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FLIGHT COMMENT

5 & 6/1996

14 Wing Greenwood, Nova Scotia

FLIGHT COMMENT

Air Command Flight Safety

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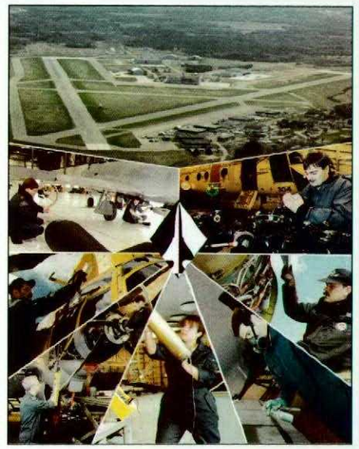

Photo by: Cpl Martin L'Ecuyer and Cpl Brian Walsh

ON THE COVER:
The cover consists of pictures "shot" around 14 Wing Greenwood. The top is an overhead presentation of the Wing looking east, with the old hangar line in the foreground. The operations area in the middle of the picture includes the Air Force's newest hangar, 14 Hangar housing 434 (CS) Squadron. Starting from the 3 o'clock position clockwise the photographs are:

- *Cpl Keith Newman, AF Tech, 413 (T&R) Squadron, removing the forward rotor head of the Labrador for inspection;*
- *Cpl Clark Walton, IS Tech, 434 (CS) Squadron, opening the engine access panel of a Challenger;*
- *Cpl Jean-Guy Roy, Ref Tech, 14 AMS, painting the flap of an Aurora;*
- *Cpl Lesley Stevens, AWS Tech, 14 AMS, checking the serviceability of the Sonobuoy Launch Tubes on an Aurora;*
- *MCpl Al Price(L) and Cpl Pat Dawson(R), AE Techs, 14 AMS, installing a propeller on an Aurora;*
- *MCpl Steve Ripley, FE, 413 (T&R) Squadron, performing pre-flight checks on a Labrador;*
- *MCpl Arnie Dauphinee(L), AWS Tech, and Cpl Rob Diamond(R), AF Tech, 434 (CS) Squadron, downloading a RADOP target from a Silverstar.*

Editor's Note: *"Bravo Zulu" to 14 Wing Imaging for an outstanding Flight Comment cover photo depicting some of the personnel and trades who keep our aircrew safe.*

CONTENTS

As I see it

by Col Richard Bastien/ Director of Flight Safety

Only six months ago, I was leading the military response to the Saguenay floods. Since then, a lot has changed for me; I am now the Director of Flight Safety and face a new set of challenges.

Aside from continuous improvement and reengineering, as I see it, the main challenge facing Flight Safety in years to come is to reduce senseless and unplanned loss of our resources—in short, to lower our accident rate. Safety's raison-d'être is to preserve the ever decreasing resources available to the Canadian Forces in order to meet the operational capability expected by Canadians. As a matter of fact, the balance between risk and operational capability is the foundation of risk management, and the equilibrium sought by Flight Safety.

Even though the CF has reduced aircraft fleets, budgets and personnel in 1990s, our flight safety statistics show only a very minor reduction in accident rates throughout the last 15 years. To our credit, the rate has not increased in this period of rapid change. However, as other countries have also concluded, we realize we must take a new path to break the barrier preventing us from further significant accident rate reduction. We estimate annual occurrence losses cost the CF and Canada more than $60 million a year. We must achieve better results; we must be innovative, pragmatic and more global in our future resource prevention approach!

During the past few years of intense change in the CF, Flight Safety chose the prudent role of "corporate conscience" to maintain the focus on safety. However, we must now seize the opportunity to improve and adapt to a new paradigm. That is why, after in-house discussions following the Wing Flight Safety Officer's conference in Jun 96, consultations with US and UK safety organizations, and civilian safety experts, we have decided to shift our focus to the single, key factor causing the majority of all our accidents - the human factor. To this end, we have acquainted ourselves with the most recent developments in the field of human factor understanding and investigation and are formulating new strategies.

The vision of the Canadian Air Division has been established as: " A mission ready air force capable of operations anywhere, anytime." We, at Flight Safety, want to be part and parcel of that vision. Our aim is to assist Commanding Officers optimize their resources so as to maintain and improve their operational capability. To help them minimize losses, we intend to teach Systemic Risk Management (SRM) as we believe it will have significant impact. It is a proven method in use in the USAF, USN, USMC, and in civilian companies such as Manitoba Air Ambulance, AT&T and General Electric. We will teach COs how to identify hazards, evaluate risks, and determine and implement affordable courses of action to address the most significant risks potentially hampering their operations. They, in turn, will design and implement their own SRM programmes.

We are also pursuing fuller implementation of Crew Resource Management (CRM) by stressing the need for continuous utilization of all the talent and knowledge available in a crew. We intend to broaden the programme by introducing it to other communities with interest in preserving air resources. We see it as a feasible approach for maintenance teams, controller teams or combined teams — such as a combined aircrew/controller/maintenance emergency response team. As a matter of fact, we intend to call this "Team Resource Management" (or TRM) to make it clear that this concept goes well beyond the flight environment. As you can appreciate, it is also applicable to the management renewal field.

We are working on the development of an "aircrew file" that will move with individual crew members as they proceed from one flying unit to another. This is not a new concept; it is in used in several countries, but it will be new in the CF. This protected file will contain information on flying skill, experience, and knowledge (viz. course reports, proficiency checks, and ticket rides) and will be available to supervisors for use as a guide to aircrew strengths and weaknesses, for help in assigning tasks for which personnel have had adequate training, and for ensuring appropriate professional progression. We are also considering reinstatement of a reformatted Flying Supervisor Course.

With the introduction of these programs and courses, our Flight Safety organization will be in a better position to establish new milestones. Through the years, DFS has established an enviable reputation in the field of flight safety, but we must not and will not be satisfied with the status quo. Proud of our hard learned lessons, we are building, embarking on a concerted effort to address the stubborn reality that human factors have for some time and still continue to cause more than 80% of all accidents. We will focus more clearly on the relationship between causality and latent failures

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"Good show"

Corporal Bill Vyse and Corporal Gary Warbeck

Following installation of a CF18 330 gallon centre line fuel tank, Cpl Vyse and Cpl Warbeck, were preparing the aircraft for a functional check.

During pre-functional checks of the aircraft, the technicians noticed that one of the flight control computers was not secured. Investigating further, they discovered that the second flight control computer was also not secure, and that the loose computers had chafed and sliced the outer shield of the wire bundles for the flight control computers. The extraordinary attention to detail displayed by Cpl Vyse and Cpl Warbeck is particularly noteworthy given the aircraft had undergone an independent check by the contractor, an acceptance check by the unit and an independent quality assurance check by another unit without the discrepancy being noticed.

Cpl Vyse's and Cpl Warbeck's professionalism and dedication allowed them to detect a condition that, had it gone unnoticed, could have led to the loss of the aircraft and possibly the aircrew. ◆

Corporal Bill Vyse and Corporal Gary Warbeck

Mr. Yves Reid

Mr. Reid, working for CAE Electronic as a technical representative at 3 Wing Bagotville, noted that a recommendation he had put forth as the result of a CF18 accident investigation was not to be accepted because of accessibility and the difficulty of the proposed special inspection.

Convinced it was possible to carry out such an inspection with an endoscope, he tried out the proposed technique to verify its feasibility. Without excessive difficulty, he visually inspected for possible damage to the wire cable assembly against the avionics ram air duct elbow. He found it to be chafed and the aircraft was declared unserviceable. Mr Reid advised Ottawa that the inspection was possible and drafted an inspection order for approval. The inspection order was implemented fleet wide and 23 of 64 aircraft had unsheathed wiring in the inspected area.

Mr. Reid's vigilance and determination were instrumental in the implementation of the special inspection that identified electrical defects in the CF18 fleet which, if gone undetected, could have resulted in serious consequences. ◆

Mr. Yves Reid

Captain Jeff Edey

Capt Edey, a pilot with 2 Canadian Forces Flying Training School at 15 Wing Moose Jaw, was flying number 4 in a four-plane air demo practice.

On a pass at 300 feet directly behind the lead aircraft, the engine of his aircraft began to malfunction. He hit the airstart button, slowed and backed away from the formation and moved to the side to begin a climb. While determining it was a compressor stall and able to maintain a 82% power setting in a shallow climb, he turned towards home base and transmitted a Mayday. With the engine continuing to malfunction he was able to achieve a glide profile closer to the base and carry out a successful forced landing. Investigation determined that a bolt from a panel on the lead aircraft had been ingested and damaged the engine 5th and 8th stages of the compressor of Capt Edey's engine.

Capt Edey's professionalism and complete understanding of the situation in a very stressful environment prevented the loss of a valuable aircraft. ◆

Captain Jeff Edey

A WARNING BELL

by Maj Ted Lee, BFSO 16 Wing Borden

This article is prompted by a recent gliding incident which closely parallels two other highly interesting fast jet events that I have witnessed during my career. All three clearly illustrate the power of the mind to defeat the normal thought process and adopt actions which, in the aftermath, are so obviously wrong.

The gliding incident involved a student pilot who used his spoilers in the downwind to lose a bit of extra altitude and then failed to close them. The unfortunate part is that for some unknown reason, his brain was convinced that he had closed them. As the circuit progressed and the spoilers remained out, the pilot lost altitude to the point where he was unable to land on the intended area and was in fact lucky to get away with only D category damage during landing in some trees.

In his assessment of the high sink situation which developed on downwind, the glider pilot had two possibilities: one, the spoilers were out and two, he had entered an area of sink. His brain, being absolutely certain that the spoilers were in, discarded possibility one and assumed possibility two. The pilot therefore lowered the nose to speed up and get out of the sink and ultimately landed very short of the intended landing area. Supervision in this case was very good, as both his instructor and the launch control officer recognized that the spoilers were out when he turned base and called the pilot to close them. However, the pilot was "sure he had closed them" and just radioed back that they were closed. Just prior to touchdown, the pilot wanted to open the spoilers to avoid some powerlines and you guessed it, the brain issued the command to move the spoiler handle and the pilot actually closed them.

I first saw this type of thing when one of my course mates on T birds was doing a night solo during pre-wings training and lost his canopy. It was actually kind of funny in that absolutely no one knew he had lost his canopy until he pulled into the line and the marshaller noticed that this T bird was a convertible! He had even refused a clearance for an NDB approach because his ADF antennae had departed with the canopy but I guess the controller didn't understand what he was getting at. Later on, back at the barracks in the inevitable bull session with all the guys, he explained that ".I had this over-powering feeling that the canopy was open so I moved the handle to close it." Then he made a gesture with his hand and of course we all recognised the gesture as the one for *opening* the canopy.

"Air Cadet Schweizer (SGS-233) Glider on final approach for landing."

Incredible how powerful the mind is! No matter that the canopy open warning light was not on, no matter that the handle was in the closed position, no matter that the pressurization was good. The brain was telling him that the canopy was open and he had better do something about it! And he did, he moved the open/close handle in the only way it could move, to the open position.

How long can a pilot stay locked into this mode? Personal experience says for quite a while, if what I saw as a monitor pilot one night in Baden is any indication. I was to give the new guy a night unit check out in the CF104D, a grand old girl in a straight line at high speed but not much in the circuit when it was loaded up with four jugs and a weapon dispenser. As we rolled out on final for the first landing, he was told to overshoot. He did so, but forgot to raise the gear, and so we staggered into the closed pattern and reached downwind with great difficulty. He didn't have much time in a four jugged dual so I suppose he just accepted the low performance as something to put up with. Anyway, when we got into the downwind, he did his checks and at the right spot he lowered the gear. Of course what he really did was move the gear handle, to the up position, and then around we went on base turn, gear up. I didn't say a word, just gave him a little more time for him to see his own error first, but we continued on until we were overshot again. So once again he was required to move the gear, and sure enough he put the gear down! After one more extremely ungraceful staggering climb into the downwind, I took control and asked him to look at the gear handle. His recognition of his error was instantaneous, but I guess he needed some external input to take his brain out of the loop it was in, in order to re-establish the logical process.

All three of these pilots would have likely sworn that the lever in question was in the right position until they were shown the reality. Somehow the brain recognized an action as having occurred when it had not. And once in this loop, not one of them was able to get out of it on his own.

I will go out on a short limb here and suggest that this sort of thing does not happen often, if at all, in a multi-place aircraft. The chances of two crew having a similar brain lock-up at the same time are too low and one will probably cross check the other and correct this type of error. Perhaps a contributor to all three situations was the element of pressure to perform well: two of them in pre-wings training flights and the third in a check flight on an operational squadron. Or perhaps a little over confidence allowed each to make an incorrect assumption. I am not sure what the causes are, but I am certain that we will continue to have pilots flying single seat aircraft and I want them to be able to handle pressure and I want them to be confident.

"CF-104D (Dual) Starfighter."

Is there a fix for this situation? I'm not sure. All I am trying to do here is ring the *warning bell*, to let you know how insidious and powerful this phenomenon is, so that if you do find yourself in a similar situation you will re-check the obvious, and confirm what your brain is so certain of ◆

"T-33 (T-Bird) Silver Star."

RINGS AND THINGS

When we are busy working, it is easy to forget about safety and just get down to the task at hand. In 1991, at 4 Wing Cold Lake, a member of the Traffic section was building up a pallet for an upcoming Fighter Squadron deployment. It was late in the afternoon, and the crew wanted to get the job done before quitting time. When it came time to secure the nets on the pallet, the top net became tangled when it was thrown over the load. Instead of using a ladder or a maintenance stand to climb on top of the load, the individual, feeling that it could be done faster, climbed directly onto the load itself. As he climbed down off the load, his ring was caught on a protruding bolt causing the gruesome wound shown in the accompanying photo. Forty stitches later and with incredible luck, the member was good as new.

This incident serves as a sobering reminder that wearing rings, watches, chains or loose clothing around aircraft, machinery or protruding objects can quickly translate into extremely dangerous situation when one does not take the time to do the job safely. Remember that doing the job safely and taking a little longer to complete a task is better than rushing someone to the hospital. ◆

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within the system, and will continue to focus on exposure of latent failures until our preventive measures have made a significant dent in the accident rate.

Once we have reunited the Flight Safety Directorate in Ottawa under the Chief of Air Staff, we will focus as well on process reengineering. There is a possibility that reengineering could result in the formation of an air force "safety centre" whose expertise could be made available to the strategic, operational and tactical level staffs to address any specialized flight safety concern they might have. My aim is to capture this reengineering opportunity to fine tune our air safety organization so that prevention in all combined activity fields will lead to enhanced operational capability and new lows in lost resources! ◆

MALLARD ..... I MEAN...DUCK!!!

A CF18 Hornet while flying at 300 feet above ground at a speed of 420 kts flew through a flock of 3 or 4 large birds. One bird impacted the right hand side of the windscreen and broke through creating a large hole in it. Pieces of plexiglass flew off and damaged the right hand leading edge flap and left hand vertical stabilizer. The aircraft landed at 4 Wing Cold Lake safely. ◆

PILOT HAD BOTH VISORS DOWN !!

MANDATORY FREQUENCY(MF)/ AERODROME TRAFFIC FREQUENCY(ATF) COMMUNICATIONS REQUIREMENTS

Recently there have been several cases of pilots not adhering to the MF communications requirements. A common MF allows all radio equipped aircraft, in the same area, to be aware of each others position and to avoid conflicts. Review the following requirements.

Operations on Manoeuvring Area:

- Report intentions and maintain a listening watch.

Departure:

- Report intentions before taking the runway.
- Ascertain by radio and visually that no conflict is likely during takeoff.
- Monitor the designated frequency until well clear of the area.

Arrival:

- Report position, altitude, arrival procedure intentions and estimated time of landing well prior to arrival.
- Maintain listening watch on the designated frequency.
- Report joining the circuit giving position in the pattern.
- Report established on final.
- Report clear of the active runway after landing.

Circuits:

- Report entering downwind.
- Report established on final.
- Report clear of the active runway after the final landing.

Note: If you are radio equipped, it is recommended that the same calls be made at non-MF/ATF aerodromes.

.... with thanks to Transport Canada/ Prairie and Northern Region System Safety ◆

SSSSSSSMOKIN' **** IS FLIGHT SAFETY UNIVERSAL?

About 6 years ago, I was part of an exercise with the CF18's in Portugal, while I was stationed in Germany. On the first day of the exercise, we were tasked to refuel the aircraft so we could meet our first mission. After having called for fuel, I prepped the A/C, grounded it and found a fire extinguisher. When the bowser showed up, I had the surprise of my life. Here it was, a 1952 convertible, rusted fuel bowser with 2 Portuguese Air Force technicians on board. I didn't know if I had to laugh or cry. After the usual preparations we started to pump gas into the A/C. About 5 min after we started, one of the Techs lit a cigarette! I immediately released the "dead man" switch and told him to put it out. He replied "no cigarette, no fuel". Then I started to worry as the outside temperature was 49 degrees celsius and you could see the fuel vapours coming out of the A/C vent. I thought if we don't get fuel, we cannot meet our mission. I addressed it to my boss who said "well that's the way they do it here, keep on going". We finished the fuel job but I've never been scared like this in my whole life. The potential of a catastrophic accident was evident but nobody would do anything about it.

If squadrons are to be deployed in foreign countries, they should ensure that *their* Flight Safety program is in place to avoid jeopardizing the safety of our troops. Obviously, this was not the case. So that's why I'm wondering *"is Flight Safety universal"*? ◆

Anonymous

"Experience is a hard teacher because she gives the test first, the lesson afterwards."

TALK THE TALK THEN WALK THE WALK !!!

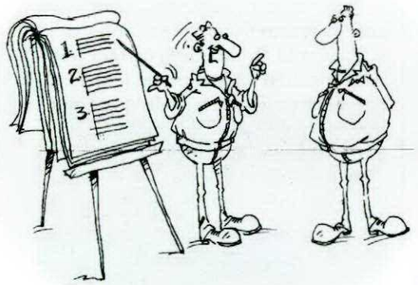
A wise flight commander passed along some hard earned advice to me as a young aviator. "You need to have a clear objective for every sortie you fly," he told me. He described the mindset as the foundation of safe and effective flying. At first, I thought it was just another cute saying with little value. After numerous discussions with him, and a bit more flying experience, I began to recognize the value of his words. In fact, the concept of clear mission objectives is part of, dare I say it, *flight discipline*. I will explain that relationship later. I'd like to first explain the advantages this mindset offers.

Have a clear objective every mission! This sounds a bit elementary for professional Air Force pilots, but give me a chance to explain. When you brief your crew or flight, you should state exactly what you're trying to accomplish with the resources the Air Force is entrusting to you. This briefing should cover all pertinent objectives of the sortie. They need to be covered whether the sortie is as simple as ferrying an aircraft, conducting student training, or more complex missions, involving multiple aircraft engagements or refuelings.

Once you list the objectives, support them with an overview of specific mission tasks. Next, discuss each of these tasks in detail, which would include any potential hazards. During the mission, if changes or new conditions develop, evaluate how these changes affect your mission objectives. Safety reports are full of incidents where crews took actions that in no way supported the mission objective. A few examples may help clarify the point.

- *A pilot simply ferrying a jet to a nearby field for maintenance decides to cancel IFR and do an ad hoc VFR sight seeing tour, leading to a fatal crash.*
- *An aircrew on a student cross country tries to fly north through an area of poor weather to get to a desired location. Completion of the mission required no specific destination and weather was better in other directions. The aircraft sustained substantial damage.*
- *An aircrew performs an impromptu airshow for the pilot's family. Both pilots died in the ensuing crash.*

The list could be much longer, but these will illustrate the point. These aircrews performed tasks that in no way supported the objective of their respective missions. It would be easy to dismiss these examples as pilots who just exercise poor judgment. But for the purpose of safety, and ultimately mishap prevention, we must ask what these trained Air Force pilots failed to notice that we should notice.



They should have realized they were deviating from the objective of their mission. If a pilot wants to do a VFR leg, he should do all the appropriate planning. Since a VFR leg is now an objective, during planning, the pilot is much more likely to notice any dangers associated with the VFR leg. If a student cross-country is your mission for the day, why not head in the direction that has the best weather? The objective for the cross-country is training, why hamper it with higher divert fuels, chances of thunderstorms, and the other associated perils of poor weather? Finally, what mission objective would an impromptu airshow fulfill?

As mentioned earlier, mission objectives are a component of *flight discipline*. But many aviators would define flight discipline simply in terms of knowing the rules and abiding by them. Aircrews should never intentionally break the rules, and volumes could be written on accidents involving aircrews who have done so. However, I think the more difficult question is often phrased, "I know I can do this, but should I?"

This question poses more of a gray area for us. From the above examples, two weren't necessarily against regulations. This is where I believe examining the mission objectives can assist the aircrew. Had the aircrews in any of the examples taken a moment to reflect on their mission objectives, I believe their actions would have been different. This relatively simple test often works for improper actions as well. As an example, not only does a low altitude "airshow" fail to fulfill any mission objectives, it is also against the regulations.

Neither my flight commander nor I will take credit for this philosophy of flight discipline. It's older than both of us. Even as a civilian pilot learning to fly, I was told, *"Plan to fly, and fly the plan."* It is an easy concept to grasp, but herein lies the problem. It is very easy to get comfortable in the aircraft and grow complacent. This complacency can lead to poor decisions. However, *if aircrews will keep the objective of the flight in the forefront of their minds, they can avoid mishaps or incidents related to poor decision making.*

Excerpted from Torch/ Safety Magazine of Air Education and Training Command/ United States Air Force/ August 1996 ◆

FOR PROFESSIONALISM

CORPORAL PETE LOVETT

Cpl Lovett, an air traffic controller at 8 Wing Trenton, received a call for assistance from a pilot in a civilian aircraft flying under Visual Flight Rules(VFR) who had encountered clouds and was disorientated.

After determining that the pilot had no experience flying on instruments, Terminal Control radar directed the pilot to maintain a safe altitude while heading towards Trenton for a Precision Approach Radar(PAR) approach. Cpl Lovett, as the PAR controller, briefed the pilot on the procedures to descend to VFR weather conditions. He noticed the civilian pilot was becoming agitated and having a hard time maintaining headings during the approach. Realizing a normal approach was not possible, Cpl Lovett modified his control of the situation and when the aircraft descended through clouds the pilot was able to visually land without further incident.

Cpl Lovett's calm, assertive control and his ability to quickly modify his controlling techniques to an emergency situation was instrumental in the safe recovery of the aircraft and pilot. ◆

CAPTAIN WILL LAWRENCE

Capt Lawrence, an Air Traffic Controller at 14 Wing Greenwood, was advised by Moncton Centre that an American civilian aircraft was at a low fuel state (30 min) after attempting several approaches to Yarmouth.

Due to weather the only aerodrome that could recover the aircraft was Greenwood. After the emergency aircraft contacted Greenwood and reported being in cloud, Capt Lawrence gave a vector to bring the aircraft over Greenwood. He also directed the aircraft to climb to a safe altitude but it was unable to do so because of the fuel state. Through coordination between Capt Lawrence and a scrambled Search and Rescue(SAR) Hercules, the pilot was convinced to descend through cloud to visual conditions for landing. The civilian pilot expressed concern that he did not have enough fuel but Capt Lawrence instilled confidence in the pilot to continue. A successful landing was carried out with a gallon of fuel remaining.

Capt Lawrence's professionalism and good judgement prevented a possible force landing that could have resulted in damage to the aircraft and possible loss of life. ◆

MASTER WARRANT OFFICER SKIP REEVES

MWO Reeves, a Flight Engineer with 405 Squadron 14 Wing Greenwood, was conducting a pre-flight inspection of an Aurora that had just completed a 10-day periodic inspection and was scheduled for a test flight.

During the phase of the external check where the tire pressure is to be checked, he noticed that the left nosewheel tire had the inflation tube on the wrong side of the tire, facing toward the nose landing gear mount. Judging this to be unsatisfactory, MWO Reeves brought the situation to the attention of the Maintenance Team and had the tire removed and replaced. Upon removal of the tire further inspection revealed that not only had the tire been installed incorrectly, it had been installed with a set of inner bearings in the place of the outer bearings. Had this problem gone unnoticed, controllability problems may have been encountered during the take-off run.

MWO Reeves' professionalism, attention and diligence in carrying out his duty to a high standard averted a possible serious flight safety occurrence. ◆

SERGEANT MIKE SEBASTIEN

Sgt Sebastien is an Airframe Technician employed in the Aircraft Maintenance Control and Records Office (AMCRO) at 413 Squadron Greenwood.

During review of incoming message traffic he realized that two Flight Safety incidents(separated by a month) involving the landing gear of a Hercules could have an alternate cause. After researching the technical orders(CFTOs), he took it upon himself to contact 8 Air Maintenace Squadron Trenton to recommend further investigation into the ballnut mounting flange and shelf bracket. Upon investigating his suggested cause, it was found to be the root cause of the occurrences.

Sgt Sebastien through superior knowledge, outstanding initiative and his professional action prevented which would have undoubtedly been additional Flight Safety occurrences. ◆

FOR PROFESSIONALISM

CORPORAL SHIRLEY STERTZ

Cpl Stertz, an Airframe Technician at 17 Wing Winnipeg, was assigned to rectify a minor entry on a Search and Rescue Hercules.

After completing the repair of the unserviceability and upon exiting the aircraft she noticed an unsecured insulation blanket adjacent to the crew entrance door. Before reattaching it she lifted the blanket to further inspect the interior of the area. Three full juice boxes were discovered jammed against the crew door jettison rod. Recognizing the flight safety hazard, she immediately advised her supervisor which resulted in the squadron and Operational Training Units re-emphasizing the consequences of storing articles in unauthorized places.

Cpl Stertz's professionalism and attention to detail may have prevented the improper functioning of the door in the event of a ground emergency evacuation. ◆

CAPTAIN TOM WENNER

Capt Wenner, an Air Traffic Controller at 15 Wing Moose Jaw, was on duty in the tower controlling several aircraft on the inner runway(10L).

A student pilot was nearing the end of a third solo clear-hood mission and had been sequenced number one at initial. After completing an overhead break the student was sequenced number 2 to follow an another aircraft performing a straight in approach. The student became distracted while looking for other traffic and subsequently omitted selecting the landing gear down. After the student verbally confirmed the landing gear was down and locked, Capt Wenner, busy with other traffic, noted something unusual about the aircraft. After carrying out a visual inspection of the aircraft with binoculars, he noted the landing gear was not down and immediately instructed the pilot to overshoot at approximately 150 feet above ground.

Capt Wenner's professionalism, keen awareness and quick action prevented an aircraft from landing wheels up damaging the aircraft and possibly the pilot. ◆

SERGEANT RAY CARTER AND MASTER CORPORAL PAUL GOODINE

Sgt Carter and MCpl Goodine are Safety Systems technicians in the Aerospace Engineering Test Establishment(AETE) Escape Systems Laboratory at 4 Wing Cold Lake.

Through an unrelated conversation MCpl Goodine heard that a canopy had been accidentally jettisonned from a Tutor aircraft. From testing which had been carried out prevoiously, he recognized the potential hazard. He phoned Sgt Carter who was on holidays and Sgt Carter then initiated the required action. He was flown to the site to inspect the aircraft. His concerns were confirmed when it was discovered that one of the ejection seat initiators had been exposed to enough gas pressure to commence the ejection sequence. Flying operations were suspended while the situation was investigated. Extensive discussions followed with NDHQ and 15 Wing Moose Jaw staff to determine the options of returning the aircraft back to operations.

Sgt Carter and MCpl Goodine reacted in a professional and timely fashion to the dangerous condition of the ejection seat explosive charges thus preventing a possible serious occurrence. ◆

CORPORAL CHRIS WHYNOTT

Cpl Whynott, an Aero Engine Technician with 413 Squadron Greenwood, was tasked to perform a "B" check on a Labrador.

After her initial inspection of the #1 engine intake area Cpl Whynott proceeded on her own initiative to do a complete area survey. While checking the #1 engine starter cover for security, the cover came off it's housing. Upon further examination it was discovered that the starter cover retaining screw had sheared and that the screw had fallen into the compressor housing. Had this gone undetected it would have eventually failed and "FODed" (Foreign Object Damage) the engine. Knowing the inherent lack of power of the Labrador, the loss of an engine could have catastrophic consequences.

Cpl Whynott's professionalism and attention to detail prevented a possible serious inflight safety occurrence which could have resulted in the loss of an aircraft and crew. ◆

FOR PROFESSIONALISM

CORPORAL TIM LANTHIER

Cpl Lanthier, an Air Frame Technician with 8 Air Maintenance Squadron Trenton, volunteered to assist in the inspection of the tail section of a Hercules aircraft undergoing a Periodic Inspection.

During the inspection he noticed the left-hand elevator inboard torque tube attachment collar retaining screws appeared to be improperly seated. After advising his supervisor, further inspection revealed that a number of screws were loose due to incorrect washers having been installed. The torque tube was determined to be serviceable and the correct hardware was installed. Left undetected, the attachment collar could have failed allowing the left-hand elevator flight control to free float resulting in possible aircraft control problems.

Cpl Lanthier is highly commended for his professionalism and alertness as his actions averted a potentially serious occurrence. ◆

CAPTAIN STEVE MELANSON
CAPTAIN RICK MALONEY

Capt Melanson and Capt Maloney, instructors at 15 Wing Moose Jaw, were completing a mutual training mission in a CT114 Tutor aircraft when upon selecting the landing gear down the nose gear indicated "in transit".

Visual inspection by another aircraft confirmed the nose gear was partially extended. While Capt Melanson flew the aircraft Capt Maloney consulted the check list and declared an emergency. After transferring control, Capt Melanson attempted to use the emergency landing gear lowering system, but to no avail. All possible procedures to extend the nose gear were unsuccessful. After consulting unit operations, the Air Maintenance Squadron and the Commanding Officer, the crew elected to land the aircraft with the nose gear partially extended. An extensive indepth briefing was carried out detailing each pilot's responsibility in preparation for landing. The aircraft was landed safely with minor damage to the nose gear doors and the UHF antenna.

Capt Melanson and Capt Maloney's high degree of professionalism and outstanding resource management prevented the loss of an valuable aircraft. ◆

CORPORAL STEVE MORIN

Cpl Morin, an Instrument Electrical Technician at 8 Air Maintenance Squadron Trenton, was carrying out an indepth inspection of the Emergency Exit Lighting and Floor Proximity Emergency Exit Marker(FPEEM) of the life raft compartment that had been removed from a Boeing 707.

While removing the systems' battery packs he noticed a burnt electrical odour emanating from the FPEEM system. Further investigation revealed that both battery circuits were shorted out. He then inspected the FPEEM systems in the remaining lift raft compartments in storage with no fault found. He also initiated a Flight Safety Investigation which determined that this was an isolated occurrence. If this fault had not been detected, the lighting system would not have activated in an emergency situation and when the lift raft was reinstalled in the aircraft an overheat condition could have resulted in an electrical fire.

Cpl Morin's professionalism, perseverance and dedication prevented a possible serious flight safety occurrence. ◆

CAPTAIN DAVE MASNYK
CAPTAIN DAN CENICCOLA

Capt Masnyk and Capt Ceniccola, Air Traffic Controllers(ATC) at 19 Wing Comox, were directing an American civilian aircraft for landing at the Campbell River airport.

The aircraft was cleared for a non precision approach. The pilot proceeded to level off 1000 feet below the minimum approach altitude. Capt Ceniccola observed this error and immediately advised the aircraft to climb to the proper altitude. The aircraft then commenced a procedure turn to the non-protected side of the approach and was again corrected by Capt Ceniccola. The aircraft was switched to the Campbell River FSS, proceeded to carry out a straight in approach and was noted by Comox ATC to be high, turning north and descending. Capt Masnyk, having relieved Capt Ceniccola as the terminal controller, re-established communication with the aircraft and it was determined the pilot was disorientated and using out of date publications. Capt Masnyk then vectored the pilot for a Precision Approach Radar(PAR) into Comox where the aircraft landed safely.

continued on page 13

FOR PROFESSIONALISM

Capt Ceniccola and Capt Masnyk are commended for their professionalism and attention to detail in averting a potentially serious flight safety occurrence. ◆

SERGEANT MYKE HAMM

Sgt Hamm, a military policeman of 14 Wing Greenwood, received a telephone call from a community resident complaining about the noise of CF18 aircraft recovering from an exercise. The caller threatened to shoot at the next aircraft that flew over his home.

After confirming there were still three additional aircraft to land, Sgt Hamm telephoned the complainant and engaged him in a conversation until such time as the aircraft were safely on the ground. Further investigation revealed that the complainant had a history of activity that confirmed him to be a very real threat to the safety of the pilots and aircraft airborne at the time.

Sgt Hamm is commended for recognizing a dangerous situation and, with exceptional initiative and quick thinking, eliminating a serious threat to the pilots and aircraft. ◆

CORPORAL FREDERIC AUBIN
SERGEANT JIM MACKEY
CORPORAL JAKE JACOBSEN

Sgt Mackey, an Instrument Electrical Technician, Cpl Aubin, an Airframe Technician and Cpl Jacobsen, an Integral Systems Technician, were working on the flight line at 17 Wing Winnipeg. While preparing for the arrival of an aircraft, Cpl Aubin noticed a Slingsby aircraft having starting problems.

Flames then appeared from the underside of the engine compartment of the Slingsby and burning fuel began to drip on the nose tire. Cpl Aubin ran to the aircraft, informed the pilot and used the pilot's fire extinguisher on the fire. At the same time, Sgt Mackey and Cpl Jacobsen noticed the fire. They grabbed fire extinguishers and ran to the airplane. The three technicians were able to extinguish the fire before the fire trucks arrived.

Sgt Mackey, Cpl Aubin and Cpl Jacobsen are commended for their outstanding situational awareness and their decisive action in a dangerous situation which could have easily resulted in injuries to the pilot and extensive damage to the aircraft. ◆

MASTER CORPORAL
EARLE MORRICE

MCpl Morrice, an Instrument Electrical Technician with 413 Squadron Greenwood, was preparing to change a generator on a Labrador helicopter when the aircraft power was turned on to function test the speed trim system.

Due to electrical arcing a small fire ignited under the number one engine. He immediately took control of the situation directing personnel to turn off power, evacuate the aircraft and advise the fire department. Using an aircraft fire extinguisher he quickly put out the fire and stood by with an additional one if needed. The fire fighters arrived on the scene and secured the aircraft with no further incidents. Due to the helicopter's close proximity to the hangar and other aircraft a major disaster was averted.

MCpl Morrice's alertness, quick response and leadership prevented the damage to aircraft and property and the possibility of injury or loss of life.

CAPTAIN BARRY SCOTT

Capt Scott, an Air Traffic Controller(ATC) at 19 Wing Comox, received a request for assistance from a civilian non instrument rated pilot who was caught above cloud and had become disorientated.

Capt Scott, the duty terminal controller, attempted to direct the aircraft towards the Campbell River airport. As the aircraft was unable to break cloud to fly visually, he elected to bring the aircraft to Comox and utilize the Precision Approach Radar(PAR) for a cloud breaking procedure. The pilot, highly stressed, was very reluctant to fly the assigned headings and refused to descend into cloud under the direction of the PAR controller. Capt Scott again took control of the situation and vectored the aircraft for another approach. Capt Scott's reassuring and confident voice eventually convinced the pilot to descend through the cloud resulting in a successful visual landing.

Capt Scott is commended for the calm, professional manner in which he dealt with a potentially life threatening situation. ◆

COMMON SENSE ONE **** STANDARD OPERATING PROCEDURES ZERO

I was tasked as a Hot Closed Circuit Refueling (HCCR) crewchief during a field exercise involving CH135 and CH136 helicopter airmobile operations. Our fuelling area included a 4 point HCCR spaced 18 metres (approx. 60 ft.) between fuelling points and a staging area I.A.W. Group Maintenance Instructions. The first airmobile of 11 Hueys and 4 Kiowas refuelled without any apparent problems and I was comfortable with all aspects of our tasking from both a safety and operational stand point.

There is no reason why the margins of safety cannot be widened.

Prior to the second airmobile mission, a conscientious young pilot who had flown in the first airmobile stressed concerns to me in regards to him feeling unsafe landing his Huey beside other Huey's at our fuelling point. His biggest worry was the distance between main rotor tips between the main rotor disks of each Huey.

From the ground it had not appeared to have been a problem, but as a precaution I instructed the HCCR crew to reconstruct the HCCR point prior to the second airmobile. The points were re-spaced 100 ft. a part.

I learned that SOP's often serve as minimum guidelines only and normally there is no reason why the margins of safety cannot be widened. In this particular case simple communication between ground crew and aircrew had made the operation safer and less stressful for all. ◆

NUTS & BOLTS

Once upon an evening in the servicing section, at the end of an extremely busy shift, we were waiting for the return of a late flying aircraft when suddenly the bells went off. Our night flyer had declared an emergency due to a loss of response from the left engine. We quickly gathered a crash crew & waited amidst the banter about who might have last worked on it. The aircraft landed without further incident. Immediately upon the aircraft being released from quarantine a technical investigation was initiated. It was revealed the a control rod between the fuel control and the control pulley assembly had become disconnected. The locknut had backed off the attachment bolt. Our methods of supervision had failed, in that during a recent maintenance action, the technician had been allowed to re-use a locknut instead of replacing it with a new one.

If our problems had ended here a little education would have been an acceptable cure. But we were soon hit with a triple header of similar incidents, only in these three cases the attachment bolts sheared. I doubt if it was ever decided which of our multitude of maintenance actions cured the disease, but as a result some interesting info did come to light. Somewhere in the dark recesses of time supply had introduced a new type of pulley assembly but had not catalogued it. The new item is similar in appearance to the original but that's where the similarity ends. The two assys are built up differently and utilize several different parts. Within this same chain of events there was also failure at management levels in that publications were not available for technicians to differentiate between the two types of assemblies.

In these times of degraded expertise and experience, caused by the FRP and growing pains associated with the new trade structure, our technicians must have the highest degree of support we can provide. This extends all the way from immediate supervisors to the highest levels of management. To use a metaphor, our technicians are the "NUTS & BOLTS" that hold many of our aging fleets together. ◆

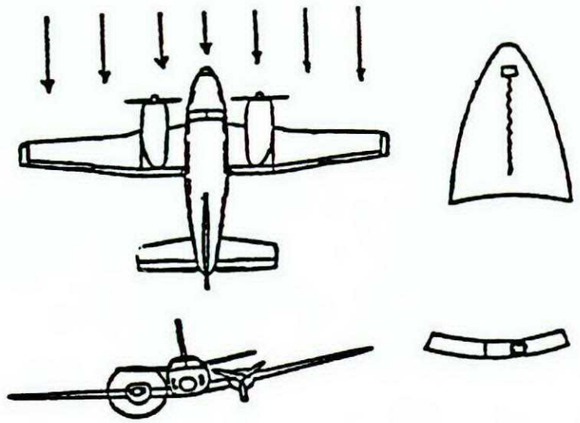
SLIPPIN' AND SLIDIN'

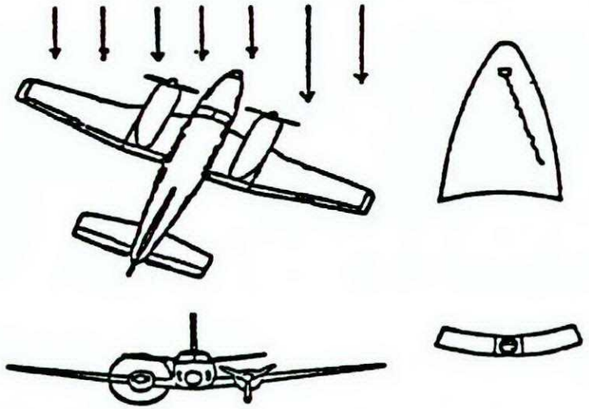
Many multi-engine pilots are under the impression that in "coordinated" flight, the airplane flies straight through the air, without slipping or skidding. That may be true in a single-engine airplane or a twin with equal power on both sides. But when one engine quits, and the power is off-center, the rules suddenly change.

In fact, in wings-level "coordinated" flight—with the ball precisely centered—an engine-out twin is flying at a rather large sideslip. A piece of string taped to the nose or windshield would lean toward the good engine. Single-engine rate of climb degrades drastically or disappears altogether, while Vmc can decrease as much as 15 or 20 knots.

Naturally, when the manufacturers do their performance testing to write the numbers in the owner's manual, they use precise sideslip indicating instruments to assure zero sideslip and therefore maximum performance. Unfortunately, these instruments are not available to the average pilot, and he has no way of knowing his sideslip angle. (Most mistakenly assume zero sideslip occurs with wings level and ball centered, as it does in normal flight.) In most twins, zero sideslip occurs when the aircraft is banked approximately 3 degrees into the good engine. The ball will be well off center (toward the good engine)—a fact that may disturb many pilots—but a yaw string will show that the airflow is straight along the nose, the proper flow for minimum drag and maximum performance.

Pilots could tape a piece of string or yarn to the nose of their aircraft and go out and try some engine-out flight. You may be surprised! Maybe a piece of red yarn and duct tape should be mandatory equipment on any multi-engine airplanes? ◆





DISCUSSION!

Family ... Passenger Checklist

I was travelling on a commercial airline to visit relatives on the West Coast and prior to leaving the gate I was listening to the flight attendants give the safety briefing to the passengers. Looking around I observed most people were reading a newspaper, dozing or just not paying attention. Why?

As part of the Aircraft Accident Investigation Course at the University of Southern California we were given several lectures by a doctor on the bio-medicine aspect of investigating victims of an accident. The pictures that most disturbed me were the ones showing the inside of the cabin of a crashed aircraft where carry on luggage had literally became "missiles" on impact and killed or injured a majority of the passengers. People also died because they did not know where the emergency exits were or even how to open them!. Most people do not even read the safety pamphlet in the pocket infront of them. Even though the probability of being in an aircraft accident is extremely low (You have a better chance of winning the 6/49 lottery!) the following are some tips worth remembering.

To Help Make Your Safe Trip Home and Back Even Safer

* Wear Sensible Clothing
* Wear a long-sleeve shirt and long slacks/pants made of natural fibers.
* Shoes should be leather or canvas with low heels.

Check with the airline for its policy on the use of child safety seats

Onboard the Aircraft

* Safely stow carry-on baggage.
* Wear your seatbelt snug and low across the hips, keeping it fastened whenever you're in your seat.
* Listen carefully to the safety briefing and review the passenger safety card provided by the airline before takeoff and landing - ask questions if you have any.
* Make a mental plan of the actions you would take in an emergency to include being familiar with all exits and **counting seat rows** between you and at least 2 exists.
* If you take your shoes off, put them on before landing.

Exit-Row Seating

* You must know your responsibilities in the event of an emergency, so listen to the safety briefing and/or read the written instructions - ask questions if necessary.
* If you're not physically capable or you're unwilling to perform emergency actions, request another seat.
* Consider the effects of alcoholic beverages.

You need to be aware of the following in case of an emergency:

Evacuation Slides

* Do not sit down to slide; instead, jump feet first into the center of the slide, placing your arms across your chest, your elbows in, and your feet and legs together.
* High-heeled shoes can damage the slides.

Decompression

* Pull the oxygen mask toward you to start the oxygen flow.
* Put your mask on as quickly as possible before helping children and others with their masks.

Flotation Devices

* Know where they are and how to use them.
* Life vests, life rafts, and some seat cushions and slides can be used as flotation devices.

Evacuating the Aircraft

* Follow crewmember instructions.
* Stay calm and proceed quickly to the exit.
* Leave all your possessions behind.

Fire and Smoke

Inflight

* Cover your nose and mouth with a wet paper towel or handkerchief.
* Move away from the smoke and fire source.

Ground

* Stay low, proceeding by your predetermined count of seat rows and/or follow floor proximity lighting to an aircraft.
* Leave all your possessions behind

Outside the Aircraft

* Remain alert for responding emergency vehicles as you move away from the aircraft, fire, and smoke.
* Never go back into a burning aircraft.

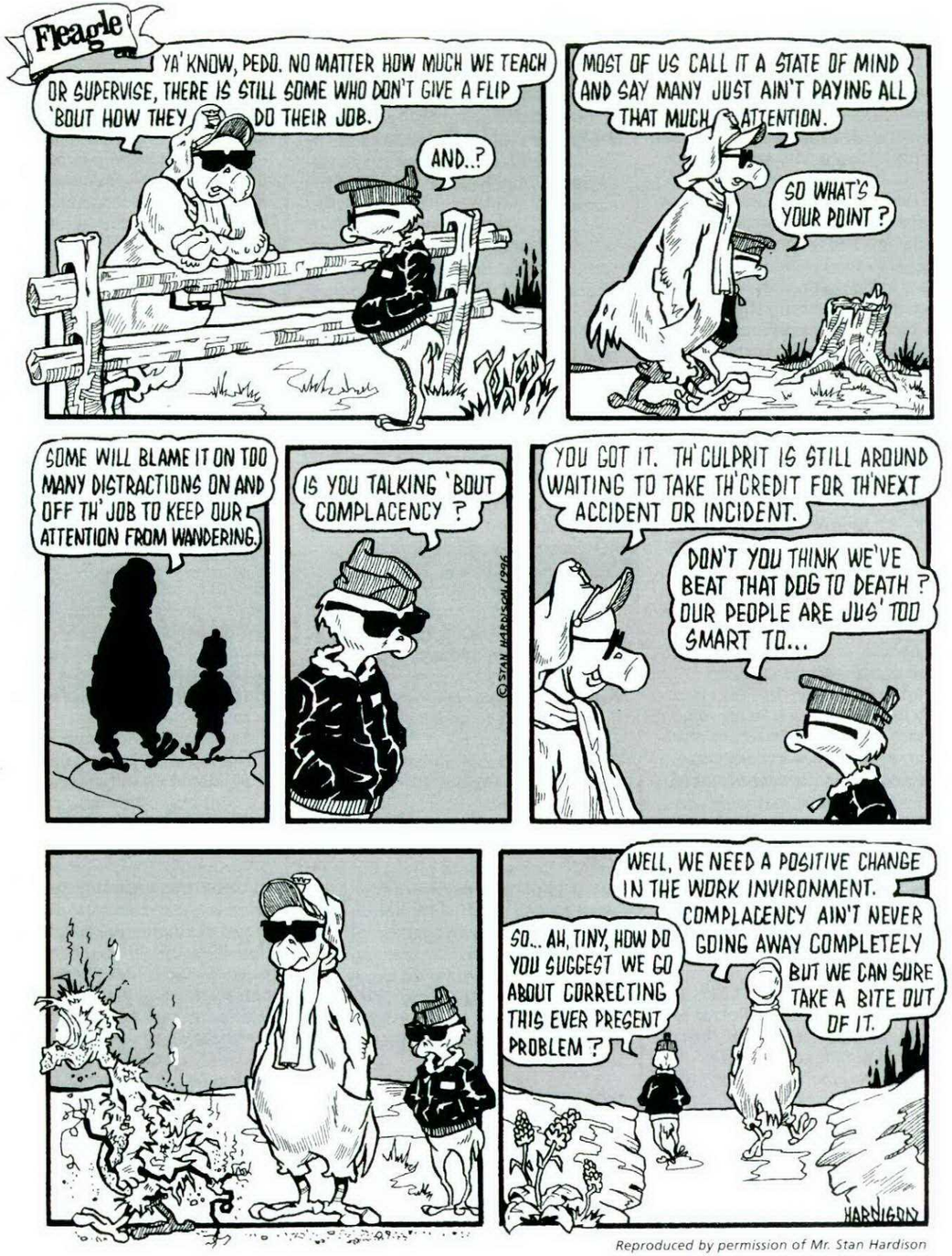
- from the Air Education and Training command Official Safety Magazine, Torch, December 1996

Charles "Chuck" Yeager on Safety

What kept me safe throughout my flying career? Knowing more about the airplane than anybody else. You've got to stay proficient. The guy that stays most proficient will always be the safest. Complacency will kill you! You have to know more about your egress systems than anybody else because a lot of times, you'll be asked to perform them in a semi-conscious state. You can't relax in an airplane. The damn thing will come back and bite you."

Excerpt from Torch magazine/Air Education and Training Command United States Air Force/September 1996

Fleagle!



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Get' em Down Safely

"I almost killed two or three people!!"

We as air traffic controllers are generally of type A extrovert personalities and extremely organized people who accept the enormous responsibilities of our profession. These qualities would lead many to believe that we are of a special, perhaps even prime cut of the general population who can act and react to situations that require the ultimate in concentration, discipline and self-confidence. I will agree totally with these comments which indicate that we may be Godly, but I must include that we are human, subject to anything and everything that affects the rest of our kind - without exception.

If I were one who kept a diary of my daily experiences, I might have written the following before trying to go to sleep the night of Thursday, September 19, 1996;

Dear Diary ***19 Sept 96***

Tonight I almost killed two or three people, or even more, due to my lack of attention on the job.

During a recovery of F18s I was issuing instructions that in my mind were safe, orderly and perhaps more pressing at the time - expeditious. With several aircraftcleared to hold high level, transmission (thankfully not an ELT) from a pilot who had just been cleared for a high approach. He had another aircraft one mile in front at the same altitude! I confirmed that the aircraft ahead had been cleared to hold one thousand feet above, his reply "cleared to FL210, sorry".

God was also there at FL200 tonight. He spared these pilots their lives and the horrible grief of their friends and families and all of us who enjoy working with the flying community.

What did I do? What did I miss? What did I not do? Why me?

What did I do?

I was controlling heavy traffic at the terminal position, working as hard as I could at the time to get all aircraft on the ground. I was clearing aircraft to hold at the high level IAF, constantly awaiting the flashing B hand-off symbology to go steady so that I could issue an approach clearance and ladder the following aircraft down in the hold. I was also dealing with low level traffic being held in two different locations. I was issuing, instructing, clearing, holding, transferring, talking, listening, coordinating and thinking all at the same time. No big deal, establish priorities and control, right? **Wrong!**

What did I miss?

A readback! The difference between issuing an aircraft to descend to FL210 and his understanding and repeating FL200 almost cost this pilot and others their lives. As found in MANOPS 133.4.

Obtain a "readback" if issuing or relaying an:

A. IFR clearance or IFR instruction;

B. amendment to an IFR clearance or IFR instruction; or

C. instruction to an aircraft or vehicle to HOLD or HOLD SHORT of a runway or taxiway.

It is one thing to be issuing safe clearances (or what one believes to be safe clearances) to pilots, but it is just as important to ensure that the pilots have clearly heard, understood and will comply with them.

My inattention to obtaining a proper readback, as I must do, led to a separation loss that only God could have possibly decided whether to prevent or allow impact, Thankfully, there was no collision.

What did I not do?

Here is the list: The readback as referred to above.

Another rule that must be obeyed as found in MANOPS 405.3; ***Inform aircraft cleared to hold of other aircraft holding at the same fix unless they will be separated by more than the vertical separation minimum.*** **Phraseology**: Traffic (type of aircraft) holding at (fix) maintaining (altitude).

I failed to issue this traffic advisory not only to these two aircraft, but to all aircraft in holds. Traffic will only be cleared off the top as fast as the arrival controller will accept them, so with traffic as heavy as it was, aircraft entered the hold and needed to be notified about other holding aircraft. If I had done my job properly, the pilots would have acknowledged their proper altitude assignments well before the close call. A rule such as this in addition to an accurate readback obviously heightens safety and may save a controller's licence, job and credibility, not to mention human lives.

Validate altitude readouts by comparing the readout value with the altitude reported by the aircraft:

A. on initial contact; or

B. as soon as practicable, if the readout is not displayed, or cannot be validated on initial contact.

This is another basic rule which must be followed (MANOPS 503.1), or else turn off the radar and control procedurally. The purpose of radar is to be able to accurately know where aircraft are and at what altitude they are so as to provide more expeditious flow of traffic. I didn't monitor all of my radar identified aircraft because I thought that all of my traffic was separated by one thousand feet or more. I was fooled by my Godly attitude that what I say is what goes - if only what I said was understood correctly in the first place.

The main point with reference to the three previous regulations that I broke is basically that - I didn't follow the rules. Rules that are established to ensure the safety of all people who choose to fly. Human lives are dependent upon our awareness, professional abilities and **our compliance with all of the regulations.**

Why me?

In addition to our knowledge of these publications, we should take a very indepth look at who we are, with reference to the personal affairs that we bring along to work. I have my own reasons for my choices in life, but as soon as I enter the IFRCC I will be an AIR TRAFFIC CONTROLLER - not a volunteer in the community, not a long distance cyclist/runner, not an Expres Test coordinator, not a homeowner and especially not a ball of emotions that result from my feelings and experiences away from work.

It is this "excess baggage" that we allow to affect our performance at work which compromises the safety of those people in the vehicles on the aerodrome, in the aircraft taxiing for take-off and those in the air with perhaps nothing but cloud outside of their cockpit.

I have realized how much all of my personal factors affect my primary duty as an air traffic controller, and also understand that I am one individual amongst a team of many who must accept the differences we have and concentrate on providing safe, orderly and expeditious air traffic services (in that order). This has been an experience that I hope will not occur again, for anyone. Avoidance of such a recurrence is only possible through continuous education of the rules, a firm understanding of one's duty and the ability to keep one's personal life out of the work place. ◆

Vintage Visual Flight Rules – IFR (I Follow Roads)

It was Friday afternoon, another beautiful summer day in Portage La Prairie. I was working at the ground control position in the control tower. The circuit, for runway 01, required the Musketeer aircraft to head north towards the Trans-Canada highway with a left hand pattern which was very busy that day, also requiring further vigilance of transiting civilian traffic. Suddenly, a bi-wing aircraft popped up out of nowhere at circuit altitude transmitting from west to east. Numerous attempts to reach the pilot on local frequencies were made and were unsuccessful. Finally, the pilot responded with his aircraft identification when a transmission was made on guard frequency.

An ESSO road map for navigation !

The controller inquired about his routing, as he is now going through the circuit. A long pause followed. In french, he asked if we spoke french. I then started translating his transmissions. We found out that he had taken off from Edmonton, in a farmers field and was proceeding to Montreal in this vintage world war II aircraft. He had not contacted anyone since his departure and was using an ESSO road map for navigation purposes. He was informed on control zone procedures and frequencies to contact Air Traffic Control agencies on the remainder of his journey. ◆

KIOWA "FOLLY'S"

by Capt F.R. Wade Staff Officer Professional Development 2/ Aircom HQ

Have you ever, through your failure to take action, found yourself in a position you sincerely wished that you weren't in? Well, some years ago, in a previous incarnation, I along with my Commanding Officer were involved in an incident which was avoidable, and which I, as the aircraft captain, was responsible for.

It was February, sometime in the previous decade, and I was a Kiowa pilot at 403 Squadron in Gagetown, N.B.. My boss was a Twin Huey pilot who held a non-operational category on the Kiowa. A friend of ours was arriving via commercial air at Halifax International Airport (CYHZ) that day and we agreed to combine the pick up with an instrument training trip.

The Kiowa was not certified for instrument flight in actual conditions and indeed, entering IMC inadvertently was an emergency procedure. Although I had a previous tour on the Tracker, I, like all of my Kiowa cohorts had a healthy respect for my aircraft's limitations. She had one basic AI, one AC inverter and no back-up systems.

The weather enroute looked good. Moncton was CAVOK. Halifax had a 3000 foot ceiling and 15 miles visibility. The area forecast was calling for marginal VFR conditions in onshore flow from a low pressure system centered on Sable Island. Shearwater was experiencing low ceilings and visibility. Our alternate was Greenwood. Our departure from Gagetown was scheduled to occur in the late afternoon with an arrival at CYHZ in twilight. Our route took us to Moncton on G1, then direct Halifax along the LF/MF airway which existed at that time.

I signed out the aircraft and we departed Gagetown on time. As we tracked the airway we remarked on the excellent flight conditions. We were at 5000 feet with my boss flying from the right seat. However, as we passed Moncton I could see that the good flight conditions we had experienced up to that point would not last. As we passed Amherst, N.S. with lowering ceilings, we were unable to maintain our altitude and shortly thereafter we changed our flight plan to VFR and descended to low level flight. We altered our track to follow low ground in an attempt to reach the Minas Basin. The Kiowa was unique in that its VFR limits were lower than its IFR limits and this was a common procedure when encountering adverse weather. Our track now had us heading towards Parrsboro. Unfortunately, that route was cut off due to reduced visibilities. We tried a couple of other routes and found our way cut-off in them as well. By now sunset was upon us and the visibility was deteriorating with nightfall. I started to have doubts about the wisdom of our actions but I deferred to my boss who seemed satisfied to continue. Shortly after total darkness we found ourselves over Springhill at low level. My sense of foreboding was increasing exponentially with each passing minute but still I made no protest. We proceeded east from Springhill using the lights of the Wentworth Valley Ski Hill as our guide. My foreboding grew. I protested weakly but despite the fact that I was the aircraft captain, I took no action to extricate us from the situation. After all, this was my boss and he had a lot more experience than I. We reached the Trans-Canada highway and turned south towards Folly Mountain. By now the visibility had decreased to the point where we were following the headlights of cars on the highway below us. I was concerned about our altitude above the surrounding terrain and as we passed the Evergreen Motel I suggested weakly that we land and call it a night. My suggestion was not taken seriously and we pressed on. Shortly thereafter, we lost all ground references and commenced inadvertent IMC procedures. As we circled for altitude I declared a "Pan" with Halifax terminal. We topped our climb at 3000 feet and received vectors for Halifax. By now we were overdue and we were quickly running short of fuel. To compound matters, we were picking up a substantial amount of icing, which I might add, a Kiowa really doesn't like. Additionally, the pilot flying was not overly current on the Kiowa. It was not a great place to be but I was too busy to give it much thought. The next ten minutes passed very slowly indeed. I had no instruments in front of me so, as with the trip up to that point, I was along for the ride. Finally we entered clear air and continued the flight VMC to Halifax where following a safe landing I finally made a decision. We stayed the night.

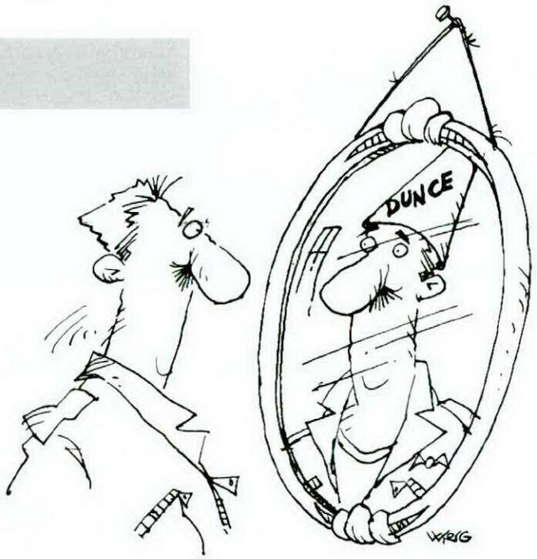
There is no mystery regarding the cause of this incident at Folly Mountain (aptly named). It was a simple case of press-on-itis. We had someone counting upon us to pick them up. This motivation proved irrelevant because the only decision I made that night was to stay in Halifax and consequently we did not achieve our objective(just scared the hell out of ourselves). The situation occurred before we got airborne. When the area forecast called for marginal conditions in onshore flow, we failed to note that the ridge of land north of Minas Basin would be experiencing on-shore flow from the Basin, and that is exactly what we encountered. It was an important oversight, however, in my mind, the most important factor in this incident was my failure as the aircraft captain to show leadership. I abdicated my authority to my superior. In reality, he was working for me in that aircraft but I failed to make the transition from office thinking to aircraft thinking. Although he outranked me and had much more rotary wing experience than I, when I signed for that aircraft, he now worked for me. At any time leading up to the actual inadvertent IMC incident I could have broken the chain of events that led up to it. Had I listened to the doubts building inside me and reacted accordingly, we would not have been there.

I relate this story because although the Kiowa is no longer with us, the lessons I learned that night are valid for all of us. When you sign for an aircraft you accept sole responsibility for decisions made in that aircraft. You cannot defer those decisions nor can you abdicate them. I don't care if your co-pilot is the CDS or if you are carrying the Queen; you are in charge and you must listen to your inner voice. It is usually right. ◆

SAFETY

When safety is the topic most folks sit and sigh,
They barely listen to the rules meant for the other guy.
Safety is for knuckleheads who go around in a daze,
But you are always wide awake and never reach that phase.
Who keeps on taking chances after going scot-free once,
but never heeds the warning? Not you—the other dunce.
We all know the rules of safety so, why bother to discuss,
Rules that apply to the other guy but never apply to us.
The moral of the story as you can plainly see:
To me, you are the other guy, to you that guy is me.

Author Unknown



MURPHY'S LAW IN ACTION ****** OUCH !!!!

by Sgt T. Sheppard 408 Squadron Edmonton

Welcome maintainers, while you enjoy your break permit me to recount an incident that will hopefully give you food for thought or at least cause you to grin at my expense and reflect upon your procedures.

It was early in my career as a technician and I had landed the posting of a lifetime! Fresh out of CFSAOE, sorry it's CFSATE now...so much for not dating this and I was assigned to heavy maintenance. Our crew had only to complete a few more landing gear checks and another bird could join the flock to protect and serve. Little did we realize how much of an awakening we were about to receive.

The aircraft was jacked, levelled and prepared for the checks. Now to connect external power, hydraulics and the communication system headsets. Our teststand was still down for routine maintenance and the headset gear was being used by, #6 crew! How could they be ready for hydraulics! They had started at least a week after us, our first in would be first out. There were no slackers on this crew, besides tomorrow is friday and its a long weekend. No problem, we will borrow another test stand and use hand signals. Afterall we were using hand signals before the headsets came along, right. Number 2 crew kindly loaned us their teststand and mentioned that it likes to overheat but if you keep an eye to it you shouldn't have a problem. Besides it is only a few landing gear cycles not a full blown set of hydraulic functionals. The hand signal method would require an additional tech which we recruited from #3 crew.

Ah, the stage is set, they say "Pride goeth before a fall". Well ours was about to take a high speed nosedive to interview city with "Murphys" beast at the controls. A cantankerous test stand, a change of procedure and an outsider to our crew unfamiliar with how we did business. Funny thing that, how different crews devise subtle differences in techniques.

With everyone briefed on their task, or so we thought, the job of adjusting the landing gear commenced. After a few adjustments to both the gear and exactly what each hand signal meant we had arrived at the infamous wheel clearance GO/NO GO check. This demanded a tech to enter the gear area with the doors disconnected, safetied open and the weight of the landing gear legs supported solely by hydraulic pressure.

The individual who, up to now, had been diligently monitoring the teststand became distracted by this check as his crew had not shown it to him and besides the temperature indicator was in the green. This was our old foe "Murphys" chance to act. As the tech was halfway between teststand and aircraft the temp spiked, tripped the overheat protection switch shutting down the stand. With the gracefulness of an avalanche the gear swung down ***striking a glancing blow to the head*** of one very surprised tech and inciting a flurry of colourful dialogue amidst the crew.

Fortunately the injury to his head was very slight but our rollout was delayed several days what with the investigation, waiting for a serviceable teststand and the headset gear. With our pride crushed and morale bruised we reflected upon what happened.

The lessons we learned are as valid now as then:

- *No task is unimportant, it's a team effort.*
- *If you doubt its' serviceability don't use it.*
- *Check all equipment before use*
- *A change of procedure demands a sound two-way briefing to ensure comprehension by everyone involved.*
- *Don't let curiosity get the better of you*
- *Plan for and use a good escape route*
- *Avoid placing yourself in the path of moveable components.* ◆

Most accidents occur because of a critical number of factors occurring in time and space. The trick to avoiding this coincidence (the accident 'chain') is to spot the first one or two...alarm bells should ring !!!

FROM THE INVESTIGATOR

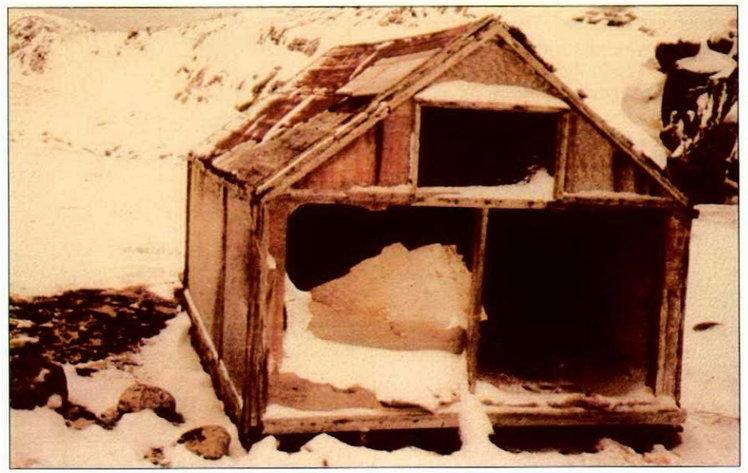
Aircraft Occurrence Summary
DFS 96/11
TYPE: Griffon CH146421
DATE: 12 November 1996
LOCATION: Killiniq Island, North West Territories

Circumstances

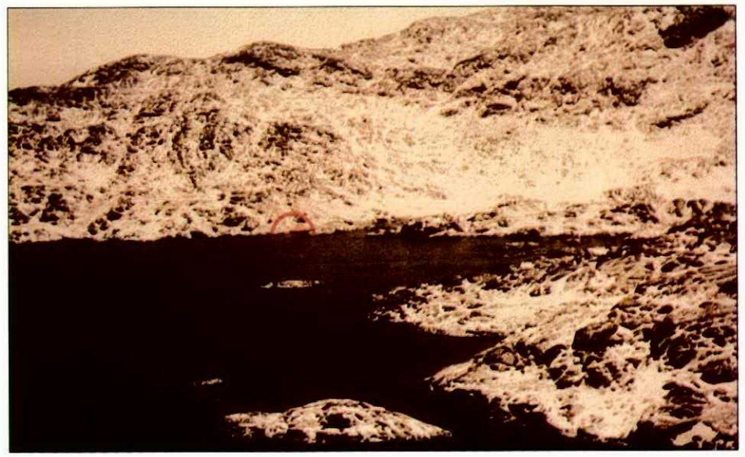
Rescue 421 (Griffon)was tasked by RCC Halifax to conduct a Medevac mission in the vicinity of Resolution Island. After initial planning the crew departed Goose Bay and proceeded up the Labrador coast towards their intended refuelling stops. As nightfall descended the crew donned Night Vision Goggles (NVG). While proceeding to an enroute fuel cache they encountered deteriorating weather conditions. The crew lost visual references during the subsequent attempt to land on shore and the aircraft impacted the water.

Investigation

The crew experienced reduced visibility in snow showers as they approached the entrance to Grenfell Sound (Killiniq Island). They executed a 180 degree turn and landed at Cape Labrador where they shut down to conserve fuel. Shortly thereafter the crew observed the weather significantly improving and elected to attempt the short flight to the fuel cache at Port Burwell (17 NM). As they approached the western end of McLelan Strait they suddenly encountered reduced visibility in snow showers. The crew lost visual references while transiting to an apparent landing site on the south shore of Killiniq Island and the aircraft hit the water. The aircraft impacted in a left bank,nose-high attitude with minimal forward speed and immediately rolled inverted. The crew executed an underwater egress in darkness and climbed onto the belly of the aircraft. The helicopter floated inverted for several minutes as it drifted towards the shoreline. It finally grounded on the rocks forcing the crew to swim the last 20 feet to shore. They escaped with only the survival equipment they were wearing. The ELT was not activated due to low impact forces.



Survival hut



Crash area looking north

The crew hiked through subfreezing temperatures and high winds for twelve hours to a 12x8 foot plywood shack they had spotted earlier. For the next 24 hours they struggled to survive in this dilapidated shack located two kilometers southeast of the crash site before being rescued. Three of the crew members were wearing survival vests of which only two had inflatable life

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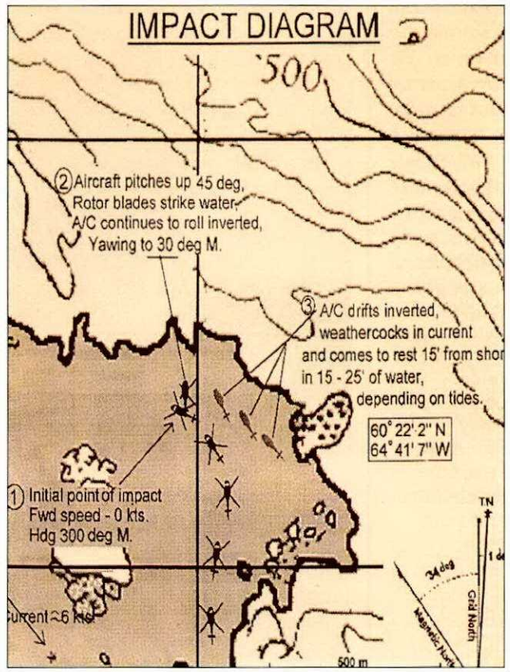
preservers attached. The fourth crew member was wearing neither. The crew was wearing a mix of summer and winter flying clothing. As a result, all crew members suffered varying degrees of cold weather injuries. The vest contents provided minimal resources for the crew's survival in this short term scenario.

DFS Comments

The survival aspects of this accident have been played out in the national media but did not portray the important issues that were illustrated here. Plan to survive with what you have on your back and dress accordingly for the conditions of flight. This crew was not properly prepared and nearly paid the ultimate price. In addition, Night Vision Goggles are a wonderful tool but they have important limitations. They do not turn night into day and their ability to see through minor obscuring phenomenon can cause a crew to delay a turn around decision until its too late. ◆



FROM THE INVESTIGATOR

Aircraft Occurrence Summary
DFS 96/05
Type: Jet Ranger Helicopter CH139303
Date: 31 Jul 96
Location: St.Andrews Airport, (Winnipeg) Manitoba

Circumstance

The mission was a dual instrument-training flight on a helicopter conversion-student who was an ex-CF18 pilot. After start-up for the second leg of the trip, the instructor pilot (IP) who was an ex-tactical helicopter pilot, spontaneously took control to demonstrate a 'congested-area'departure to the student. The IP executed a vertical take-off from the apron refuelling area to clear obstacles directly in front and then descended to, and stayed at about 15 feet above ground as he turned very steeply past an abandoned control tower. He then turned to avoid a 100-foot NDB tower and continued along at low-level before pulling up very aggressively into a steep climb. At the top of the climb he began an aggressive left turn and, being concerned with other circuit traffic, he further increased the bank angle. When the aircraft developed a very high sink rate he realized that an impact was imminent and he unsuccessfully attempted to level the helicopter. The helicopter struck the ground and bounced into the air and continued ahead for a considerable distance before the IP initiated autorotation and brought the aircraft to rest with the engine still running. The crew shut down the aircraft and egressed uninjured. the firefighters arrived shortly and foamed the aircraft as a precautionary measure.

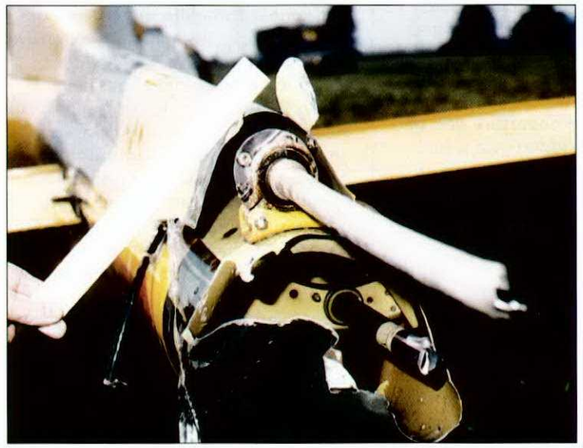
Investigation

The aircraft impacted the ground in a mature oat field leaving readily identifiable ground scars from which DFS investigators were able to determine the sequence of events with some degree of precision and certainty. Investigation revealed that they hit the ground with approximately 40-degrees of left bank in a slightly nose-high attitude. The initial impact force was sufficient to cause the immediate loss of tail-rotor authority and puncture the fuel cell with the rear cross-tube. The resultant massive fuel leak left a dead vegetation trail which indicated that the helicopter had spun through three full revolutions before the pilot entered autorotation approximately 250 feet from the initial impact point. The pilot delayed his autorotation in order to clear a 40-foot wide, 10-foot deep irrigation ditch which was almost directly ahead of them. The engine test cell results indicated that the engine was serviceable. There were no anomalies found in any of the other aircraft systems and they all appeared to be functioning normally before the accident. One of the crew suffered minor injuries. The damage was assessed as B category.

DFS Comments

The pilots of this helicopter were indeed fortunate; prior to the initial impact the main rotor blades missed striking the ground by only three inches. Furthermore, there was no post-impact fire and the IP somehow, managed to control the helicopter over the ditch. Had they hit the ditch, the outcome would most certainly have been more serious. The investigation into the cause(s) of this accident is still ongoing. Pilots are reminded however, to exercise constant vigilance and critically assess intended actions prior to attempting any non-routine or unusual manoeuvre. ◆

Final position of aircraft and severed tail boom.



Damage to tail boom and tail rotor drive shaft.

FROM THE INVESTIGATOR

Aircraft Occurrence Summary
DFS 96/07
TYPE: CF188768
LOCATION: Iqaluit, Northwest Territories
DATE: 14 August 1996

Circumstances

The mishap aircraft was deployed to the Iqaluit Forward Operating Location (FOL) to participate in a NORAD exercise. The aircraft was number two of a 2-plane formation which had been given an exercise order for immediate take off. When the pilot of the mishap aircraft commanded full aft stick at rotation speed, the aircraft did not respond and the pilot elected to abort. The departure end cable was not up and the runway remaining was not sufficient to stop the aircraft using maximum braking. The pilot ejected 200 feet from the end of the runway at a speed of approximately 70 knots. The ejection was successful; the aircraft rolled off the departure end of the runway and skidded into a fuel pipeline. The on-board fuel ignited and the aircraft was destroyed in the post-crash fire. The fuel pipeline was damaged but not broken.

Fire scene

Investigation

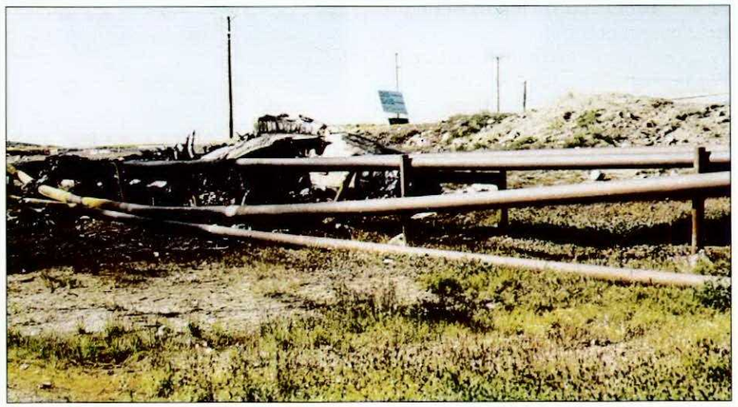
The investigation was hampered by the near complete destruction of the aircraft. Nevertheless, extensive analysis did not reveal any aircraft unserviceabilities that could have resulted in a failure to rotate. A video tape of the accident was analyzed to verify the positioning of flight control surfaces and to calculate the aircraft's speed at various points during the abort sequence. It was determined that the aircraft was properly configured for take-off and that the abort was initiated within 10 kts of the calculated nose wheel lift-off (NWLO) speed.

The investigation identified several pre-flight events that contributed to this accident. In particular, the lead pilot read back the IFR clearance incorrectly and identified runway 18 vice runway 36 as the departure runway. As a result, the mishap pilot taxied to runway 18 even though the departure end cable was set for runway 36. The accident aircraft experienced an unusual flight control anomaly just prior to line up. Although the anomaly was resolved, it served to undermine the pilot's confidence in his aircraft. When the aircraft subsequently failed to rotate as expected, recollection of this anomaly led the pilot to conclude that his best option was to abort the take-off.

DFS Comments

Research into the phenomenon of late nose wheel rotation reveals that this mishap was not an isolated case. Since 1985, there have been 12 failure to rotate occurrences with CF18s in forward centre of gravity (C of G) configurations. Of the twelve occurrences, two were caused by improper take-off configuration settings, two were caused by poor nose oleo servicing, five were attributed to aborting prior to reaching rotation speed and three have undetermined cause factors. Three aircraft have been destroyed while the remaining 9 aircraft have been saved by a departure end cable. ◆

Close up of burnt aircraft



Damage to fuel lines

ÉPILOGUE

Aircraft accident summary CC144613

On 24 April 95, at Shearwater, Challenger CC144613 experienced a right hand main landing gear failure on an attempted landing which resulted in the aircraft's destruction on the subsequent emergency landing. The investigation is now complete.

The crew was conducting a non-precision circling approach in the flapless configuration. On the attempted flapless landing, the aircraft bounced twice and then climbed away. The Tower controller noted damage to the right main landing gear and advised the crew. For over 30 minutes, the crew assessed the condition of the aircraft and reduced fuel. Suddenly the damaged landing gear fell from the aircraft, the right engine failed, and a serious fire erupted in the lower fuselage. After an immediate emergency landing, the right wing dropped to the runway and the aircraft rotated to the right, leaving the runway and eventually coming to rest against the airfield boundary fence. All four crew members escaped from the burning aircraft. Aircraft damage was assessed as "A" category.

The investigation determined that flapless circling approaches are not normally practised. However, given the requirement to complete a number of sequences, the desire to maximize the flight's training value, and the absence of regulations which prohibit flapless circling approaches, the Aircraft Captain elected to combine a non-precision approach, a circling approach, and a flapless landing into a single exercise. As a result of this greater than normal workload the First Officer was unable to stabilize the aircraft on short final leading him to use

Continued on page 28

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rather abrupt control inputs during the landing phase.

It was also determined that on this flapless approach the criterion for ground spoiler deployment had been met after the first bounce increasing the rate of descent by almost 60 percent. The manufacturer reviewed the system logic and determined that, on the whole, the use of wheel spin-up as a criterion for ground spoiler deployment enhances safety. Pilots should therefore expect automatic ground spoilers to deploy on a bounce and be aware they will subsequently increase sink rate.

Flapless landings will continue to be conducted in the Challenger; however, the rules now *recommend* that flapless approaches be stabilized (in terms of airspeed and glidepath) by 1000 feet AGL and *direct* that they be stabilized (in terms of airspeed, glidepath and runway centreline) by 500 feet AGL. Also, CC144 initial pilot courses conducted by 412 Sqn and 434 Sqn have been expanded to include more detail on the automatic ground spoiler system. Finally, Comd ATG made a committment to provide sufficient taskings (or "trainers in lieu of taskings",if required) for Squadron pilots to maintain established minimum proficiency levels. ◆

"Aircraft on first pass showing damage to right wing and landing gear"

"Crash site - showing Runway 34 in background and beach parking lot in foreground"

"Aircraft at rest viewing left fuselage against fence"

ÉPILOGUE

On 3 May 1994, Hornet CF188784 experienced an in-flight fire which forced the pilot to carry out a single engine landing at BFC Bagotville. The investigation into this accident has been completed.

The aircraft was on an air-to-ground mission when the pilot lost all aircraft displays. A headset tone accompanied this after which the displays reappeared and a left generator caution light came on. The generator was cycled in accordance with the check list but tripped off line a second time. After securing the left generator, the pilot prepared to return to base when a left engine fire caution light appeared accompanied by a fire light. He immediately secured the left engine, activated the fire extinguisher system, and returned to base. The post flight inspection of the aircraft found that the fire damage was concentrated in the left-hand Airframe-Mounted Accessory Drive (AMAD) bay. An adjoining bulkhead and most of the electrical wiring in the area were heat damaged. In addition, the fire destroyed the Generator Converter Unit (GCU) covers and the Air Turbine Starter exhaust duct, and discoloured many fuel lines. The damage was assessed as C Category.

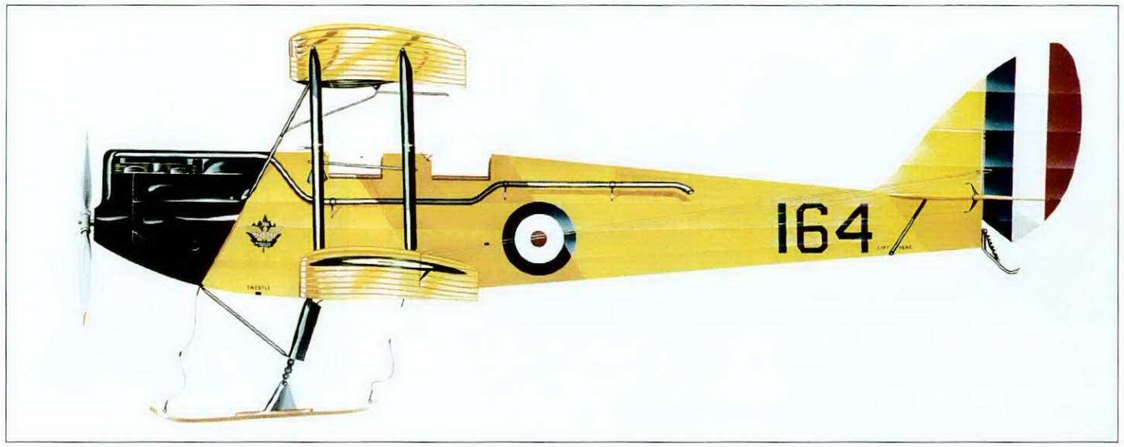
The investigation determined that the fuel source for the fire was the left-hand motive flow boost pump fuel lines that had worn sufficiently at a coupling to cause a leak into the AMAD bay. The fuel pooled in the bay and was subsequently ignited after a control card internal to the left-hand GCU short circuited. The CF was aware of the fuel line wear problem before this occurrence and had already initiated a redesign effort. Meanwhile, the periodic inspection card deck was amended in January 1994 to visually inspect the fittings in question for signs of wear. This additional inspection requirement, however, was not called for when CF188784 last went through periodic.

In response to this accident, the CF18 AOIs will be amended to emphasize fire-related emergency procedures and kits will be acquired to refurbish older GCUs for improved reliability. The fuel line redesign work is progressing and field modification kits should be available within a year. ◆

"Damage to Airframe Mounted Accessory Drive (AMAD) bay"

"Rear left view of aircraft"

DH-60G GIPSY MOTH 164



artist: Ronald G. Lowry

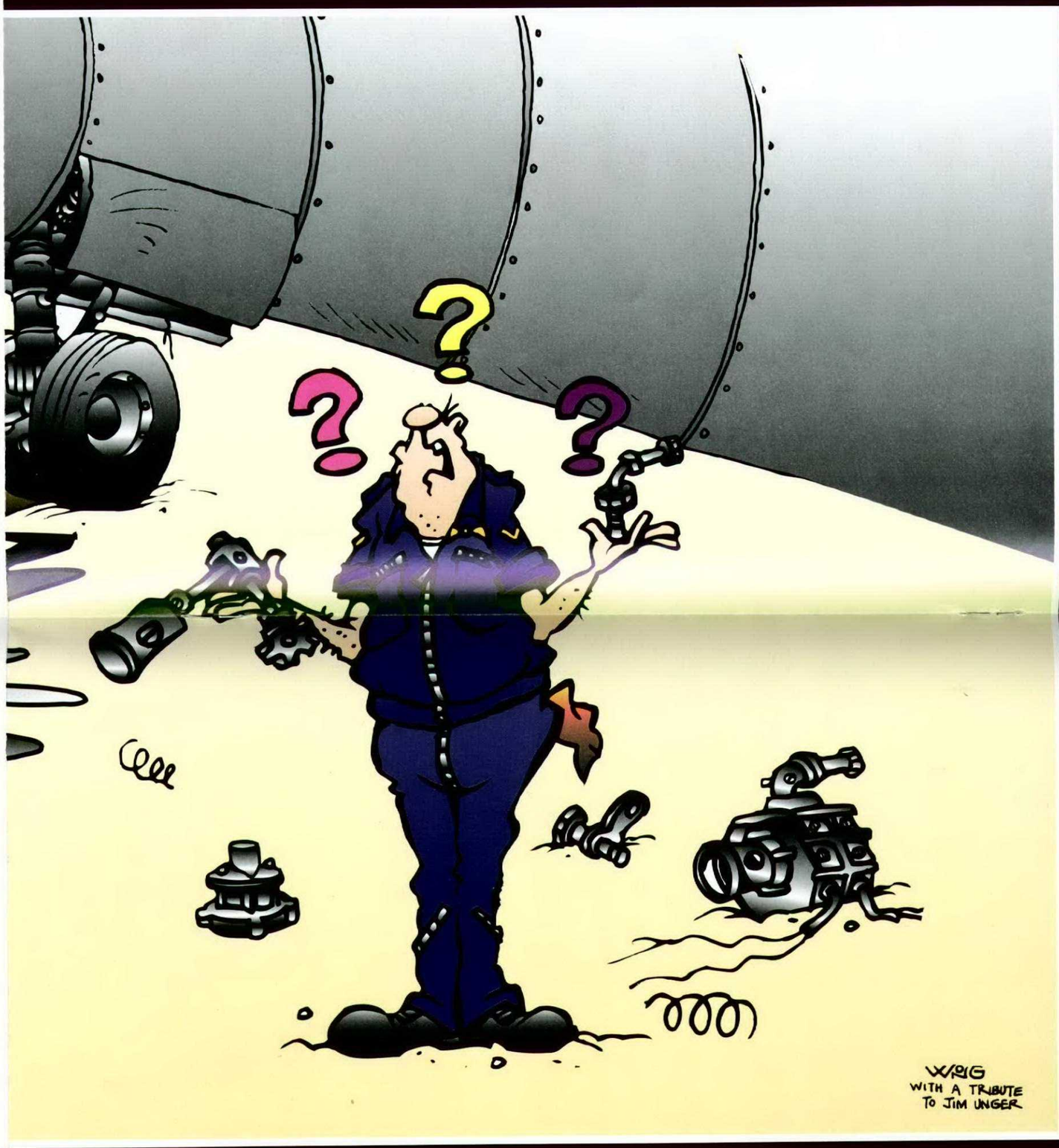
De Havilland DH-60G Gipsy Moth 164 of No. 112 Squadron (Auxiliary) Royal Canadian Air Force Winnipeg, Manitoba 1938.

Powered by the D.H. Gipsy I engine rated at 100 horsepower the Gipsy Moth had a gross weight of 1750 pounds.

The Gipsy Moth is part of the CAN-NAV collection donated to Air Command by Larry Milberry.

Don't be afraid to a
they're a lot easier to exp

sk stupid questions;
lain than stupid mistakes!



questions stupides ; elles
r que des erreurs stupides !

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