder controls jammed during flight. ◆

FOR PROFESSIONALISM

CAPTAIN STEVE WILSON

On 11 February 2001, Captain Wilson was the training Mission Commander for a student navigator flight on a Dash-8 aircraft #CT-142803. During internal pre-flight checks, he heard a faint snapping sound. This was brought to the attention of the Aircraft Commander (AC) and the crew repeated the pre-flight checks. When the control lock was released, Captain Wilson heard the faint noise again.

As the lock was cycled, he traced the sound to a ceiling area. It was a difficult sound to hear and isolate. He was the only member of the crew to detect it. Technicians were called to the aircraft to investigate. They determined that the gust lock cables slapping against the ceiling panel had produced the noise. The cables were so slack that the technician was able to wrap them around his hand. The remainder of the fleet was checked and all gust locks were found to be out of rig and tension. With the cables that much out, there is the potential for interference with the aileron control cables. In addition, a failure of the controls to lock on the ground would cause significant damage to the controls in a high wind situation. The fleet had been operating for some time in this condition.

Captain Wilson's willingness to pursue something that, on the surface, would seem so insignificant, and to be able to bring the rest of the crew "on board" to help investigate, demonstrated a high level of dedication, determination, and professionalism. His actions prevented serious damage to valuable resources and, potentially, a catastrophic incident. ◆

CORPORAL ROB VIPOND

On 10 November 2000, Corporal Vipond, a maintenance technician, performed an after-flight check on a transient Tutor aircraft, #CT-114049. During his visual inspection of the engine compartment, he discovered a broken air bleed duct clamp and replaced it. Upon completion of his check, he went to install the right -hand engine access panel and spotted something out of place.

While looking further aft of the right-hand engine access panel, and under limited lighting conditions, he discovered a metal hydraulic blanking cap lying loose on a ledge. It should be noted that this is not an area normally inspected. Corporal Vipond removed the cap and immediately reported his findings to his supervisor and a Flight Safety Report was initiated. Had this cap not been discovered, it would have inevitably caused a catastrophic engine failure. This blanking cap could have jammed the compressor inlet guide vane actuators causing a compressor stall with no chance of re-light or a jam of the main fuel control at a high throttle setting.

Corporal Vipond's acute attention to detail in this area was above and beyond the normal requirement. His actions ultimately prevented the loss of valuable resources and, potentially, the loss of life or serious injury. ◆

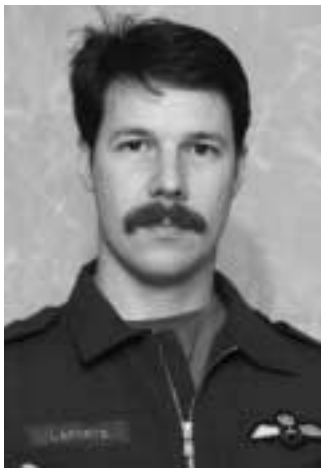
CORPORAL PAUL NEALE
CORPORAL RICK GEIGER

On December 11, 2000, during a Flight Engineer combined before and after flight-check, Corporal Neale and Corporal Geiger were working on a ramp snag on the #3 engine of Aurora aircraft #140105. While performing the rectification on the engine, they noticed what appeared to be fuel dripping from the bottom of the auxiliary power unit (APU) compartment. Deciding to investigate further, they opened the APU punch panel and discovered a large stream of fuel spraying from a fuel line connected to the APU. Without hesitation, and realizing that an extreme potential fire hazard existed as the APU was running, Corporal Neale and Corporal Geiger quickly shut down the APU and instructed all aircrew on board to immediately evacuate the aircraft.

As the two technicians continued their investigation into the fuel leak, they lowered the APU's access panel and a large amount of fuel poured out onto the tarmac. As they continued to look for the source of the problem, they discovered that the fuel leak was coming from the acceleration limiter fuel line; the seal in the line had failed, allowing fuel to leak past the fitting. Upon rectifying the snag and cleaning up the APU compartment of all remaining fuel, they performed a ground run and returned aircraft #140105 to a serviceable condition.

It is almost certain that had this problem gone undetected, there would have been an explosion and fire resulting in damage and destruction. If it had not been for Corporal Neale and Corporal Geiger's vigilance, attention to detail, and quick action, this massive fuel leak could have potentially involved the loss of life as well as the loss of the aircraft. ◆

MASTER CORPORAL PIERRE LAPORTE



Griffon aircraft #CH-146426 had just been released from maintenance after a scheduled inspection and was scheduled to fly later in the evening. MCpl Laporte was assigned to fly in this particular aircraft for his night vision goggle (NVG) training trip.

MCpl Laporte commenced his walk-around while the aircraft was parked on the flight line. The sun had already set and ambient lighting was at a minimum, making conditions difficult for carrying out the pre-flight inspection.

While completing his examination of the tail rotor and 90-degree gearbox assembly, MCpl Laporte noticed that the 90-degree gearbox cap appeared to be sitting higher on its post than usual. In order to complete a more detailed inspection of the gearbox, he took the extra time to get an aircraft stand from the hangar. Upon closer inspection, it became readily apparent that the 90-degree gearbox oil filler cap was merely resting upon its post.

The loss of oil from this gearbox could have had catastrophic effects, possibly resulting in the loss of the aircraft and crew. MCpl Laporte is to be commended for his superior attention to detail under less than ideal pre-flight conditions. ◆

CORPORAL GARY EDDY

Corporal Eddy is an aviation technician (AVN) employed in the Aircraft Repair Organisation at 12 Air Maintenance Squadron (AMS) Shearwater. On 12 June 01, he was participating in a periodic inspection of Sea King aircraft #124A405. While carrying out the inspection of the auxiliary floatation installation, his attention was drawn to the flotation bags installed in each sponson of the aircraft. Closer examination of the assembly revealed that the gasket and plate on the flotation bags were not creating a proper seal and he decided to change both the gasket and the plate. However, after assembling the new parts received from supply, Corporal Eddy discovered that the seal between the plate and flotation bag was still not completely airtight.

Concerned that the situation could exist fleet-wide, Corporal Eddy verified the part numbers and informed the Engineering and Projects Organisation (EPO) of the problem. Investigation by the EPO and by a third line field service representative revealed that one specific batch of plates did not meet the tolerances described by the manufacturers drawings. The plates, being out of tolerance, resulted in an insufficient seal between the plate, gasket, and floatation bag when installed with the other components of the assembly. Director Aerospace Equipment Program Management — Maritime (DAEPM(M)) instructed that the incorrectly manufactured batch of plates be removed from service and quarantined. DAEPM(M) is also taking steps to ensure that the problem is fully addressed and that only serviceable plates are available in the future.

The auxiliary floatation installation is an integral part of the Sea King's emergency equipment; it provides stability in the event that the helicopter has to conduct an emergency water landing. The contractor's technical memorandum that reviewed this incident noted that failure to achieve proper clamping of this joint could result in improper deployment of the auxiliary floatation installation and could also lead to a condition in which the helicopter is more susceptible to becoming inverted after ditching.

Corporal Eddy's superior attention to detail is commended; his vigilance, technical ability, and effort resulted in the detection and elimination of what would have been a serious flight safety hazard. ◆

CORPORAL LUCAS JANSSENS

During an after-flight ("A") check of Buffalo aircraft #115465, Corporal Janssens discovered that the right-hand engine start balance line was secured only finger-tight. He immediately informed the Servicing Desk of the situation; the line was secured and the aircraft was promptly returned to service.

Had this line backed off completely, hot bleed air would have entered the engine deck area and could have caused an engine fire indication. Additionally, the potential for a foreign obstacle damage (FOD) related incident was definitely present. The loss of bleed air pressure would have made an engine start difficult, leading to the loss of a valuable Search and Rescue (SAR) asset. The "A"-check on the Buffalo aircraft only calls for an area inspection of the engine compartment. The fact that Corporal Janssens, an avionics technician by trade, discovered the loose balance lines fittings, displayed excellent attention to detail.

His daily displays of professional and technical dedication are evident in all aspects of his work. Corporal Janssens thoroughness and prompt action clearly averted a serious Flight Safety incident. ◆

CORPORAL NEIL THORNE

On 29 May 2001, Corporal Thorne, an aviation technician, was conducting a post phase engine run on a CF-18 aircraft, when the jet experienced a power failure on the number one generator. Sparks were observed coming from the area, and Corporal Thorne immediately shut down the aircraft. Upon inspection, the left hand generator control unit (GCU) was found to have an "arced" plug due to failure of the insulation wrapping.

Corporal Thorne, on his own initiative, decided to check the next phase aircraft and found the same problem existed with it. Corporal Thorne's findings led to an inspection of all 441 Squadron unit aircraft. The results of that inspection led to a fleet-wide special inspection. Also, Corporal Thorne submitted an aircraft inspection change procedure (AICP) to ensure that this problem area would be inspected during every phase inspection.

Corporal Thorne's diligence and attention to detail resulted in the discovery of an aircraft condition that could have remained undetected and most likely would have resulted in the loss of electrical power and a potentially serious flight safety incident. He is commended for his outstanding professionalism, alertness, initiative, and dedication. ◆

MAJOR BRIAN MURRAY

On 28 August 2001, shortly after take-off, Major Murray's aircraft, CF-188905, experienced a "bleed air left" warning, followed immediately by an "engine fire left" warning and, within seconds, by an "engine fire right" warning. Calmly following the red-page actions, he shut down the left engine and activated the extinguisher system, which resulted in both the left and right "fire warning" lights going off, and he maneuvered his aircraft away from populated areas. Major Murray's back seat pilot, 2Lt Decarlo, observed residual smoke coming from the left engine area.

As per the pilot's checklist, Major Murray then reduced the gross weight of his aircraft by dumping fuel and he also lowered the electrical burden on the single generator by shutting off the aircraft's radar. Later, both the formation lead, Captain Shepherd, and Air Traffic Control determined that no further smoke or damage to the F-18 was apparent. Major Murray set the aircraft up for a ten mile, straight-in approach to runway 31R; a flawless half-flap approach was carried out and, when the jet was clear of the runway, the aircrew carried out an emergency ground egress. Further examination of the damaged aircraft revealed that a major fire had occurred in the left-hand engine as a result of a broken lower fuel manifold. The fire had ruptured the engine casing, and scorched much of the left engine bay, and had been in the process of migrating to the right engine bay before the fire was extinguished.

Major Murray's timely execution of the red page responses and his calm, professional manner in returning to the airfield saved a CF-18 and, the most valuable resource of all, two aircrew. Major Murray is commended for his outstanding alertness, dedication, and professionalism. ◆

CORPORAL SHAWN BRUMSEY
CORPORAL FRANK HISCOCK

On November 1, 2000, Corporal Brumsey and Corporal Hiscock were carrying out a routine night start sequence on Aurora aircraft #140106 in Kinloss, Scotland. Although it was raining heavily and there was extremely poor visibility, they noticed what appeared to be a mist rising from the #3 engine after start. Unsure of what this mist was, they elected to take a closer look to try to identify the source. After realizing that the fluid was coming from the engine area, they immediately directed the aircrew to shut down the aircraft.

Upon shut down, hydraulic fluid was discovered on the #3 propeller and on the nacelle of the #3 engine. After further investigation, it was discovered that the blade root seal had failed on the #3 propeller and in a matter of seconds it had lost 90% of its hydraulic fluid. There was a real possibility for the #3 engine to go to "pitch lock" on takeoff. Combining this likelihood with a wet runway, poor visibility, and a full fuel load could have caused a serious accident.

Corporal Brumsey and Corporal Hiscock are to be commended for their outstanding professionalism and quick action in adverting a potentially catastrophic propeller failure. Had this situation gone unnoticed, the aircrew would most likely have had to take emergency action on takeoff. ◆

MASTER CORPORAL DAVE HUMPHREYS

Master Corporal Humphreys is an aircraft technician (Crew Chief) assigned to the NE-3A AWACS Contingent in Geilenkirchen, Germany. During a recent deployment to North Bay, Ontario, Master Corporal Humphreys completed the aircraft start-up procedures and advised the Aircraft Commander (AC) that his aircraft was ready for taxiing. As he turned away from the now moving B-707, he noticed something different about the right rear (#8) tire.

No longer able to speak directly with the AC, he immediately sprinted to the ground terminal and notified Air Traffic Control (ATC). Despite being initially put on hold while the control tower was giving a clearance, Master Corporal Humphreys persisted and finally convinced the controller to have the aircraft return to the ramp for further investigation. Upon its return, a severely worn spot on the tire, that proved to be beyond limits, was discovered. The aircraft had been parked on the worn spot since arrival. Master Corporal Humphreys advised the Flight Engineer (FE) and quickly deflated the tire for fear of a rupture.

Undetected, the resulting tire blowout, on takeoff or landing, could have resulted in serious damage to the NE-3A or injury to its crew. Had it not been for Master Corporal Humphreys' outstanding attention to detail and decisive, quick action, the aircraft would have been cleared for flight. A potentially dangerous flight incident was avoided by the professional attentiveness and perseverance of Master Corporall Humphreys. ◆

CORPORAL CARMEN BEAR

On 12 May 2001, while Corporal Bear was performing a visual check of the left engine bay on CF-18 aircraft #921, he noticed chafing on the outer cover of the throttle cable. Further investigation discovered that the improper positioning of former Y566.0 Hi-Locks during third line repair caused the chafing.

Realizing the implications this could have on the whole fleet, Corporal Bear raised a flight safety report and initiated an informal inspection of all 410 Squadron aircraft. Four of the five initial aircraft inspected were found to have the Hi-Locks improperly installed on either the right or left side of the aircraft engine bays. An unsatisfactory condition report (UCR) was submitted on the Hi-Lock installations on both sides of the aircraft. Based upon the UCR findings, a special inspection (SI) was implemented. Results of the SI revealed that 32% of the CF-18 fleet had chafing of the throttle control cables.

The potential for disaster was very high in this incident; if the cable chafing had gone undetected, it is very likely that an aircraft would have had a possible loss of one or both engine controls. Thanks to the diligence of Corporal Bear, his professionalism and prompt actions averted a potentially serious or disastrous accident. ◆

CORPORAL CHRIS SCANLAN

While conducting a before-flight check on a T-33 Silver Star aircraft, tail #133504, Corporal Scanlan, an aviation technician with 434 Squadron, noticed that the rudder pedal movement didn't feel right. Additionally, he heard an unfamiliar sound coming from a forward right-hand side panel. Being concerned with flight safety, Corporal Scanlan decided to investigate further.

He removed the suspect panel and found two screws attached to the back of it with masking tape. Two more screws and one washer were also found on the floor behind the panel directly below the screws that were taped to the panel. The rudder cable is routed behind this panel and was rubbing against the hardware that was taped to it. There was no damage to the rudder cable or the panel. This aircraft had flown 11.2 hours since its last periodic maintenance inspection, which was the last time this panel would have been removed. When panels are removed for maintenance, it is a common practice to place the attaching hardware in a plastic parts bag and fasten it to the panel with a CF-942 Material Condition Tag. The hardware that was taped to the back of this panel did not originate from this panel and was not attached to it in an acceptable manner.

The potential for a serious occurrence resulting from the FOD being left in this aircraft was very high as it was found in the immediate vicinity of flight controls. Corporal Scanlan's extra effort, attention to detail, and professionalism resulted in the identification of a significant flight safety hazard, almost certainly preventing a future incident. ◆

SERGEANT ROBERT BUTLER

On 25 July 2001, while conducting a pre-flight check on Labrador aircraft #304, Sergeant Butler noticed small traces of a black, oily substance on a support structure below the diagonal bulkhead. Sergeant Butler intuitively decided to investigate this abnormality to determine the root cause.

Upon further investigation of the area, Sergeant Butler identified this unknown oily substance to be the product of aluminium breakdown. He continued to investigate and discovered that it was masking several significant cracks in the aircraft support structure (rib). The most significant crack measured approximately ten inches in length. The cracked structure is located inside a louvered door on the right side of the aft pylon, forward and above the fire extinguisher squibs. This rib is located in a spot that is extremely difficult to see, requiring a very specific angle and elevation. The interior of the aft pylon is normally inspected through the left-hand side where the fire extinguisher pre-charge is checked. The cracks were not visible from that side.

Sergeant Butler demonstrated a keen eye and high level of professionalism, identifying a serious hazard to Flight Safety. This crack may have easily gone undetected if not for the diligence and persistence of Sergeant Butler. The consequence of the discrepancy going uncorrected could have led to a serious in-flight incident. Fully aware that many areas on the Labrador helicopter are not inspected on a regular basis, he has developed a personal habit of looking at one or two such areas whenever he conducts a pre-flight inspection. Sergeant Butler is commended for his diligence and dedication. ◆

CORPORAL MARTIN MENARD

On April 30, 2001, Corporal Menard was assigned to carry out an acceptance check on CF-18 aircraft #933 from a third line maintenance facility. While carrying out card #13 of the acceptance check, he noticed something unusual in the area of the left main landing-gear up-lock assembly. Upon closer inspection, he discerned that while the up-lock pivot bolt had been installed, the associated washer and nut were missing.

He immediately informed his supervisors; a flight safety report was initiated and the aircraft was quarantined. Following an extensive FOD check, the missing items were not found and were ascertained to have fallen off in flight. Although the acceptance check requires a visual inspection of this area, it does not call for this specific item to be inspected. Had the pivot bolt fallen out during flight, the over centre position of the up-lock hook would have prevented the main landing gear doors from opening. This, in turn, would have prevented the left main landing gear from properly extending.

Corporal Menard's diligence and attention to detail resulted in the prevention of a possible in-flight emergency and the loss of valuable resources. Thanks to his professionalism and alertness, the aircraft was returned to service without requiring further maintenance action. ◆

MASTER CORPORAL CAM BARNHILL

On 19 March 2001, the crew of CFC 2628, a Hercules aircraft, was preparing to start engines in Ottawa. Master Corporal Barnhill had completed his loadmaster pre-flight duties and was outside awaiting direction for the start. Although not part of his duties, Master Corporal Barnhill regularly walks around the aircraft, a habit he developed as a private pilot. That morning, his keenness clearly paid off when he noticed some damage at the root of each blade on the #2 propeller.

Master Corporal Barnhill immediately notified the rest of the crew. After careful inspection, it was determined that an engine panel had come loose during the previous flight and caused serious damage to the propeller. Although impossible to know what would have happened had the aircraft taken off, it is evident that Master Corporal Barnhill's keen sense of observation and dedication to his duties prevented a potentially hazardous condition from happening. ◆

CAPTAIN STEVE R. WORMSBECHER

On 9 October 2001, during a T-33 two-plane training run, the number two aircraft was simulating a missile launch from lead. As number two passed by his aircraft, Captain Wormsbecher, the formation lead, alertly noticed the oxygen panel fluttering in the air stream. He immediately notified his wingman, who slowed down and returned to base without further incident.

Had Captain Wormsbecher not taken the time to check his wingman's aircraft as it passed by him, CT-133483 may have accelerated to a speed where the panel, which is difficult to see, could have broken off. This could have potentially resulted in an engine failure and the loss of an aircraft.

Captain Wormsbecher's diligence, outstanding attention to detail and quick reaction are what prevented the open panel from possible breaking off in flight and being sucked into the engine compartment. His professional attitude enabled him to spot this problem, while his timely actions clearly averted a potentially dangerous accident. ◆

CAPTAIN IAN HUGHES

Captain Hughes is an air traffic controller who works in the control tower at 15 Wing Moose Jaw. On 9 November 2001, Captain Hughes was controlling the outer runway when a student pilot requested a full stop landing following a closed pattern. The student declared "three green" to indicate that his three wheels were in the "down and locked" position.

Captain Hughes verified the position of his traffic, which was now on short final, and saw that the wheels on the Harvard aircraft were, in fact, in the up position. Captain Hughes immediately challenged the student pilot. The student pilot initiated an overshoot and was able to recover the aircraft safely without further incident.

Captain Hughes' outstanding situational awareness and prompt actions prevented a potentially serious "gear up" landing accident. His attention to detail and superior professional attitude averted the potential loss of aircraft and personnel. ◆