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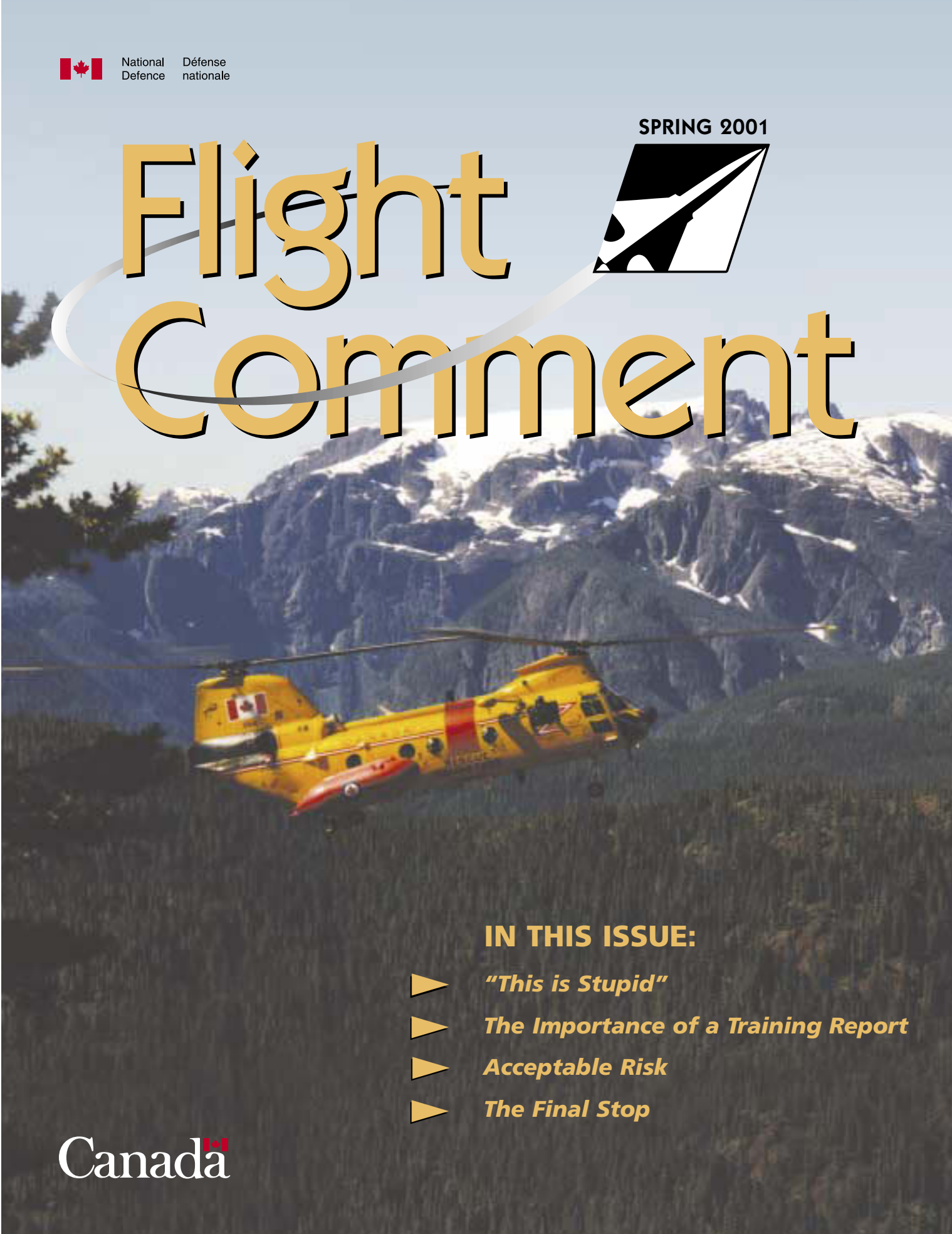
Flight Comment



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As I See It

Letter from Major Ted Lee, BFSO, Borden

Ref Incident ID 97495 Oct 99 and 102186 Nov 00

I have a bone to pick with current implementation of the flight safety reporting system as illustrated in the above two incidents.

The first incident was a 417 Sqn Griffon which came close to hitting a wire on the Primrose Lake highway north of Cold Lake, and it made me aware of the increasing use of the hard-to-get-a-grip-on cause factors like expectancy and confidence when others are available that can be acted upon. In that particular incident, the AC was conducting a check ride and gave the FP an emergency requiring immediate landing. The only landing spot available was the PLER highway and the FP initiated an approach towards a very low-on-the-horizon sun resulting in a reduction in visual acuity. As he approached the ground the FP saw a wire crossing the road and overshot, narrowly missing the wire. The investigation assigned cause factors of: 1) expectancy, in that the AC expected to see poles or balls marking any wires; 2) confidence, in that the AC had landed on the highway several times and had never seen these wires before and therefore was confident that no new wires had been erected; 3) environment/weather in that the sun position made it difficult to see the wire.

Are those cause factors justified? Is it reasonable to expect every wire ever erected to have markers indicating its presence to aviators? — of course not, and that is why lookout always has been and always will be the prime technique for avoiding wires. Expectancy just doesn't apply because in this case it was an unreasonable expectation. Similarly with confidence, was it reasonable to be confident that there were no new wires on the highway? I have been in Cold Lake and I know how long that highway is, and I know that it is highly unlikely that the AC had landed on or recce'd every foot of that road, so his confidence was likely based on a very small sample. That wire probably wasn't even new, it had just never been seen before by the AC. Therefore, confidence does not apply either, because it was unreasonable for the AC to believe that his small sample proved that the entire highway did not have other wires across it that were unknown to him. As for environment/weather, I think this was a clear case of unjustified use of an environmental cause factor. Para 42 on pg 11-7 of the "135" clearly states that environmental cause factors are applied to those conditions which are beyond human control and there was absolutely no compelling reason for this sequence to be flown into the low sun.

You can have some very long arguments about cause factors and it may come down to who can yell the loudest when it comes to the final assignment. However, that is not the point of our business, it is the preventive measure which must evolve from the whole investigation which signals the success or failure of the process. So what was the preventive measure in this case — it was to get Wing Ops to have one company place marker balls on wires across the PLER highway. That is fine for this one set of circumstances, but what does it do to the overall lesson learned for the Griffon community at large? It only solves one small local problem and does nothing to make the point about flying safe approaches under low visibility conditions everywhere.

There is something else about this situation however, something intuitive that may not be formally addressed in training but which is so much common sense that I think it is an understood and universally accepted fact. It is in the technique applied to approaches into unknown areas and poor visibility situations. Final approach in a helo is a time for intense scrutiny of the landing area especially when it is not a regularly used landing pad. And flying into low visibility is like over-driving your headlights at night — you keep your speed down to what will allow you to avoid an unknown threat. This is a pure flying technique issue and if a cause factor of technique had been assigned, then as well as the installation of marker balls, a universal preventive measure could have been the much maligned "brief all aircrew" on the necessity of a good landing area recce on final and the reduction of speed when going into low visibility. If this were done at morning brief and the UFSO were to ask

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if anyone had any examples of sudden surprises they had when going into non-standard landing areas, even ones they had been into many times, I am sure there would be many, many examples and it would likely start a discussion which would renew the issue to everyone's benefit.

So that was a little over a year ago and and since then I have seen several similarly unjustifiable expectancy type cause factors (what I will call fuzzy human factors, or FHFs) but I just swallowed my bile and let them go unremarked. I get the feeling that I am just a crusty old curmudgeon, unable to grasp the new wave that is sweeping the flight safety system. However, with the next incident, I just can't sit still any longer.

The second incident was in Bosnia where a Griffon at 11,300 lbs AUW had a mast overtorque during take off. The calculated 4 ft hover Q was 76% and it was achieved in the hover. The wind was 5–10 kts from 2 o'clock. The helo began to move forward and at 30 ft AGL began a left turn to avoid wires. The helo began to sink, the FP applied more collective and the mast Q spiked at 101–102%. The assigned cause factor was expectancy, in that the crew expected to achieve required clearances given the pre-briefed parameters. (By the way, isn't that a given for any aircraft? Is there anyone who begins a take off who is in doubt about that?) The preventive measure was "briefed all on technique for high all up weight departure procedure". The preventive measure addresses a *technique* issue, so why isn't the cause factor technique? The FP had 24% Q to play with on departure, he had at least 30 ft of height to sacrifice during the turn, and from my limited knowledge of Griffon capability there should have been an ample power cushion to carry out the take off without an overtorque. Unfortunately, the extent of the brief mentioned in the preventive measure does not specify CRM nor does the investigation identify what kind of CRM measures were briefed/employed during the take off, but here are a few for starters. Was there a departure brief that acknowledged a good excess of available torque and a climb straight ahead before turning to a basically downwind flight path? This might have reminded the FP to be careful about pulling more collective in terms of both rate and quantity, it might have alerted the NFP to expect a collective increase so he could be monitoring it, and it would have let the FE know that there could have been a descent after the turn so it would not have caught him off guard. Clearly, expectancy was not justified nor applicable because I am quite sure that it was indeed possible to get airborne without incident. It was a failure of technique which caused the incident and had the points above been discussed by the crew I am sure the incident would have been avoided.

The assignment of cause factors must come under a much better scrutiny to ensure they lead to appropriate preventive measures. What can you do about expectancy, confidence, etc? — you will never change those human conditions but you can devise flying techniques which will overcome them. Just because you expect the landing area to be clear is no reason not to do a careful area recce on short final, every time, and this particular technique evolved long ago to counter human failings. On the other hand, if there is no standard technique to overcome one of these FHFs and a new technique must be devised, then go ahead and assign the FHF, but I would like to know what your preventive measure is going to be. It must be something so completely new that we have missed it over the course of the last several decades of our collective experience. But if this is not the case and there is an existing standard technique which would obviate the FHF, then assign technique and reaffirm the training and procedures which have been developed over many, many years.

Comments from DFS:

Major Lee, thanks so much for taking the time to tell us (awhile ago now — the hazards of long publishing lead times) about and so thoroughly document your concern. You have put your finger on something which has been bothering us at DFS for some time, and one of the main reasons we started looking for an alternate approach to personnel cause factors. I believe that with the Human Factors Analysis and Classification System (HFACS — see last issue of *Flight Comment*) which I have briefed to air force senior leadership and am in the process of briefing to all Wings, we will be steered into more accurate assessments, and more likely to select the ones which will focus us on corrective action. HFACS identifies not only the immediate causes, but also the underlying, supervisory and organizational causes of accidents and incidents. More importantly, it classifies those causes in a way which leads more directly to effective intervention. When it is fully implemented and all our Flight Safety professionals are trained in its use (we hope within the next year), we will, I believe, be much more likely to avoid cause factors that don't get us anywhere in terms of prevention. For the first incident you describe, HFACS will lead us to a "decision error" relating either to the decision not to do comprehensive high and low recces or the decision to complete an approach and landing with insufficient visibility into sun. Perhaps "interpersonal resource mismanagement" would be added because those decisions should involve the whole crew and be fully briefed. For the second incident, the same HFACS cause factors would probably be assigned, since this had more to do with a decision error (which you identified as "technique")

than skill, and "crew resource mismanagement" was definitely implicated. In both cases, questionable decisions could be addressed with additional training or focus on those issues in unit continuation training. In neither case do we have enough information to decide whether there was some other pressure causing a "precondition for an unsafe act" (for example, was landing at that place and time, or take off with that load from that place and time critical or perceived to be critical to mission accomplishment?), but if we had been using HFACS, that possibility would probably have been examined. If there had been pressures (and why else would potentially unsafe acts be initiated?), mitigating action would have focused on mission accomplishment versus risk assessments. Again, there is insufficient information to decide whether supervision or the organization played a role, but they might have, and HFACS will steer us there.

So HFACS will, if we use it properly, fix the problem you so aptly and thoroughly identified. In the meantime, it would not hurt for Flight Safety professionals at all levels to be thinking in terms of potential corrective action as they select cause factors. Thank you again for your excellent analysis — our system depends on professional and insightful people like you! ◆

Col. R.E.K. Harder
Director of Flight Safety

ROUTINE TRAINING SEQUENCE

As a Flight Engineer (FE) employed on a CC-138 Twin Otter, I have had the opportunity, during all four seasons, to fly to and land at many isolated areas. One such event occurred while flying with a retractable "Bristol" ski landing gear configuration.

Our crew was conducting winter ski operations training at a north-central location in Alberta. Assessments were carried out on the ice condition of several frozen lakes, and one was decided upon as suitable for training. Checklists were completed, and crew briefings were given, identifying actions "in the event of…" and each crewmembers area of responsibilities as per operating procedures. Everything was ready to begin the routine training sequence.

After a series of "drags," where a combination of aircraft weight and a reduced airspeed is used to vary the pressure exerted on the ice, and to pack the snow covering into a smoother landing strip, we were satisfied the ice was solid enough to complete the intended training. Upon landing, further ice strength "proving" was carried out while conducting a slow taxi slide, using the skis to pack down the snow even more. As the published procedure would suggest, we had made a dumbbell turnaround at one end of our landing track and were in the process of turning off the track at the opposite end for a second dumbbell to prepare for take-off. It was at that moment I noticed water emerging under the left main ski. It took a moment to register in my mind, and then I announced over the intercom that there was water at the ski. Suddenly, the aircraft settled to the left as the ice gave way and the left main ski started to sink. I excitedly called "water, water, water!" Although the proper terminology is "break through, break through," the pilots knew immediately what was happening and advanced the throttles to maximum power.

After some long moments, we were airborne off of the ice and climbing away. Once airborne, an attempt was made to retract the skis. They would not retract as the water and snow were quickly becoming a frozen block on the skis. After some discussion, a decision was made to return home to Edmonton where a "grass" strip and crash response were located. We landed in Edmonton without further incident.

A good lesson was learned that day. Even though all the procedures were correctly followed and the training was fairly routine, the day may well have turned ugly really fast had we not been alert as a crew. Anything can happen! ◆

"This is Stupid"

The weather enroute from Zagreb to Kwonos couldn't have been more perfect for aviation. There wasn't a cloud in the sky, there were no restrictions to visibility and the temperatures were very pleasant. We had just delivered a relatively large load to Zagreb and were proceeding to Kwonos, Lithuania to pick up some troops that were going to participate in a Partnership for Peace (PFP) exercise in Iceland.

The crew was highly motivated to be conducting this mission as none of us had previously visited a former communist block country. We had enjoyed a full day off in Lynham, so we were well rested and our crew day was a reasonable ten hours. Everything should have proceeded smoothly for an uneventful arrival in Kwonos. Like any professional crew, we had studied the local topography prior to our approach, and established the airport position relative to the city and a major river that ran through it. The approach itself, while long, (teardrop from overhead the aerodrome to an ILS final) was a relatively simple one. The first officer briefed an instrument transition to overhead and then, weather permitting, joining a left hand down wind for the visual approach and landing. Everything was going great; the crew was briefed well in advance, we had crossed all the T's and dotted all the I's, now we had time to enjoy the view, right? Wrong!!!

The sector controller put us on a heading for traffic, at least that is what the first officer thought he heard. At this point, the aircraft commander switched the VOR navigation radios to the ILS frequency. As the airport at Kwonos does not have a Tacan, this meant that we no longer had any IFR directional guidance to the aerodrome other than that offered by the controller. The first officer queried this decision as he as sure we were only on a heading, but the aircraft commander was insistent that we were on radar vectors. Since no other member of the crew said anything, and we were within visual range of the city of Kwonos, the first officer did not press the issue (*mistake number one*). Shortly after this, the enroute controller switched us to Kwonos tower and on initial contact we were told to call the airport visual. By now, the city of Kwonos was well into view and we were fairly sure we could see exactly where the airport should be, so we did not reselect the VOR frequency required to give us positive guidance to the aerodrome (*mistake number two*).

Using the ground references we had studied on the map, we were able to locate the airport and we informed Kwonos tower that we had the airport visual. He informed us that he also had us visual. We took this as a positive sign and were highly confident that we had selected the correct airport; after all, there was only one airport on the map for hundreds of miles (*mistake number three*). When asked our intentions

by the tower, we requested overhead the airport to join for a left hand downwind to the active runway. The tower controller granted our request and asked us to call overhead. As we overflew the airport and made the necessary call, we noticed that the runway was labeled incorrectly (21 vice 20), but we assumed magnetic variation had caused the change and they just hadn't got around to changing it (*mistake number four*). As we flew our downwind and configured for landing, we noticed a small aircraft taxi onto the runway and take off without any radio calls. Now we started to feel uneasy about our airport selection but we continued with our approach. None of us observed the Distance Measuring Equipment still had us 12 miles away from the desired airport (*mistake number five*). As we turned base and started our final descent for landing, we noticed a small crossing runway which was not on our airport diagram. We also noticed that the runway seemed much shorter than it should have been. Once we were established on final, we were all getting that uneasy feeling that things weren't looking right, so the aircraft commander asked the tower controller to confirm that he had us visual on final for the active runway. His response to this query was "NO, I DON'T HAVE YOU VISUAL".

OK, now it's panic time!! Where the heck are we if we're not at the airport we thought we were? Now we notice that the distance to our airport is more than 12 miles (we think we are on 1/2 mile final), so we reselect the NAV radio to the proper frequency and get a good point to where we should be. We initiate a missed approach and fly sheepishly to the correct airport.

So, what happened?? As it turns out, the airport we were going to was NOT on the map. Our destination was a former Soviet military airfield and they don't appear on civil maps. Our check Navigator knew this, but he didn't point it out to our junior Navigator. We were about to land at the only airport on the map, a small civil field in downtown Kwonos that was half the length of our destination.

How could this embarrassing and potentially dangerous situation have been prevented? Firstly, the first officer should have been more insistent about leaving the navigation aids tuned to give better directional feedback. Secondly, the aircraft commander could have been more receptive to the first officer's concerns. Thirdly, if you have unique information about an area, share it with the rest of your crew. And lastly, and probably most importantly, don't let the strength of an idea corral you into making stupid errors. We had ample opportunity to identify our first choice as the wrong airport, but because we wanted it to be the right one, we talked ourselves into accepting obvious discrepancies. A "this is stupid" statement by any one crewmember would surely have resolved this situation much sooner than it was discovered. ◆

Major McKenzie

Never Improvise a Missing Tool

It started out as just another one of those typical workdays. You begin with a daily goal until it spirals out of control with multi-taskings. My primary job is as an operational SAR Tech team-leader. My secondary role is as a scheduler/training coordinator within a training cell. This latter role seemed to occupy most of my daytime activity once the flying portion of my day was complete. Overall, there is never a shortage of things to complete within the run of a normal day. One of the general duties of a SAR Tech is to inspect and maintain copious amounts of personal operational gear. This responsibility includes the CSAR-4 parachute.

This day in particular I was packing my parachute following the established parachute packing procedure. It had become a standard routine until this time. When I came to the pack closure tie for the reserve canopy, I could not find the temporary retaining pins. I thought, well, I will just improvise and use a substitute because I must finish this and move on to something else.

Later on that same afternoon, I questioned myself "where were those missing retaining pins?" They should be on the tool board if they are not in use. Did someone forget to tag the board? I continued with my queries within the shop, asking everyone I could about what they might know. It came to light that this tool had been missing for days if not a week. How many parachutes were packed in that time? I hazard to guess. As I continued to look into the problem, I was surprised to sense it did not seem to be that much of a concern to some. I solicited some help from a couple of junior SAR Techs and we proceeded to check all the parachutes in search of the elusive pins. There were at least 50 chutes in various locations, including those on an operational standby aircraft. Where were these pins?

Eventually we did find them. The puzzling part was that they were supposed to be together attached with a cord. They were found separated within two different reserve chutes. They were locking the loops of the pack closure. Simply put, if these chutes had to be deployed, there would have undoubtedly been a malfunction.

Lessons learnt. Never improvise a missing tool. Never assume that someone else will look after it. It takes a little discipline to see the job through. What alarmed me was how did the pins come to be where they were found without being accounted for on the final inspection check, before the book was signed. The inspection process had not been followed to its fullest extent. My concern over the mystery of the missing pins prevented a potential incident before it developed into something much more serious. This safety issue was rectified immediately at the section level, as all personnel were re-acquainted with the proper packing procedures. As for the missing pins, they have since been replaced with a heavy-duty version, interlocked within a metal cable and visibly flagged to make it virtually impossible to go down that road again. ◆

Runway Excursion

On 20 May, 1999, at approximately 2000 hours local time, a SAR crew departed Greenwood on a mission that would take them up past Goose Bay. The crew consisted of the normal SAR crew complement with the exception that both pilots were SAR Aircraft Commanders.

Approximately 100 nm south of Goose Bay at cruise altitude, the RPM of #4 engine was observed to be slowly decreasing from 100%. Checklist actions were carried out and the engine was subsequently shut down.

The mission was aborted at this time and the crew turned around and headed back to Greenwood. En route back to the base, there was discussion about which runway to land on with respect to the winds at that time, which were 90 degrees to the only available runway. The winds turned calm prior to the crew arriving back at Greenwood and runway 26 was selected since the PAR (Precision Approach Radar) was already set up for that direction.

There was no discussion during the transit home as to pilot technique during the landing phase or previous 3-engine landing experience of the pilot (left seat). The aircraft returned to Greenwood at approximately 2400 hours local. The conditions at the time were IFR, winds calm, light rain, three miles visibility, and ceiling 800 feet.

The copilot flew a PMA (Pilot Monitored Approach) PAR approach to runway 26. The pilot then took control of the aircraft once visual with the runway. The initial flare was high which led to touchdown farther down the runway than normal. The aircraft touched down left of centerline and then started drifting farther left. The copilot made manual corrections towards centerline. The aircraft continued to drift left resulting in the left main gear and nose gear departing the runway. The aircraft was brought back onto the runway with the use of #1 engine power (pilot) and right brake (copilot). The aircraft was brought to a stop on the runway and the crew ground evacuated due to the potential for hot brakes.

It was later determined that the aircraft left main gear departed the runway for approximately 570 feet, the nose gear was two feet off of the runway at the furthest point, and a number of runway marker lights were broken. The following lessons were learned from this experience.

One should never take for granted the level of experience or comfort of the other pilot and crew members. Although quarterly sequence requirements include three-engine landings, they do not accurately reflect the yaw changes or rudder pedal requirements necessary when the throttles are moved to flight idle, ground idle and then reverse, since no engine is actually shut down at any time. Three-engine landings are performed in the simulator bi-annually with an engine actually shut down. This having been said, the pilot had never previously landed on three engines in an actual situation.

The discussion with respect to the landing should have been conducted en route back to Greenwood. This would have served two purposes. First, it would have answered any questions the pilot had with respect to what to expect upon landing (i.e. yaw changes and control inputs required). Second, it would have alerted the copilot to the level of experience and comfort that the pilot had, and thereby eliminated any complacency or professional courtesy. ◆

Capt. M.J. Thornley

YOU CAN'T SPELL CRM WITHOUT THE CREW

Photo by Mike Reyno/Skytech Images

They say it's lonely at the top. I can't comment about that, however, I do know that at the low to medium (where the Hercules flies), thanks to CRM and your crew, you are never really alone.

It was during a late September night near the Rockies that "it" happened. We were flying from Ottawa to Abbottsford at about 20,000 feet in a heavy E-model. It was around the 8th or 9th hour of the crew day when we started to hear a different noise. Whenever the co-pilot spoke we could hear a loud whistling over the intercom (no, it wasn't his oxygen switch)! The noise was also present but quieter when the pilot spoke. Immediately we all went to work isolating the sound. Both pilots checked their headsets and intercom; the FE started checking panels and switches. I moved from my chair and went from the left to the right side of the cockpit to try to isolate which side it was coming from. After about five minutes of jabber, looking around, and hurried activity, we all heard a lone voice over the intercom: "Aircraft Commander, Load Master… Who's flying the plane?!?"

We all stopped and looked at each other. In our haste to desnag our problem, we had forgotten to ensure that someone was 'aviating' the aircraft. The co-pilot took control. The problem was found shortly afterwards — it was the seal of one of the windows behind the co-pilots instrument panel. There is no sad ending to my tale. For better or worse, I'm still here.

It's easy to get channelized and focused on a problem. Even more so on a problem that is perceived to be minor in nature and not visibly dangerous. Fortunately there was no imminent danger. Luckily, the FE had raised a question that brought us all back to reality and allowed us to effectively handle the situation. ◆

Gut Feeling

So, I finally got the call… a recovery flight to the United States! I had enough time to do some planning, brief the technician I had been tasked to bring, hop in the jet, and go. I landed at the destination (only two hops away) and while the technician worked on the broken jet, I mulled over a few things. The original plan was to RTB immediately following repairs, and, especially since things were busy at work, I was all for the plan. The only potential glitch was that it took more flying time then anticipated to arrive at my destination. I checked the flying hours to get home against my maximum allowable, and found I had some to spare.

My technician finished up and we took off again. This time it was two hops (one night) to get to an airport where we could clear customs. By the time we cleared customs I was tired. I was so tired that I calculated flying hours again, hoping the ten-minute flight home that I had yet to do would put me over my maximum time. To my dismay, I had about .7 hours to spare. I sat down and contemplated. The first thing that went through my head was "I can see the flight safety report now." However, after considering the brevity of the transit and the fact that I was needed at my unit, I pressed.

During the take-off roll, my heart sank as I noticed my flaps were not properly set. I set them, lifted off and quickly checked the cockpit for any other omissions. Luckily all was okay and I continued without further incident.

In retrospect; we've all seen examples of pressing, and this one is mine. In my case, I let external pressures override a gut feeling. Think about it now… you need the edge to make that call when you are fatigued. ◆

THE IMPORTANCE OF A TRAINING REPORT

Following a 25-year career in the military, including 15 years as an Air Traffic Controller, I have to admit that on some occasions I witnessed and have been involved directly or indirectly in situations where flight safety rules were either forgotten, ignored, or overlooked. To this day, there is on such occasion that I still remember vividly.

Like any other year, it was the end of the posting season, which meant that most of our experienced PAR controllers had been posted out and their replacements (usually relatively new in the trade) were under training and checkout for the next three to four weeks. As usual, during training of new personnel, the trainee sits in front of the PAR scope and does precision radar approaches while being monitored by an experienced PAR controller who is sitting behind the trainee, taking notes. The monitor helps the trainee when required, and is ready to intervene at the first sign of trouble. Generally, this means when the trainee is unable to complete the approach in a safe and orderly manner.

On this particular day, I was assigned to monitor a new PAR controller just posted in from Moose Jaw. Since this controller had already qualified in GCA at that Base, everyone, including myself, immediately assumed that this would be a quick and easy checkout. Following a brief introduction, we positioned ourselves behind PAR 2 where I reviewed some local procedures while he was performing his equipment checks. The weather was marginal VFR. As the fighter recovery began, we took the second aircraft on PAR 2 and the trainee's Radar approach was relatively good for his first of the day. Based on my initial assumption and the first few PAR approaches that were well done, I started to adopt a more relaxed and comfortable position by letting my mind wonder to other things and focused on writing the trainee's training report.

Meanwhile, the trainee had been handed an aircraft at approximately ten miles on final, which was sequenced number two behind another aircraft (same type, same speed) five miles final. It sounds pretty simple, yes — two planes, same type, five miles apart and travelling in the same direction. As I was writing his training report, a loud voice announced the dreaded call!! "SEP LOSS" This means that a controller has just lost minimum radar separation (three nautical miles on PAR) between his aircraft and another aircraft. As I heard the call, my heart immediately shrank to 1/10 its size and, as I lifted my head to look at the radarscope, I already had that sinking feeling, knowing who was responsible for this.

What happened? The aircraft that was handed off to the trainee was travelling 30 knots faster than the lead aircraft, closing in on him. This wasn't noticed by either the trainee or by me. I was too busy writing reports instead of monitoring the approach.

Nevertheless, I immediately jumped in, took the aircraft off of its approach to regain separation and continued with the PAR approach with no further incident. Needless to say, this was my first significant emotional event in my career and I hope it was my last. Of all the many reasons or causes as to why accidents and incidents happen, I must say that I have experienced the most potent one: **Complacency**. ◆

Cable Up or Down?

While working a night shift, the Tower Controller and I, the Ground Controller, received word that two F-18's were going to be arriving at our airfield in approximately one hour and would require an approach end arrestor cable up (standard procedure). Meanwhile, a C141 was loading cargo and preparing for departure. We decided to call Fire hall out and have them put the approach end cable up. As the fire truck was on his way out, the C141 called up for IFR airways and engine start. Figuring that it would take 15 to 20 minutes for the C141 to be ready for departure, we had the Fire hall continue with putting up the cable, a process that normally took 10 to 15 minutes.

Approximately 15 minutes later, the C141 called ready for taxi. Due to his location on the airfield, the best taxi route was for him to go straight out onto the runway and backtrack to position. I told Fire hall that the C141 would be backtracking and asked him how much longer they would require to finish putting up the cable. They informed me that it would take about five minutes. As the C141 progressed down the runway, I instructed the fire vehicle to proceed off of the runway into the pits and I requested the cable status. They informed me that the tape was across the runway, but the cable was not tensioned. The tape is about eight inches wide, made of nylon and used to pull and tighten the steel cable. I took this to mean that the cable was across and hooked up, but not tensioned. I told the C141 about the cable status, as I had interpreted it.

He told me that it would not be a problem for him. He continued with the backtrack, taxied over the tape and proceeded to the button, located 1350 feet from the cable and did a 180 degree turn for departure. Once the C141 departed, Fire hall informed me that when the aircraft went over the tape, it had bounced up and was then blown off of the runway and he was not sure if the tape had done any damage to the aircraft. The pilot was informed of the Fire halls' observation and he reported that they had no problems and they continued on to their destination WFI.

This incident could very easily have been a disaster; the aircraft's landing gear could have been severely damaged, the firemen that were in the cable pits could have been seriously injured or killed if hit by the flying tape. We found out later that Fire hall still had the tape attached to their truck and decided at the last minute to undo it. Who knows what could have happened if they had not?

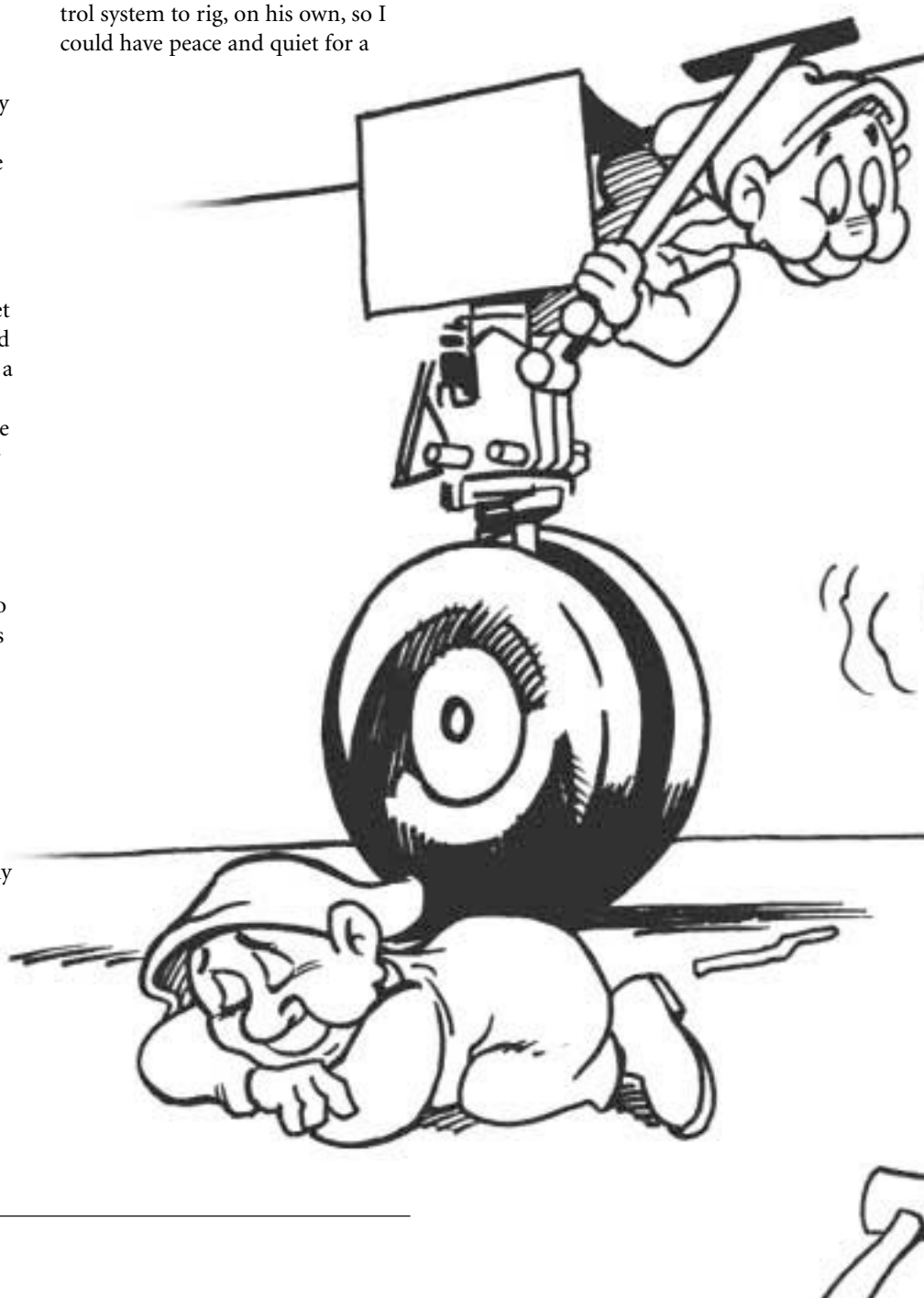
The biggest mistake that I made was in misinterpreting the information that Fire hall had passed in reference the cable status. The fact that it was the tape across the runway and not the cable should have clued me in that the cable could not have been hooked up on the other side. ATC had never been given a briefing on exactly how the cable was put up and later we discovered that it was being done two different ways by Fire hall and the field maintenance crews. The second mistake was in letting the C141 take off over the cable when it was not up and tensioned, we should have had the Fire hall pull the cable off to the side of the runway.

During this whole incident, several different people could have prevented it from occurring. The Tower Controller and I, who between us had more than 33 years of experience, and the Fire hall who were the cable experts, knew that the C141 was going to depart over the tape. We were very fortunate that no one was hurt. Section personnel were all given a thorough briefing on cable procedures and were explained the different ways the cable could be put up. Also, a policy was later put in place stating that the runway could only be used if the cable was up and tensioned or completely off. ◆

MCpl. Zevenbergen

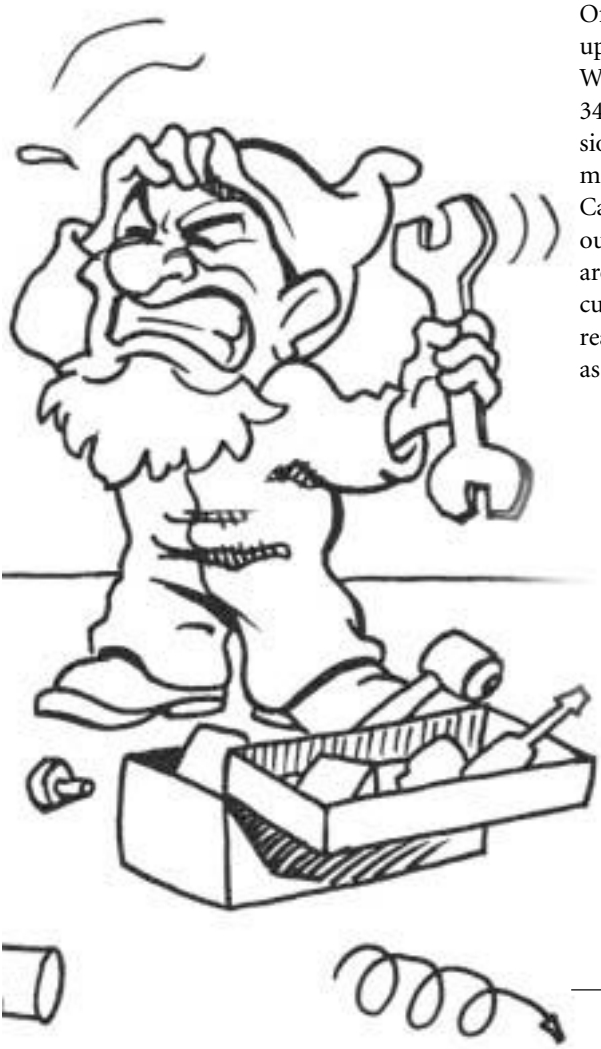
THIS JOB'S SO SIMPLE

After a short stay in a support section down the line, I was back on the aircraft type I had worked on for the past 10 years, but this time I was the brand new Master Corporal in second line maintenance. I knew all the guys on the floor and it made it easy to know who was who so I could better keep an eye on the boys. So I thought! It was almost like a Disney episode; there was Dopey, Sleepy, Sneezy, Nasty and all the rest of the gang including Fasty, my not so favorite one. I had all of the skills of a decent technician plus experience on type, but little did I know that my supervisory skills would get a boost I did not foresee. I inherited the aircraft about midway through a periodic inspection and was fairly confidant running the show. I made sure everyone had tasks and if they needed a hand or someone to do the time consuming supply runaround, I was there for them. Distributing tasks was almost an art — making sure to match task to technician as best as I could, always taking into consideration the personal abilities of each and every one. That was not so bad as long as Sleepy was awake, Sneezy took his allergy pill, and Nasty was not throwing tools across the hangar floor. Work got done pretty efficiently. Basically, the only one I really had to keep an eye on was Fasty! His famous words almost every time I gave him a job were: "Is that it? I'll be done in five minutes! Give me something else to do!" I must tell you that sometimes I felt like giving him the complete flight control system to rig, on his own, so I could have peace and quiet for a week. Unfortunately, remember when I wanted to match "Task to Tech?" Well, Fasty just did not have the skills yet. I kept him busy with jobs ranging from windscreen replacement to lockwiring Cannon plugs.



I could do it with my eyes closed… and die!

I was OK at observing the results of his work, but I lacked expertise in gauging the effects of outside stress and other factors on his methods and especially the way he paid, or, better yet, *did not* pay attention to the tasks he performed. As it happens to everyone at one time or another, he approached me with concerns about his private life. I was new to that too; now, instead of saying "don't bother me with that stuff, go see the MCpl!" I was the MCpl! So I patiently listened and at the end of the conversation I told him to take a break and we would resume work after.



Having said that and knowing his state of mind, I gave him the simplest job I could. So I thought! *Mistake #1*. I then went back to do some paperwork in the office. *Mistake #2*. His job was to inflate the aircraft's tires so we could take it off jacks. After all he had done this job many times before. Simple enough? NOT! Using a liquid nitrogen cart he had to inflate the tires to 150 psi. The job itself was not so hard; it was using the cart that was a little more complex. The distribution gauge on this cart read three different pressure units: psi, kilopascals, and barometric.

Of course, old Murphy showed up and what could go wrong, did. While I was in the office closing 349's, I heard and felt this concussion that reminded me of my old militia days when we were shooting Carl Gustav bazookas. I rushed outside only to find Fasty running around like a chicken with his head cut off and a couple of technicians really awake (even Sleepy!). As soon as the situation got under control and the ambulance departed, we could investigate the damage and find out what happened.

The right hand nose tire was ripped to shreds, with that distinct "X" cut on the tread, typical of over-inflation. The split wheel retaining bolts were stretched about 1/16th of an inch and the belly of the aircraft suffered major denting. Fasty was temporarily deafened and fortunately no one else got hurt, just scared, A LOT! Instead of 150 psi he had inflated the tire to 150 bar which was about 1,200 psi. So, why did the simple job get so dangerous? Probably because Fasty did not have his mind on it and his supervisor lacked human behavioral assessment skills.

Many lessons were learned that day, but the one I could honestly say stuck the most, was, the fact that being in a supervisory position meant that from now on as well as analyzing and troubleshooting aircraft systems, I had to troubleshoot and analyze human factors. ◆

MCpl P. Nolet

I WAS TOO EMBARASSED!

It was during my first tour as a flying instructor on Tutors in Moose Jaw; I would act as the photo chase on a formation of six aircraft. The boss, who was soon to pass over command of the school, led the formation. As well, my supervisor, the Chief Standards Officer, led the second three-ship.

The mission went off with one aircraft breaking after take-off. We proceeded to the flying area and my passenger, the base photo technician, was able to capture some nice shots of the remaining five aircraft. The formation then moved to the north of the city, where some more photos were taken. It was at this point that the fall-out crew was able to rejoin in the spare. Following some quick photos of the six aircraft together came the final phase, which would involve a gear-up, low approach down the runway.

As Lead set up, it was evident that Runway 10 was active, requiring an eastbound pass by the tower in a gentle left turn. This was less than ideal from a photo perspective due to the photo tech sitting in the right-seat and our aircraft being stepped up on the formations right side.

The pass went without incident and the commandant began a left downwind setting up for initial. It was my intention to get a few more pictures of the six aircraft, so as the formation climbed crosswind I slid to the inside, giving the photo tech a better view.

It was at this pint I was guilty of expectancy, which very nearly cost us our lives. As a section lead myself, it was routine to lead gear-up low approaches. My technique, as were the majority of my peers, was to climb to 5000' on the cross-wind and clear the city before returning to circuit height.

On the day in question, as I slid to the under side of the formation, I was expecting the formation to climb in a lazy, left turn. What happened was that the formation carried out a tighter turn, leveling off at the 1500' circuit altitude. As I moved towards a line abreast position, I was looking skyward with no reference to the ground. For reasons of luck only, I glanced forward in time to see we were descending through 400' AGL, with 60º angle of bank and 15º nose down.

To this day, I don't think the photographer knew how close we came to being statistics. I didn't have the guts to tell him, nor did I tell the others in the debrief. Why? Well, I was too embarrassed, in front of the Wing Commander, Old Commandant, New Commandant, Chief Standards Officer, and my fellow pilots. What I learned about flying that day is an obvious point about assumptions. What I wished I had done, was allowed the other 12 aviators to learn as well. ◆

Acceptable Risk

"Amalgamation," "Down-sizing," and "Trades reassigned," are all familiar terms in today's Airforce. Often these factors combine with mixed results.

When presented with the opportunity to perform Area Surveillance Radar (ASR) maintenance as a technician with primarily a communications background, I saw an opportunity to broaden my skill base. A brush block change was the maintenance action required, and I was paired with the senior technician to perform the repair. The brush blocks and slip rings are components in the ASR antenna that pass control signals and voltage through the rotary joint. Replacement and cleaning of these items are required at regular intervals.

The cleaning and replacement of the worn parts and the re-assembly proceeded without incident. After testing and verifying that all was well, I added another preventive maintenance (PM) item to my list of trained tasks. On the next maintenance cycle for the brush blocks, the senior technician on the ASR performed the PM with another "radar background" technician.

The maintenance had proceeded to the point where the blocks were removed and the slip rings were being cleaned through the cover in the antenna. Cleaning the slip rings involves one technician removing debris from the rings as the other "walks" the antenna from the radome above. The technician cleaning the rings was concentrating on viewing them via a small latch. He was so focused on the slip rings that he failed to notice his free hand was on the ring gear instead of on the case of the antenna. As the antenna was walked, the gear slowly carried his hand forward to the point where he felt a pinch and looked up.

By this time, his hand was now trapped between the ring gear and the drive gear and was slowly advancing. As the antenna weighs a number of tonnes, there was no stopping it and knowing the clearance of the gears, the technician elected to "take the crush" and allow his fingers to pass through the point where the gears met. The end result was a minor laceration and two very bruised digits. X-rays revealed there were no broken bones. Forms were filled out, reports made and filed, and the event was documented.

Knowing that I had performed the same PM a number of months ago gave me an appreciation for what had happened. I realized that pulling away would have resulted in a much more serious injury. What was really required to perform this maintenance safely? Is this a good practice even though it has become an accepted one?

Awareness when working with heavy machinery is essential. In this case, experience averted a more serious injury, but that same familiarity set the stage for the incident. ◆

D. Florkiewiez
Serco Aviation Services
Moose Jaw, SK

GOOD JUDGEMENT AND TRAINING MAKE SAFE MISSIONS

In September 1994, my CP-140 Aurora crew was tasked to find and track a USN nuclear submarine on its way to be decommissioned. Approximately one hour into the tasking, from my Acoustic position (ASO 1), I smelt what seemed like rotten eggs. I promptly advised the Aircraft Commander (AC), who immediately ordered a search for a smell of unknown origin to be carried out.

The whole crew, fifteen of us, immediately proceeded to carry out the repetitively practiced task. After a thorough search, nothing significant was found, but the smell was still there. The only noteworthy finding was that the smell was stronger within the Main Electrical Load Centre (MELC), but no smoke was visual.

The crew commander, not satisfied with the uncertainty and the potential for something to sneak up on us, decided to declare an emergency and proceed to the nearest suitable aerodrome: Gander, Newfoundland. During the transit to Gander, we occasionally visually inspected the MELC for potential smoke or fire, however nothing other than smell could be identified.

Shortly after the landing, with no change to the situation, the AC advised the control tower that the fire trucks were not required as all seemed to be in order, but they followed us anyway. During the taxi, the lead Non-Acoustic Operator (NASO 1) requested to once more visually inspect the MELC. After opening the door of the MELC, he reported a considerable amount of smoke coming from one of the Air Data Converters (ADC's). The AC immediately stopped the aircraft and advised the crew and Air Traffic Control that we were to evacuate the aircraft.

From the moment that the command to evacuate was given to the assembly of all crewmembers until successful egress, was approximately 20 seconds. The firefighters still following us then boarded the aircraft, took care of the problem, and the crew got to spend a night in Gander followed by an effective Mobile Repair (MRP) task. NO INJURIES.

Some lessons learned here are: don't hesitate to speak up. When your senses say something is not right, it's probably not. When not happy with the findings, play it safe and bring the aircraft and crew to a safer area for proper investigation. Keep the training for all emergencies as an important part of all training flights. It proved to be extremely useful in evacuating my crew in less than twenty seconds. DUCIMUS! ◆

Making MOUNTAINS *out of* MOLEHILLS

Back in the days of the illustrious Boeing 707, a co-worker and I were tasked to change an annunciator panel. This is a small panel with a row of lights for things like glide slope and selected altitude. The lights come on orange when target acquisition is close and turn to green when the target is reached. I had removed the old panel and was about to put the new panel in place when one of the small light bulbs fell into my lap. It was an orange colored bulb and as I was putting it into the socket, I noticed that someone had painted a small green dot beside the hole. I then pulled the other bulb out of the spot where an orange dot was painted and, sure enough, it was a green bulb. We left the bulbs as they were, because the system checked out serviceable. It was obvious to us that someone had simply painted the dots backwards.

As these panels are rarely changed, and the system was serviceable, we did not follow up on, or report, this minor discrepancy at the time.

Just over two weeks later, we came to work for an evening shift and were informed that one of the Boeings had a possible wiring snag and had been down all day. Training flights were cancelled and we were to give it our top priority. The problem was that when the aircraft neared its selected altitude, the light on the annunciator panel would turn green and when it reached its target altitude, the light would turn orange. This was exactly opposite to what should happen. My co-worker and I went out to the aircraft, removed the annunciator panel, switched the bulbs around, putting the orange bulb in the green painted spot and vice versa and presto, the aircraft was serviceable. We also got someone from the lab to go out and repaint the dots on the panels; something we should have done in the first place but never followed up on.

An aircraft had been down for a whole day basically because of our inaction on something that we considered minor and inconsequential. I learned my lesson that day — when it comes to aircraft maintenance, there is no such thing as inconsequential. Everything is relevant and even the smallest irregularity has got to be actioned or, at the very least, reported. We were lucky that our inaction on this matter resulted in only lost training and wasted man-hours.

Remember, if it doesn't seem right, it probably isn't. Fix it or, at the very least, report it. Doing nothing is the very worst thing to do. Do not let a molehill grow into a mountain! ◆

What Would You Have Done?

It was a beautiful sunny day, the aircrew had briefed for a standard COREX mission and they had a serviceable aircraft. What could go wrong?

The trip was uneventful up to the point where contact was made with a military sailing vessel on Channel #16. During the course of the conversation the aircraft decided they should use this opportunity to practice a hoisting evolution, since the weather was perfect. An in-flight brief was conducted and the crew proceeded with the evolution. No one on the crew had ever performed a hoist to a sailing vessel before. No objections were raised and they carried on with the hoist. Despite difficulties from both the front and back end, they pushed on and the AESOP was hoisted out of the back door. The end result was that the AESOP fell 40 feet to the deck of the ship, luckily only sustaining minor injuries. The aircraft returned to the airfield minus one crewmember!

Many discussions, points, and lessons came from this turn of events. As always, hindsight is 20/20. First, was it wise to perform a spontaneous evolution, in light of the fact that there were and are no set procedures for hoisting to sailboats, and the fact that no crewmember had ever practiced the evolution before? Second, shouldn't the evolution have been knocked off at the first sign of difficulty? In training there is never a need to push to accomplish an evolution. Safety of the crew should have come first. Third, should the SMG (Standard Manoeuvring Guide) be amended to specifically mention hoisting to a sailboat? Last, what would you or I have done differently, or the same, for that matter. What would you have done? ◆

"FAMIL RIDE"

The Squadron had been deployed on a two-week exercise in support of "air mobility" operations. The main exercise had successfully finished and now one crew (mine) had been selected to stay behind to act as a casualty evacuations (CASEVAC) helicopter for a follow-on operation.

We had maintained a 24/7 posture, which meant very little flying until the last day. On that day, we were authorized to provide famil flights to some young, gung-ho, army types. At last, a chance to go flying and show our Griffons' capabilities!

After a crew briefing and passenger loading (8 total), we were airborne, dropping down to tactical altitude (15–50 feet above obstacles). After flying several circuits along a pre-planned route, we descended into a river valley that was on the southern border of the range.

Since we had now deviated from our route, a crew discussion commenced as to whether this valley was included in the squadrons previous wire recce. Before this question could be answered, the co-pilot (who was at the controls) screamed "wires!" and initiated a rapid cyclic climb. We cleared the wires by what must have been mere feet!! The climb continued up to 500 feet and the intercom was silent while we returned to the base.

Photos by Mike Reyno/Skytech Images

During the crew de-brief, we discussed whether it was worth it to fly tactical when it was not necessary to our mission, and, to fly along a route that we had neither planned or briefed, and, to remain tactical in an area where it was unknown if a wire recce had been carried out or not.

Looking back, I realize just how close we came to losing a crew, passengers, and a helicopter for the sake of a "famil ride." ◆

PREPARE FOR THE WORST

I was number two of a two-ship T-33 formation. We had been tasked with a ground control intercept (GCI) mission to give controllers in North Bay a couple of targets to move around the sky. The weather on take-off was VFR. We departed IFR, as there was a cloud layer from about 2000' AGL up to 16,000'. The runway was dry, but there were some showers in the forecast.

After completing the GCI and re-joining, we each listened to ATIS and were pleased to hear that the weather was still VFR and very little had changed since take-off 45 minutes earlier, or so we thought. The plan was to recover by letting Greenwood terminal vector us in for the ILS approach. As soon as we broke out of clouds, lead would then cancel the ILS and we would continue in for the overhead break. Lead was keeping the speed high on purpose so that it would be a relatively small change in speed when transferring to the overhead break.

Terminal asked us what our intentions were and when lead replied, terminal told us that the field was IFR. We were about 10NM back on the ILS. Since we were not really anticipating having to complete the approach, we did not have an overshoot plan, we did not have an alternate plan, and we had considered fuel for a VFR recovery and not an IFR diversion. After all, considering the information we had received on the current ATIS, why should we have even considered these things? The time for that was at altitude, in clear air, with lots of time to prepare.

As a new pilot on squadron, I still found it challenging just to fly the T-33 in formation. Now, we were changing configurations in cloud and in rain (which the T-33 canopy makes unbelievably unpleasant) as well as pulling out approach plates in case I lost lead. I found the situation very challenging and frustrating. I was task saturated but managed to land safely.

Rapidly changing weather conditions are of vital importance and I was surprised that the latest ATIS had not been amended or at least indicated that for the latest weather to contact terminal. I know that ATC does their best to avoid situations like this, but as a pilot I now know that one must always prepare for the worst. Expectancy caught me a little off guard. In the future I will not be surprised if ATIS is wrong and if there is a concern about weather, fuel, and/or alternates, I will pipe up and ask. ◆

Capt. Kinner

The Best Laid Plans

We were setting out from Moose Jaw for the weekend to conduct Instrument Flight Rules cross-country training in a Tutor aircraft. I had just finished conversion training, having recently completed my first tour on the Aurora. The other pilot was nearing the end of his first tour on the Tutor. Between us we had more than 4000 hours of flying experience.

The first leg of our trip from Moose Jaw to Thunder Bay was uneventful. Our plan was to fly one more leg that day to Barrie, Ont., which is a fairly small, uncontrolled airport. The forecast weather at Barrie was slightly better than minimums for the full procedure VOR approach, the only published instrument approach. The weather in Toronto was forecast to be better than what was required for an alternate. We knew that the clouds were based at about 1000' and topped at 18,000' enroute, so we asked the flight service specialist if there had been any PIREPs with regard to icing. We were informed that there had been no reports of icing of any kind.

After a fairly lengthy discussion about whether to remain in Thunder Bay for the night or press on, we decided to "give it a shot." We decided that we would have quite a bit of excess fuel so we could check the weather enroute and refile to Sault Ste Marie if it appeared to be deteriorating at our destination. For one last check, we called the radio operator at Barrie by telephone and asked him what the weather looked like. He informed us that it was a bit hazy, but that he could see stars.

We took off in good weather and climbed to 27,000'. We checked the weather enroute and were told that Toronto was still quite good (1000' ceiling and 6+ miles visibility). There were still no reports of icing. We called the radio operator in Barrie and he informed us that he could still see clear sky. We decided that we had a very good chance of getting into our destination and requested descent.

We entered cloud at around 20,000' and did not notice any icing initially. As we got lower we realized that we were picking up a fair amount of mixed ice. We would spend more time in cloud by climbing back to altitude than we would by flying the approach, so we decided to continue. At procedure turn altitude, our required power setting to maintain 175 knots straight and level was 92% (normally approximately 78%), so at this point our rate of fuel consumption was much greater than planned. We became visual with the runway at Barrie when we were directly above it; clearly we were not landing there.

We carried out the missed approach and requested clearance to Toronto. We were cleared to a fix to hold for 45 minutes. We informed arrival that we would not have enough fuel to hold for that length of time (at this point we had iced up pretty badly and were burning our fuel rapidly). We were then told that if we could not comply with the holding clearance that we would have to declare emergency fuel, which we immediately did. We were then made number one on approach into Toronto for the ILS approach. Remember the good weather reported at Toronto? It was now being reported at 200' ceiling & 1/2 mile visibility in snow.

I don't think I have ever had as much adrenaline coursing through my veins as I did on that night, flying the ILS approach into Toronto. I remained on instruments and was just about to overshoot when the other pilot saw the approach lighting. We landed, taxied to park and shut down with 300 lbs. of fuel remaining. We would have had enough fuel for one more approach and then would have been faced with ejecting had we not gotten in.

The lesson I learned from this flight was that no matter how well you think you have prepared, things can still go bad. I thought about what specific factors caused us the problems and have identified three. Firstly, with haze, it is important to remember that vertical visibility can be good but your forward visibility can be next to nil. Secondly, the reason there were no reports of icing could have been because all of the air traffic in and around Toronto that night had anti-icing capability. Lastly, remember that if there is extensive cloud, the weather conditions can change rapidly, regardless of what is being forecast. ◆

The Final Stop

One of my first TD's in the military was Operation Box Top in Thule, Greenland. For a first timer, Thule was an eye opener with its barren landscape, extremely long days, and refueling pits vice refueling trucks.

One memorable day I recall being sent out to park a Hercules aircraft that was due in from its refueling run to CFS Alert. Having walked out to the designated parking spot which gently, but noticeably, descended towards the open fuel pit, I placed the wheel "chocks" (which were nothing more than 50–70 lb. sandbags) close beside me and waited for the Hercules to arrive. I didn't have long to wait. From my position I could see the Hercules make its descent, touch down, and brake hard to make the turnoff at the first ramp access. Once on the ramp I couldn't help but notice that this guy **was moving**.

As soon as he was within range I gave the slow down signal and he slowed somewhat. When he came into position, I started the hand motions for him to turn right. Once he completed the turn I started to bring him forward. He hadn't gone more than ten feet forward when I suddenly heard the distinctive sound of all four engines being shut down and the Hercules came to a sudden stop, still well short of the nose wheel parking spot. Almost simultaneously the crew door opened and crewmembers were egressing the aircraft at a gallop. This happened so fast that my hands were still above my shoulders motioning the come forward signal.

As I lowered my arms, wondering what the heck was going on, I looked at the Hercules only to notice it had started to roll backwards...straight towards the open fuel pit. I picked up the sandbag and ran towards the Hercules, hoping I could throw the chock behind the rear wheel and maybe stop the roll. Had the aircraft been stopped on the parking spot I might have had a chance; but, as I was trying to catch up to an aircraft that was gaining momentum while carrying a 60 lb. sandbag, I realized that I'd lose this foot race.

I had just gotten past the crew door when the Hercules suddenly came to a stop. It seems that the last crewmember coming out noticed that the aircraft was moving, and where it was moving to, and quickly reentered the cockpit and set the brakes. The cause for all of this excitement...smoke in the cockpit.

In light of today's Flight Safety awareness, I look back and consider the events of that day and what went wrong. The obvious is the break down of cockpit discipline. But other questions come to mind - if the aircrew thought that the smoke in the cockpit was a fire/explosion threat, why not shut down immediately after landing and on the access ramp instead of parking near a refueling point. If the aircrew had declared an emergency and the servicing desk was aware of it, why didn't they inform the groundman of the emergency? Why were the refueling pit doors open? And lastly, if there was a concern, amongst the aircrew of a possible fire and/or explosion, why was the groundman not warned or stopped from approaching the aircraft by the aircrew? If it had not been for the action of that last crewman, the final stop of that Hercules would have made a hell of a mess. ◆

Marshalling Madness

Marshalling a large, unfamiliar aircraft at night into an extremely tight spot is tough enough for any technician, but for an inexperienced person it can be downright dangerous. At any time during the following occurrence I could have said "no," I could have asked for a review of my instructions, or I could have asked for someone more experienced to do the job. Having an unshakeable faith in my own common sense could have led to a disastrous night.

Having spent three years in the artillery and nine years in a lab environment as an AVS technician, I had recently been rotated to the servicing environment. Due to my age and time in, most people took for granted that I knew much more than I really did about an aircraft environment. I often tried to tell people about my near total ignorance of my new job, but the idea remained that I knew what was going on. This preconception of my abilities, and my own eagerness to please led to what I felt was a dangerous park job one night.

It was well after dark in the line shack when the word came down that a small two-engine E2 Hawkeye had to be parked. I was unqualified to park, on paper, but it was generally thought I was god at it, so good that I was sent out to supervise a Private (on rotation with us) on this particular park. The Private had the wands, when, instead of an E2 Hawkeye, an E3 AWACS came screaming towards us. The Private quickly passed the wands to me, when I'm sure I had no more experience than he did. Being a stand-up guy, I took the wands, and relying on my faith in my own common sense, I decided to give it a shot.

There were aircraft on either side of the spot, and for some reason there was all kinds of ground radar trailers and antennas parked on the grass just behind the spot. It would have been hard to get the Hawkeye in there, much less an E3. The aircraft was to taxi into the spot, do a sharp U-turn, and then roll forward to the line. To make a long story short, it took three tries to get it in place, all the time coming much too close to the other aircraft and ground equipment. When it was done I thought I'd be in trouble, but I was treated like some sort of hero. Many very experienced technicians said there was no way they would have attempted it, but thought it was great that I pulled it off. I had the chance to question my orders or stop the process at any time; instead, I let my confidence create a dangerous situation. ◆

Corporal Pike

MAINTAINER S CORNER

Welcome to the newest section of the Flight Comment Magazine. This page is dedicated to the men and women of the Canadian Armed Forces who specialize in keeping our fleets in flying order.

The aim of this page is to provide a means of sharing trends and concerns developing in the maintenance world. The intent is not to focus on any particular fleet but to discuss as many subjects as possible.

Throughout the year various maintenance issues will be tackled. Your participation is welcomed. If you have anecdotes, photos, or article ideas forward them to DFS for review and possible inclusion in the magazine. Send your submissions to Sgt Anne Gale, DFS 2-5-3, via e-mail or regular mail.

IS AIRWORTHINESS FOR TECHNICIANS?

Yes, airworthiness does concern technicians. Or rather, the actions of the technicians directly affect the airworthiness of an aircraft. How? First, let's look at some definitions. Even though the word "airworthiness" is not defined in dictionaries, we can safely assume that it is derived from the term "airworthy" which means "fit to fly" [*Canadian Oxford dictionary*]. DND further defines airworthy as "fit and safe for flight and in conformity with its approved design type." Second, let's see how airworthiness relates to technicians. Every time a technician carries out maintenance on an aircraft, he or she will positively or negatively affect the fitness and the safety of that aircraft. This effect will be positive if the technician is conscientious and follows the CFTO, and uses correct, serviceable, and authorized tools and parts prescribed in the orders. The effect will be negative if the technician is careless: does not follow authorized procedures, uses the wrong part or tool, does not complete the job, etc. Positive actions will put a safe and fit aircraft back in the air. However, the results of carelessness may not be apparent or evident, but they can be deadly. A missed torque on a critical fuel line, for example, could cause an in-flight failure of the line, which could cause a fuel leak, which could cause a fire, which could cause an explosion, which could cause… well, you get the picture.

The consequences of performing tasks that do not comply with regulations, orders, and standards can be catastrophic; we have a moral and professional responsibility to provide only the utmost quality workmanship. Therefore, as technicians, **WE** are responsible for providing an aircraft that is fit and safe for flight. So, yes, airworthiness is extremely important to technicians.

One more thing, at the end of the day, when the work is done, ask yourself if you would send your loved one on the aircraft you just finished working on. I sure hope the answer is yes. ◆

Sgt Anne Gale
DFS 2-5-3

Solitude and Isolation

There is a time and place for everything. Shutting oneself off from the outside world in order to indulge in peace and solitude can be very tempting when things get brisk. However, when you're operating within a busy ATC environment and on an unfamiliar aerodrome, it is important to remember to switch yourself "back on" before it is too late.

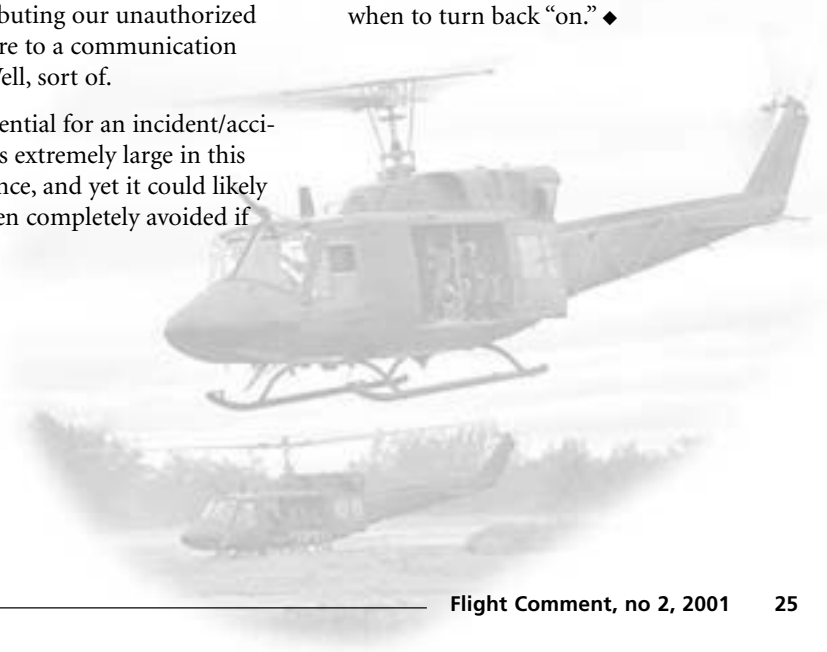
As a fairly new copilot on the Twin Huey, I tended to be in awe of the "high time" fliers on squadron and readily grabbed at any chance I could to fly with them and reap the benefits of their experience. It was on one particular occasion when I learned that even these "demi-gods" were only human after all. It was night and we were preparing to depart Visual Flight Rules from a mid-size American airfield in Vermont. I was on the controls and we had just been cleared by ground control to hover taxi via the most chaotic route deemed imaginable in order to reach the departure runway. As we were hesitant to stray off track due to the sheer number of large airliners which seemed to surround us, the A/C painstakingly repeated back the taxi clearance for confirmation purposes and simultaneously traced the route on the aerodrome diagram located in the aeronautical charts. He then proceeded to feed me verbal instructions on when and where to turn while I taxied.

This would have worked out fine were it not for the incessant chatter which permeated from the ground control frequency as numerous aircraft were directed one way or the other. As it was, my A/C's verbal instructions were continually "stepped upon" and had to be repeated as we slowly made our way through the maze. After nearly missing a turnoff at a taxiway intersection due to the cacophony of radio voices, he decided to isolate my radios such that the only voice I heard from that point on was his. From then on, it was smooth sailing right up to the runway hold short point.

Being new on the airframe and only in a four-foot hover, I elected not to put myself back on radios at this point, (this would have required momentarily flying with my left hand), and instead looked to my A/C (a Major) for further instructions. He appeared perturbed that I had stopped at the hold short line vice taxiing onto the runway and signaled me to proceed. So I did. I aligned myself on the runway and looked to my A/C again. He looked at me as if I were daft (had he forgotten that my radios were isolated?) and signaled me to take off. So I did. Over the far end of the runway and at a comfortable 300 ft altitude, I switched hands and de-isolated myself only to hear the tail-end of ATC's admonishment; "…normally compulsory to receive take-off clearance before departing [this airport]!!!" My A/C sheepishly responded, attributing our unauthorized departure to a communication error. Well, sort of.

The potential for an incident/accident was extremely large in this occurrence, and yet it could likely have been completely avoided if BOTH pilots had been monitoring the tower transmissions. I, as copilot, should have verbally requested that the A/C de-isolate me upon approaching the hold short line. As for the A/C, he should have automatically put me back on radios at this same point, especially when he had changed frequencies from ground to tower. Furthermore, he should have been certain we were cleared for take-off before we in fact did. Given the situation, isolating the co-pilots radios while on ground was a feasible solution.

There are numerous in-flight maneuvers (i.e. slinging, hoisting, slope landings, etc.) during which the flying pilot is radio isolated due to the concentration required and the necessity to adhere to directional commands from the Flight Engineer. However, it is extremely important that radios are de-isolated at the *earliest possible moment* since two heads (or four ears — six with the FE) are invariably better than one. The importance of staying abreast of what's happening within your air environment cannot be overstated. There is a time and place for solitude and isolation, but know when to turn back "on." ◆



Epilogue

TYPE: **CC115465**
LOCATION: **Comox, BC**
DATE: **07 Feb 1998**

Three technicians were conducting a maintenance ground run on Buffalo 115465 following engine maintenance. The run-up was conducted in accordance with the checklist and included the Power Lever Burst (PLB) procedure, which directed that the power lever be moved from the maximum forward thrust position to the maximum reverse thrust position within one second. During this procedure an unfamiliar engine sound was heard, followed immediately by a loud explosion and fire. The LH power lever was moved to idle and fire emergency procedures were carried out. Pulling the LH FIRE PULL T-Bar handle failed to activate the fire extinguisher and attempts to activate the second fire bottle failed. The RH engine was shut down and the aircraft evacuated. Three fire trucks arrived approximately 2.5 minutes later and extinguished the fire in approximately 3 minutes. There were no injuries in the accident, however, the aircraft sustained Category 'C' damage.

The investigation revealed that the engine exploded and caught fire as a result of the failure of the internal coating of the overspeed switch to prevent an engine overspeed, during the PLB Check. Furthermore, analysis showed that there was no technical reason for the PLB check, but it remained in the CFTO. The engine fire extinguishing system failed because a shunt wire was installed in the squib preventing the charge from firing the fire bottle. The crew were unable to turn the LH Fire Pull T Handle to utilise the second fire bottle, likely because they had not practised the manoeuvre.

The analysis of this occurrence has shown it to be a classic case of several independent factors conspiring to create a spectacular and costly outcome. Fundamentally, it comes down to the failure of an overspeed switch (active cause) as well as an unnecessary checklist procedure (latent cause) that placed dependance on an overspeed detection system, whose serviceability could not be confirmed beforehand.

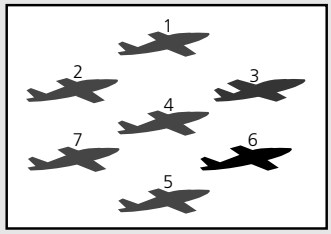
To correct the problems identified in this report all overspeed switches have been replaced with ones containing a Sandstrom coating and the CFTO has been amended to remove the PLB check from the Run-up checklist. Fleetwide, a Special Inspection (SI) was conducted on systems that employ shunts to ensure serviceability. Also, flagged grounding plugs are used in lieu of improvised shunts when fire bottles are serviced. Finally, all Air/Ground crews receive training which includes practice pulling of the "Fire Pull" T handle. ◆

Epilogue

TYPE: **CT114019**
DATE: **27 Feb 1999**
LOCATION: **15 Wing Moose Jaw, Runway 29R**

The aircraft was number six of a 7-plane formation landing after an on-field air show practice at 15 Wing Moose Jaw on 27 February 1999. During touchdown on runway 29R, the aircraft experienced a firm landing. The aircraft then bounced and became airborne again. The nose of the aircraft then rotated quickly towards the ground and the nose landing gear contacted the runway surface heavily. The aircraft veered to the right, the nose landing gear collapsed and the pilot maintained directional control using differential braking. The aircraft then skidded to a stop. There was no interference with the rest of the formation. The pilot shut down the engine, turned off electrical equipment and egressed from the aircraft. Fire fighting vehicles and an ambulance arrived on scene within minutes, but were not utilised. There were no injuries.

The positions in the formation are depicted as follows:



The team was under training for the 1999 air show season. Three members of this 7-plane formation were first-year team members (numbers 1,5 and 6). Numbers 2 and 3 were ex-team members who had joined the team partway through the training syllabus. They had replaced one team member, who had departed because of an imposed weight restriction on Tutor aircrew, and Snowbird 2, who had suffered fatal injuries in the December 1998 Snowbird accident. The team had dealt with these set-backs effectively and responsibly.

The collapse of the nose gear was due to excessive bending overload caused by poor landing technique. Contributory causes were training practices at 431 Squadron and the lack of clear direction for 7-plane landing irregularities and emergencies in Squadron Standard Operating Procedures (SOP's).

A number of effective measures have been taken to date which were also fall-outs from the December 1998 Snowbird accident;

- The Squadron SOP's have been amended and are clear on escape lanes during seven-plane landings;
- Semi-annual evaluations are now conducted by CFS vice an annual evaluation;
- The Snowbirds now utilise a Computer-based training (CBT) package which allows each pilot to effectively learn his/her respective sequences;
- A Squadron Training Plan and Squadron-specific CRM package have been developed; and
- Three-year tours for the Snowbird aircrew have now been implemented to allow for more expertise to remain on Squadron to perform some training, standards and evaluation functions. ◆

Epilogue

TYPE: **CH-124A414 Sea King**
DATE: **16 June 1999**
LOCATION: **Shearwater, NS**

At 1420 Z 16 June 1999, a crew from 406 (HT) Squadron, consisting of one Waterbird Instructor Pilot and one Airborne Electronic Sensor Operator (AESOP), had just completed a crew change of the right seat student pilot on the ramp at Shearwater.

The occurrence student was a qualified co-pilot from 443(MH) Squadron, scheduled for proficiency training for water landings. Prior to taxiing, the crew discussed the fact that a sharp right turn would be required to ensure separation from other aircraft parked in the vicinity. The student pilot initiated the taxi by applying 20–30% torque and forward cyclic (as indicated in the AOI). He verified that the tail-wheel lock pin was unlocked by turning initially to the left and then commenced a rapid turn to the right.

Both pilots had turned their heads to the right to confirm clearance from any obstacles in the direction of the turn, when they noted in their peripheral vision that the rotor tip path plane was descending relative to the horizon. The student pilot initially reacted with two shots of aft beeper trim. As both pilots became aware that the aircraft was rotating forward and the nose of the aircraft was in danger of striking the ground, they both pulled back on the cyclic, and the tail wheel returned sharply to the ground. The number five main rotor blade tip cap struck the tail rotor drive shaft, causing the vibrations and banging that the crew noted. The aircraft bounced several times and yawed 30 degrees to the right. The instructor pilot took control, ordered an emergency shutdown and the crew egressed safely from the aircraft. There were no injuries in this occurrence.

The investigation revealed that no method of unlocking the tail wheel is published in the standard manoeuvre guide. Uniformly, CH-124 instructors teach a brief left turn to confirm that the tail wheel is unlocked. The co-pilot, being a recent graduate of the training unit assumed that the learned procedure was mandatory and therefore conducted an unannounced left turn before commencing the right turn as instructed by the Crew Commander. Distracted by the unexpected turn into traffic, both pilots fixated on reversing the turn to the right. With both pilots concentrating their attention out the right side pilot's window, no one noticed that the cyclic and collective inputs made by the co-pilot had caused the aircraft to smoothly adopt a significantly nose low attitude.

When the attitude change of the aircraft was noticed, both pilots reacted instinctively by pulling back on the cyclic and lowering collective. The speed of the control inputs caused the tail wheel assembly to fail in overload upon impact with the ground, and the Main Rotor blades then impacted the tail rotor drive shaft.

The investigation concluded that a departure from the expected chain of events distracted the crew at a critical time, resulting in C Category damage to the aircraft.

It has been recommended that a case history of this accident be included in future instructor training, as a preventative measure. Amendment of the Standard Manoeuvre Guide was also recommended to establish a standard method of unlocking the tail wheel. ◆

Epilogue

TYPE: **CC130325**

LOCATION: **90 NM North West of Thule Air Base, Greenland**

DATE: **27 Aug 1998**

During Operation BOXTOP a crew was on a daylight flight from Thule, Greenland to Eureka, NWT, to position two non-flying CC 130 crews to recover two diverted aircraft. A malfunctioning cargo compartment pressurization system led to a gradual increase in the cabin altitude such that at FL180 the cabin altitude was 10,000 feet. While attempting to rectify the pressurisation problem the cabin altitude reached 14–15,000 feet. At that point a non-flying aircraft commander (AC) proceeded to the cockpit to inform the crew that he and others were experiencing symptoms of hypoxia. He recommended, to the flying AC, a descent to 10,000 feet and the use of oxygen for the flying crew. The emergency checklist was actioned and due to calculated Minimum Obstruction Clearance Altitude (MOCA) the aircraft was descended to 13,000 feet (11,000 — cabin altitude), followed, 15 minutes later, by a descent to 10,000 feet. With below limits weather at Eureka, the aircraft returned to Thule at 10,000 feet without further problems. A physiological incident was declared. The total time above 10,000 feet cabin altitude was approximately 25 minutes with the flying crew without supplemental oxygen for about 10 minutes. Of the flying crew, only the First Officer (FO) reported one possible (mild) symptom of hypoxia. Eight of the 10 non-flying crewmembers reported some symptoms of hypoxia.

The investigation revealed that the pressurisation problem was caused by a defective cargo compartment air conditioning turbine. More importantly, the investigation also revealed deficiencies in CRM application within the flying crew and between the flying crew and the non-flying crews.

The analysis of this occurrence has shown that the flying crew relied on past experience with flight above 10,000 feet cabin altitude, and Transport Canada regulations, rather than action the "Cabin Underpressurised" checklist as soon as the cabin altitude reached 10,000 feet. As the cabin altitude continued to climb, the flying crew became mildly hypoxic. Their hypoxic condition, coupled with a possible reluctance to use the on-board supplemental oxygen equipment, played a role in the flying crew's decision to press on to Eureka.

The actions of the non-flying crews, while effective at reducing flight time above 10,000 feet cabin altitude, added undesireable stress to the situation and made the management of the emergency more difficult for the flying crew, especially since they were suffering from hypoxia.

To correct the problems identified in this report, future simulator sessions will have scenarios dealing with pressurisation emergencies. A recommendation to audit the effectiveness of the current CRM program has also been made. ◆

From the Investigator

TYPE: **Bellanca Scout C-GGYS**
DATE: **8 October 2000**
LOCATION: **Alexandria, Ontario**

One tow aircraft and two gliders from the Quinte Gliding Centre (Mountainview) were deployed to the Alexandria municipal airport to provide local Air Cadet squadrons glider familiarisation flights as mandated in the Air Cadet Gliding Program. The experienced pilot of the accident aircraft took off at approximately 0815 on the Sunday morning and carried out nine successful glider tows. On landing from his ninth tow, the pilot was observed to be slightly "longer" than previously. The aircraft landed slightly farther than normal and heavier braking was used in order to stop at the launch point.

The conventional landing gear equipped aircraft (tail-dragger) was almost at the end of it's landing roll and travelling at no more than a brisk walking pace when the tail was observed to rise causing the idling propeller to strike the ground and the engine to stop. The aircraft slid on the lower engine cowling for a short distance until the propeller nose cone caught the ground and the aircraft stood vertically on it's nose. After a brief pause in the vertical attitude, the tail of the aircraft continued forward. The aircraft came to rest, inverted and facing toward the approach end of the runway, at a point approximately fifty feet beyond it's normal holding position. The pilot suffered no injury during the accident or his egress from the cockpit.

The aircraft sustained "B" Category damage. The propeller, the engine, the cowling and the top of the vertical stabiliser suffered impact damage. The weight of the inverted aircraft on the wing caused some buckling of the wing struts and the wing roots and damaged the flap mechanism. The windshield, right window and skylight were cracked. The diagonal tube crossing the skylight was bent downwards. The aircraft will be sent to a contractor to be checked for symmetry and alignment.

The investigation is focussing on landing technique on wet grass runways in order to determine the root cause of this mishap. ◆

From the Investigator

TYPE: **Cessna 172 C-GVWT**
DATE: **26 July 2000**
LOCATION: **Bromont, Québec**

On the morning of 26 July 2000, a solo Air Cadet undergoing private pilot training under the Air Cadet flying scholarship program, departed St-Jean PQ for Bromont PQ in a Cessna 172M. The purposes of the flight were to acquire more solo cross country time in order to meet the 5 hours requirement for the private pilot licence and to practise touch and go landings away from the student's base at St-Jean as that airport was also host to the Air Cadet League's regional glider school and the circuit was very busy.

The aircraft was established for a touch and go with a slight crosswind from the left (45 degrees at 5 to 10 Kts). On touchdown, flaps were selected up and full power was applied.

The aircraft began to move left, then right of the centre-line. The student pilot elected to continue the take off roll, went around the circuit and attempted another touch and go. Again, after touchdown, the aircraft moved left and right of the centre-line. The take off roll was continued and a decision was made to carry out one more circuit to a touch and go, with the provision that if the aircraft exhibited the same tendency to cross the centre-line the student pilot would stop and phone his home base in St-Jean to report the aircraft's directional problems to the flying school staff.

The set up for the third touch and go to runway 23 was normal. Approach and touchdown were also normal, with the aircraft landing approximately 1000' from the threshold and on centre-line. Again, the flaps were raised and full power was applied. At this point, the aircraft turned to the left, heading towards the runway edge at about a 30º angle. The aircraft exited the confines of the runway, crossed over a 4 foot-deep ditch, continued along a relatively flat unprepared surface, then entered a second 4 foot-deep ditch, where it came to rest. The two ditches run parallel to the runway and are 100 and 200 ft from the runway edge respectively. The total distance travelled outside of the runway hard surface was approximately 500 ft. The student suffered minor injuries and the aircraft sustained "B" category damage.

The investigation team has eliminated mechanical failure and is now focussing on pilot technique in order to determine the root cause of this mishap. ◆

For Professionalism

CORPORAL CHRIS GRAHAM

On 8 May 2000, Corporal Graham was carrying out maintenance on the fire protective system inside the APU bay of Challenger aircraft CC144606. He noticed two red plastic caps on the lower left side of the airframe. Further inspection revealed that the oxygen fill port and quantity gauge appeared to be properly installed and had been capped off but all the other associated plumbing and hardware had been removed from the oxygen system. A small label had been applied in the area of the oxygen gauge and fill port stating "inoperative" however, the aircraft servicing set was not annotated to reflect "no servicing" of the oxygen system.

Further investigation revealed that, while the aircraft was undergoing extensive electronic support trainer (EST) modifications, the passenger oxygen system was to be upgraded. Checks on two other EST aircraft revealed that the entire oxygen system, including the fill port and quantity gauge, was removed and a blanking panel or a reworked shelf installed. This indicated that the civilian technicians failed to take proper steps to either fully remove the original oxygen system or ensure that an entry to reflect this abnormality was placed in the aircraft serving set.

The oxygen system on the Challenger aircraft is high pressure and the oxygen gauge of aircraft CC144606 read approximately 250 PSI. This would indicate a requirement to service the oxygen system to 1850 PSI. Had the small "inoperative" sign been missed or misunderstood to mean oxygen gauge vice system inoperative and the aircraft oxygen had been replenished during a routine check, the tail section of the aircraft would have been enriched with oxygen, creating a hazardous situation. Corporal Graham fixed a temporary placard to the aircraft stating oxygen system was not to be serviced, initiated a Flight Safety incident, and arranged for this unit to complete the unfinished contractor modification following receipt of the CFTO's and drawing.

The consequences of this improperly installed oxygen filler assembly being utilized could have been a serious aircraft emergency. Corporal Graham should be commended for his exceptional attention and professional attitude, which resulted in the identification and removal of a potentially lethal hazard. ◆

CORPORAL RALPH GIGNAC

On 25 April 2000, Cpl. Gignac, a restricted flight Engineer with 400 Squadron was conducting his morning pre-flight inspection in preparation for a mission for pilot training and found the left-hand lower ejector attachment bolt missing and also found the side bolt loose.

The ejectors direct the engine exhaust system outside the airframe towards the back of the aircraft. If the ejectors would have become loose, the hot exhaust would have been directed inside the airframe on the oil coolers, oil lines and the fire warning system. This could have become a very dangerous situation causing extensive damage and/or a fire.

Cpl. Gignac went beyond his duty to check the condition of the ejector system, which is not an item of the pre-flight inspection. He was very keen and thorough, and is recommended for a "For Professionalism" award in recognition for his dedication. ◆

For Professionalism

CORPORAL DOUG McELWEE

On 28 May 2000, a visiting pilot was using his T-33 Parachute in an Emergency Egress Drill in the 414(CS) Squadron Ready Room when the arming cable was accidentally snagged, and the parachute deployed. The parachute was then routed to 19AMS/ALSE and to Corporal McElwee for re-packing on 29 May 2000. In the process of inspecting the parachute prior to re-packing it, Corporal McElwee discovered two flight-critical faults, and six other unserviceabilities.

Corporal McElwee's vast experience and expertise in the ALSE Parachute field allowed him to immediately identify two flight-critical faults. He found that the installed power cable, used to automatically open the parachute, was too long. The extended length of the power cable may not have enabled positive removal of the parachute pack closing pins during an ejection. A parachute opening delay or malfunction could have occurred, with possible fatal results. He also found that two of the screws on the connector links that secure the parachute canopy to the parachute harness had visibly backed off. Had the connector link screws backed out completely, the secure connection between parachute canopy and parachute harness would have been compromised. Separation of this link during actual use would have had fatal results. This parachute was immediately removed from service and shipped back to the home unit for a Unit Flight Safety Investigation.

Corporal McElwee's extremely professional outlook, outstanding attention to detail, vast and very intimate knowledge of Personal Parachutes permitted him to easily identify the faults on this particular parachute. His whole-hearted effort and dedication ensures that each and every parachute leaving the 19AMS/ALSE packing tables is the absolute highest quality product possible. Corporal McElwee's outstanding effort, expertise, and professional dedication during the performance of his assigned tasks discovered major unserviceabilities of this parachute. ◆

CORPORAL MATT HECKBERT

On 12 Sep 00, Corporal Heckbert, an Aviation Technician with 103 SAR Squadron, Gander was carrying out an AVN After-Flight ("A") Check on Labrador aircraft CH113304. Paying particular attention to detail he noticed a dark line on a structural framing member that was obscured by fuel lines and wire bundles. Without direction he proceeded to carry out an in-depth inspection and even though this area is normally shrouded in darkness and obscured by fuel lines his examination revealed two extensive vertical cracks, totaling 13.75 inches. Corporal Heckbert's finding led to a fleet wide special inspection that required specialized NDT technique and the support of third line repair personnel.

Corporal Heckbert's professionalism and keen attention to detail led to the discovery of this major unserviceability. This framing member is an integral part of field splice 410, which is the attaching point for the aft pylon section. If left undetected the aircraft could have experienced a

catastrophic structural failure resulting in the potential loss of aircrew and a valuable SAR aircraft.

Corporal Heckbert is commended for his professionalism, attention to detail and perseverance in preventing a very serious flight incident that could have caused extensive damage and/or the loss life. ◆

MRS. KAREN REID – CIVILIAN CLERK

Mrs. Reid, a civilian clerk in 434 squadron Log Control, was processing the previous days "Daily Flying Certificates (CF 335). While doing so, she noticed that a Challenger aircraft had flown a total of 6.0 hours. Although this was not out of the ordinary, she remembered that on the previous morning the daily status sheet showed that the right hand engine, in the same aircraft, had only 2.2 hours remaining until its' engine periodic. While Mrs. Reid was walking into the hangar that morning, she had learned from a converstaion with a technician that this aircraft was scheduled to fly later in the day. Since she hadn't seen any paperwork for an engine periodic, she became concerned and immediately decided to contact the Servicing desk and her supervisor.

After the flight was placed on hold, Log Control began to verify that the periodic was due and discovered that the aircraft had over-flown the periodic inspection by 3.8 hours. Further investigation revealed that the aircraft actually had a flight of 1.6 hours whild overdue for engine periodic. At this time the Log control supervisor raised a flight safety occurrence report.

Mrs. Reid's outstanding professional attitude, attention to detail and immediate action narrowly averted another occurrence. This aircraft was on the Ops Schedule and was within minutes of being signed out. Many links in the chain failed to notice and rectify this situation. Although this is not part of her normal duties, her keen alertness and quick response prevented this aircraft from making another flight with an overdue Periodic Inspection, thus averting another potentially serious flight safety infraction. ◆

MASTER CORPORAL GEORGE WESTCOTT

Master Corporal Westcott, an AVN technician at 413 Squadron is very professional in carrying out servicing inspections on the Hercules and Labrador aircraft. His close attention to detail and persistent inspections enabled him to identify three fodded engines on separate CH113 Labrador airframes during the past year. Further investigation at second line facilities revealed severe internal damage, even though there were no indications of diminishing engine performance. If left undetected, any one of these deficiencies could have developed into a very serious flight incident.

Master Corporal Westcott is very persistent in all endeavours to ensure the airworthiness of aircraft. This was demonstrated in July 1999, when a Hercules aircraft had been declared serviceable after an in-depth maintenance to correct an unusual rubbing noise during landing. During an "A" check a month later, Master Corporal Westcott paid particular attention to this area and noticed that the landing gear was still rubbing and getting progressively worse. He immediately informed his supervisors and imposed a brilliant in-flight troubleshooting solution that led to the discovery of worn landing gear shoes.

Master Corporal Westcott's keen sense of responsibility and exceptional professionalism highlighted several technical problems. Had these gone undetected, these would have developed into potentially serious flight safety incidents. His efforts to ensure the highest quality of airworthiness in an aging fleet are worthy of acknowledgement through the Flight Safety award program. ◆

CAPTAIN DAMIAN UNRAU
CAPTAIN ADAIN COSTELLOE

"On the 14 August 2000, while flying a mutual training flight aboard a Harvard II aircraft, airframe #156113, based at 2CFFTS Moose Jaw, Captains Unrau and Costelloe experienced an engine failure. Both pilots are instructors at 2CFFTS and had, at the time of the incident, just completed the Harvard II conversion course with a total flying time of approximately 20 hrs on type.

Capt Unrau, sitting in the front seat, was, at the time of the incident, pulling up for a stall turn. Captain Costelloe, sitting in the back seat, noticed the falling engine oil pressure. Captain Costelloe immediately took control and recovered to level flight. Reducing the power he turned the aircraft towards Moose Jaw. As the oil pressure further dropped into the red, a CHIP warning light illuminated. Shortly thereafter the propeller feathered as the engine grounded to a halt. Capt Unrau took back control as Capt Costelloe transmitted a MAYDAY. The Emergency Red page response was immediately carried out in a timely manner with efficient cooperation and coordination between Captains Unrau and Costelloe. Now gliding back to the base with a seized engine Captain Unrau and Costelloe worked together in perfect CRM harmony while Capt Unrau flew the aircraft to a complete and successful forced landing.

Captain Unrau's and Costelloe's professionalism during this emergency is commendable. Their quick action, cooperation and decision-making ability resulted in the safe return of both aircrew and aircraft. The ensuing investigation revealed the exact cause of the engine seizure to be a massive oil cooler failure. Captain Unrau's and Costelloe's decisive action are key to their successful recovery as, without oil the Harvard engine could not have operated for more than approximately 15 seconds. With the aircraft safely on the ground further investigation led to the redesign of the Harvard oil cooler. The Harvard II fleet-wide oil cooler fix would not have been possible except for the skilled piloting of these two instructors." ◆

CORPORAL DAWN THOMAS

On 22 June 2000, Corporal Thomas, an AVS Technician with Aerospace Engineering Test Establishment (AETE), was a passenger on a CH146 Griffon during recovery of a slung load. The aircraft landed beside the load which was then hooked up by the Flight Engineer (FE). Once the FE was back on board and secured to the helicopter, the flying pilot asked that the cargo doors be pinned open for the return flight back to base.

Upon completion of the doors being pinned, the FE reboarded the aircraft and said he was ready. The pilot initiated takeoff by increasing power. At this time Corporal Thomas noticed that the FE's safety harness was not secured to the helicopter and immediately brought this to the attention of the crew. The takeoff was aborted to allow the FE to secure himself.

Due to the outstanding situational awareness and attention to flight safety, Corporal Thomas removed the potential for a serious accident and possibly saved the life of a CH146 crewmember. ◆

"We Are NOT at War"

After a mid-afternoon mission out of Comox, my flight of two T-33's landed in Victoria. Here, we would stage a late night mission against CF-18's operating out of Comox.

Immediately after landing in Victoria, the jets were safetied and the required post- flight checks were performed. The rear seats were tied down, as we had just dropped off two passengers. We briefed the refueller and expressed that we needed to launch no later than 2000 hours and then left for supper.

Upon returning from supper at approximately 1830 hours, we realised the jets had still not been fuelled. With the T-33 taking a long time to fuel, we suggested strongly that the refueller get on with the job so that we could meet a 20-minute window that we had for an altitude reservation (ALTRV). The refueller had other priorities and said he would get on it as fast as he could. We left to do our flight planning.

At 1950 hours, the fuelling was finally complete. If we did not rush, we would not meet our 20-minute window. The paperwork was filled out and pre-flight checks were quickly carried out.

It was now dark out, so we had to depart as two single ships on IFR clearances to our initial point. On climb-out through Flight Level 230, I felt dizzy. A quick glance down at my oxygen gauge made me realize that I had none. An immediate descent to below 10,000 feet was requested and I recovered the aircraft without further incident in Comox.

Upon reflection of this flight safety incident, it was clear to me what exactly had happened. For starters, when the rear seat was tied down (by me), I had set the rear oxygen regulator to 100% oxygen and safety pressure. It should have been set to normal pressure. This caused the oxygen to slowly bleed out through the rear seat oxygen hose, which is attached to a blanking plug.

During the pre-flight checks, I was rushing myself to make an ALTRV timing. I put mission requirements ahead of flight safety, thereby omitting an oxygen check. At FL230, the cabin pressure of the T-33 is 14,000 feet and consequently I went hypoxic.

It is generally expected that during wartime operations, mission accomplishment may be one's primary goal, with all other considerations secondary. This does not ring true during peacetime, as I learned.

In summary, I put mission requirements ahead of flight safety. This incident could have been avoided if I had properly followed procedures in tying the rear seat down. If I had not let the pressures of the mission distract me from properly carrying out checks, the aircraft would never have left the ground. (NOTE: because of excellent high altitude indoctrination (HAI) training, this incident was minimized.) ◆

National Defence / Défense nationale

REMEMBER: THE BIG SKY THEORY

NEVER WORKS!

YOU MAY NOT BE ALONE.

SOUVENEZ-VOUS :
LA THÉORIED'ÊTRE SEUL DANS LE CIEL

N'EST QU'UNE THÉORIE!

VOUS N'ÊTES PEUT-ÊTRE PAS SEUL.

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