FLIGHT COMMENT

THE FLIGHT SAFETY DIGEST OF THE CANADIAN ARMED FORCES

EDITION 4 1978

Comments

Taking pen in hand to introduce myself and the latest edition of Flight Comment, I am subjected to mixed emotions. On the one hand, I consider my appointment as somewhat of a milestone (perhaps premature) in my career, and on the other, I am reminded of an insert in a recent issue of CFB Esquimalt's "The Lookout" which describes a good editor:

> "A good editor is one who has never made a mistake; who has never offended anyone; who is always right; who can ride two horses at the same time he is straddling a fence with both ears to the ground; who always says the right thing at the right time; who always picks the right horse as well as the right politician to win; who never has to apologize; who has no enemies; and who has worlds of prestige with all classes, creeds and races.
>
> There has never been a good editor."

Having identified the extremes of self-confidence and humility, and not being one to ascribe to a middle-of-the road policy, I am unsure as to where I fit in. No doubt the readership will be the judge of that!

Nevertheless, our philosophy at Flight Comment will be to continue to produce a magazine which attempts to promote flight safety by presenting ideas and facts which are timely, relevant and provocative. Some changes have been made, or are forthcoming, both in format and in content. Some are subtle and may not be easily perceived: others are cosmetic and will be obvious, the rest are journalistic and their impact will only be felt as an overall impression of the magazine. All are important and essential to our belief that the magazine must keep in touch with reality, current problems and the best interests of the readership. **Ab H. Lamoureux, Captain**

CONTRIBUTIONS

As always, your contributions are welcome. If you would like to write about a subject of interest to you, by all means, be our guest! Articles in French are also welcome. Remember not only do we have access to English-French, French-English translation services but our team of hardy translators stand ready to help you with any language and/or terminology problems you may have. Don't be shy, let's hear from you.

We request that, where possible, articles submitted for consideration be accompanied by a short biography and a suitable "hero-shot". You may have friends out there who wondered whatever happened to you!

We are continually in search of ideal cover photographs. Your submissions should be in colour and we remind photographers (amateur or otherwise) that because we need an 8 x 10 vertical to send to the printer, there is often little we can do to convert a horizontal photograph in which the aircraft occupies the whole picture. In short, try moving back or rotate the camera 90 degrees.

COVER

The twilight Voodoo photo was taken by Cpl Jeanette "Hans" Eilke, a Met. Tech at CFB Chatham. Hans is also an accomplished artist and cartoonist, whose work has appeared in Flight Comment before.

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A complaint often heard from people on flying units is that they never hear what happened in an aircraft accident. Too often the information is available and has been sent out but it never seems to get to everyone. I can assure you first of all that no one in the flight safety business is trying to hide anything important from you – quite the contrary. We make every effort to pass on the facts as soon as they are known, but that sometimes takes time. So, if you are not getting the facts, let's find out why. To that end you are invited to write directly either to DFS or to the Air Command Flight Safety staff if you can't find a written accident report or resumé on your base within about two months of the accident. If that time frame seems excessive to you, consider the work involved in getting a completed copy of a Board of Inquiry to NDHQ from which a resumé can be written, printed and distributed.

A frequent suggestion is that we should simply give accident boards a wider circulation. We resist this idea because the information contained in these reports is sometimes inaccurate and often misleading. Worse than that it sometimes reflects badly on the personnel involved whether or not they deserve it. Nothing is to be gained by revealing every detail about an aircraft occurrence. People make mistakes and must not be afraid to honestly admit to their failures because of fear of public embarrassment.

Much of the interest in accidents is simple professional curiosity. We recognize this and cater to it because the lessons to be learned will only have an impact if people are interested. You can be assured, however, that if a hazardous situation exists action will be taken by the operational or technical staffs long before an informative flight safety bulletin appears. No matter what action is required – a simple inspection or an operational flight restriction – the action occurs because of a team effort involving the appropriate specialists at all levels of command. Our job in flight safety is simply to make sure that the right people have all of the facts and that something is being done. Your job is to learn from the mistakes of others and we can help you do that. If you are not getting the word, don't complain – ask!

J R Chisholm

COL. J.R. CHISHOLM
DIRECTOR OF FLIGHT SAFETY

THE NEW PERSONAL LOCATOR BEACON FOR THE CF

By Capt M. Stopani-Thomson

The journey to replace the AN/URT-503 Beacon Set was begun by the signing of an Operational Equipment Requirement (OER A-2/71) on 5 Sept 1972. The requirement stated was for a two-way voice capable Personal Locator Beacon (PLB). As a result of the OER, a specification was written, reviewed and amended numerous times before it was published as RAD 62-3 on 25 Mar 1975. As a result of this specification, beacons (AN/PRQ-501) are now flowing off the production line at a rate of approximately 60 a week and the days of the AN/URT-503 are numbered.

Where it Came From

The story as to what happened between the issuing of the specification and the delivery of the first PLB, is not one of smooth sailing! First PLB source selection had to be made using RAD 62-3 as the baseline requirement. As there were several beacons already in use by other nations and these were available at reasonable prices, these had to be tested first. In turn each was rejected as not meeting specification, and, the decision was made to build the PRQ-501 here in Canada. The reasons for the rejections were various and include reed switches that didn't switch; separate antennae that had to be plugged into receptacles that could present problems (due to possible snow plugging); battery packs that were internal to the device from which leakage or fumes could cause corrosion to the electronics; battery packs that needed tools for replacement and so on. All of these evaluations took time but out of them came the clear idea that in order to meet our unique requirements, the CF would have to build its own.

Garrett Mfg Ltd., Toronto, with its expertise in rescue beacons (RESCU 88 and RESCU 99) won the contract and since the specification is tough, design engineers had to develop or at least modify certain aspects of packaging technology. Eventually prototypes were produced and sent to AETE, Cold Lake, for trial. An antenna broke off during the trial requiring a change in the brazing technique for attachment; battery pack mounting rails and the method of locking the battery into place were deemed unsatisfactory and required design changes; the trials continued and easily proved that the basic design and operation of the prototype was superior to the competition.

The beacon was then ordered into production with changes incorporated. Other problems such as finding out that the modular internal circuit boards were unsuitable for production line wave-soldering techniques due to their small size and density of components resulted in a delay to its introduction into service (eventually the boards had to be handmade). The list of problems experienced and solved goes on; however, they have been faced one by one and the solutions have resulted in a well engineered, compact multi-mode beacon that is far superior to the AN/URT-503. As this article goes to press, over, 500 PLB's will have been delivered.

One of the prime reasons for the rejection of the competitive beacons was the fact that we here in Canada have a very harsh environment coupled with a vast expanse of little used territory. The range of temperature conditions experienced by a downed airman is much more extreme than say those experienced by BAF pilot. The PLB must work in Canada winter and summer meaning typically - 40° C to + 30° C for long periods of time. Statistically if a crash occurs in (say) the high Arctic, the chances of discovery steadily improve if the PLB will operate continuously for a long period of time. For various reasons it often takes time to realize that an aircraft is overdue; it takes further time to notify a Search and Rescue center and a further length of time to have a plane in the general area of the crash. The airman on the ground never knows if another aircraft might be within receiver range and tends to operate his PLB continuously. Therefore, it becomes a race between being heard by another aircraft and the PLB's battery dying. The only class of battery that will operate satisfactorily at - 40° C are cells of the lithium family. These are of the newest technology and most of this family still suffer from teething problems. The lithium type cells can be divided into two classes – low power and high power. The new PLB is initially issued with one of the high power class namely a (Li-(CFx)n) lithium Carbon Fluoride battery pack which is absolutely safe to place in seat packs where they will be in close proximity to certain treasured parts of anatomy. A contract exists to investigate other types of lithium cells with the objectives of safetying all risk mechanisms and thereby making available higher performance batteries at - 40° C (meaning longer lives at low temperatures). In time, when the problems are solved to CF satisfaction, a new battery pack will be forthcoming that will incorporate these cells.

How it Works

What makes the new PLB so different from the rest? It weighs about 1.75 pounds complete with battery. It is a one-piece device with a spring-steel self-erecting antenna fixed firmly in a plastic block on the top. There is nothing to remove, discard, plug-in, pull-on or screw on before operation. A piece of velcro fastener both on the bottom of the battery pack and at the top of the antenna deal effectively with antenna stowage. The antenna wraps around the PLB in the stowed position and shields both "ON" and "VOLUME" wheels from inadvertant operation: To turn the PLB "ON" requires that the antenna be released whereupon it will automatically spring into the vertical position. The battery pack, when it has to be changed, slides onto rails on the bottom of the beacon and locks into place with a wide flanged-head screw that cannot fall out and get lost in snow/water should the battery be changed: this screw mechanism can be tightened/undone with a gloved hand.

The AN/PRQ-501 is waterproof for 24 hours at a depth of 2 feet so it can tolerate the water in a life raft or immersion if you have to swim around with it stuffed into a pocket; it will even tolerate a five minute soak at a depth of five feet. The beacon itself is made of two light metal castings screwed together to make a very rigid package. It will take normal abuse like an accidental drop onto rocks without failure but of course abuse is not recommended! If you drop it and if you want to check that no damage resulted, turn on the beacon and push the 'press-to-talk- button; the characteristic sound for the speaker will assure you that all is well. It will operate in two modes, namely Beacon and Voice. Beacon operates at 243 MHz (the military distress frequency) whilst the voice mode operates at both 243 and 282.8 MHz with a 25 KHz band width. It is therefore possible for example to have two life rafts talk to each other or for a ground party to use it as a walkie-talkie during a search.

When you use a PLB you must consider that the energy from the antenna must travel in a direct line to the search aircraft. Hills and trees (terrain masking) restrict this line-of-sight whilst the ground plane restricts the power radiated into space. In a perfectly flat field, placing the PLB on the ground does not result in the maximum possible range as the ground might be dry and sandy and not reflect most of the energy radiated. For best results the beacon should be operated eight feet above the ground in all terrain; in heavy vegetation operate it as high in the trees as possible and in hilly terrain, using it from a high place (if possible) will help with the terrain masking problem. During the AETE prototype trials, the PLB was operated from a wooden stand four feet high above the ground with maximum audio range measured at 95NM and homing range of 55NM: with optimised conditions the PLB will transmit equally as well in real world usage. Needless to say, training models have been purchased for aircrew familiarity and practice searches: these operate at the training frequency of 242.1 MHz.

Good luck, and here's hoping that you never have to use this PLB; however, if your life depends upon it, know that you have the best beacon available anywhere in the world.

70 training models will be available. They have already been allocated to 21 bases, so there is no requirement for ALSEO's or BFSO's to submit requests to NDHQ regarding procurement.

Editor

Captain Malcolm Stopani-Thomson

Captain Malcolm Stopani-Thomson joined the RCAF in Oct 57 as an AC2. Trained as an Armament Systems Technician he worked on B-25s, CF-100 and CF-104s before being selected for UTPM. He graduated and was commissioned in 1969 as a Lieutenant. A short posting as an instructor followed by another in the field as a repair Officer occurred before his first posting to NDHQ. There he became the project officer for the CF-104 gunsight replacement program and later the CF-5 OPI for weapons and weapon systems. A posting to RMC for a Masters of Electrical Engineering before returning to NDHQ resulted in a change from weapons to the navigation field. He became the project engineer for the CF-104 inertial platform replacement program. With the initial work completed, he moved into the Search and Rescue equipment position (NDHQ/DGAEM/DAASE 3-4-2) where he is responsible for the PLB, all CPI's, Flight Data Recorders including new developments and SAWSAT atmospheric equipments, plus direction finders.

Why Light Brown

Why "Light Brown" and not light blue?
It's because the gods have a master plan too,
You see, they gave man a crack at the sky
Turned Sergeants to Officers and taught them to fly
But they got carried away with the op plan intent
Actions, zippers and colors to narcissm lent
To the mortals, near grounded, a white paper was sent
"Support the grunts or your wings will be bent",
"The helo shall fly – disregard laws of motion"
And its color will be that, save the sky and the ocean
And those that therin who shall dwell at the pole
Shall be clad in LIGHT Brown – of the earth – of its soul
Heed y not things that go BOOM in the blue
For like thunder and lightning they are just passing through
When they're mission corrected and the glide slope is down
Surely their raiments will change through all spectrums to Brown.

Go Army

LCol Don Johnston
Flight Surgeon
1 Canadian Brigade Group
Calgary

WELCOME TO TORONTO BUT...

by Capt Micheal O'Shea

So, you're off on a weekend jolly to Toronto! Time to visit old friends or perhaps strike up some new acquaintances. Finally a chance to get away from the QRA or all those students for a few days. If these are the only thoughts in your mind as you get close to Downsview you may be in for a bit of a shock.

Not only is Toronto one of, if not *the*, busiest control zones in Canada, but in addition to the airborne problems that await you, there are numerous other hazards that may put your weekend off to a bad start.

Traffic routing. In almost all cases you will be cleared, if IFR, for a straight into 15 or circling to 33 off either the Kleinburg VORTAC or NDB. Runway 15/33 is the only IFR runway at Downsview. Runway 09/27 can be served by a circling approach but only if you are in a piston aircraft. Due to noise abatement the runway is closed to jet traffic.

Obstructions. Your approach, however, will take you almost directly over two uncontrolled airports with a great deal of light aircraft traffic – King City and Maple. These airports are, in fact, the reason why your approach is restricted to 2400 ASL until 6 NM from Downsview. By this time you will have cleared the circuit at Maple which is the furthest south of the two airports. Aircraft at these airports generally fly the circuit at 1650 ASL and are not supposed to proceed above 2000 ASL without contacting TRSA. Remember, however that there is no guarantee attached to it.

As you get closer to Downsview you will notice that, although the amount of traffic below you has decreased, the amount above you has definitely increased in both size and numbers. If 23 is the approach sector at Toronto International Airport the big boys will be passing overhead. They are supposed to pass overhead Downsview at no lower than 2000 ASL (on an NDB 23L) and are generally above that. You should be aware that vortices from the wide bodied aircraft can cause you considerable trouble. If 05 is in use for departures the aircraft will generally be high enough overhead Downsview so that they won't cause you any problems.

If you have to do a circling approach to 33 you may be presented with problems of a different kind – ground obstructions! As you are probably aware, Toronto boasts the tallest freestanding structure in the world – the CN Tower. Fortunately it's 8.0 NM from Downsview but it can prove distracting at times. Also very distracting are the apartment buildings and shopping centres that you will have to curve around. Don't bother to try and see if there are any girls sunbathing on the balconies – you'll have your hands full with other things – like flying the plane! Also, more than one pilot has been known to take a glance down Highway 401 as he passed over it on short final, marvelled at the size of the highway and the number of cars on it – and forgotten to check his airspeed or give his gear a final check. There are a lot of distractions – don't let them be costly. You'll have plenty of time to enjoy Toronto's structures (both animate and inanimate) once you're on the ground.

Toronto is also noted for its poor visibility! During the summer months you can pretty well count on restricted visibilities in haze and smoke (smog). This can be a real hazard if you're unfamiliar with the airport. There are lots of streets around that look amazingly like runways in reduced visibilities. The problem is even worse at night. It is extremely difficult to find the airport among all those lights unless you are aware of some of those signposts. I would strongly suggest that all night arrivals for transients be IFR or at lease use the inbound track for guidance.

If you do decide to come in VFR or in one of those "aircraft" that have to come VFR, keep your head up and eyes out of the cockpit as much as possible. Also, if possible, use your landing lite. It's a great aid to others to pick you out.

Toronto has a TRSA beginning at 2500 ASL so if you're not familiar with TRSA procedures you'd better get up to speed before you blast off. The TRSA controllers do a great job advising you of VFR traffic in your vicinity but occasionally one will go zipping by you that they didn't mention. Don't forget that they're working mostly on SIF and can sometimes have trouble getting a skin paint on an aircraft not equipped with a transponder. Also its easy to mistake an aircraft for a large building. Don't get complacent just because it sounds like you're getting IFR separation – you're still VFR and it's your responsibility for separation. If you think that there was a lot of traffic over Old Wive's Lake everytime you tried to do your sequence then you're really going to be shocked by the amount of VFR traffic in Toronto.

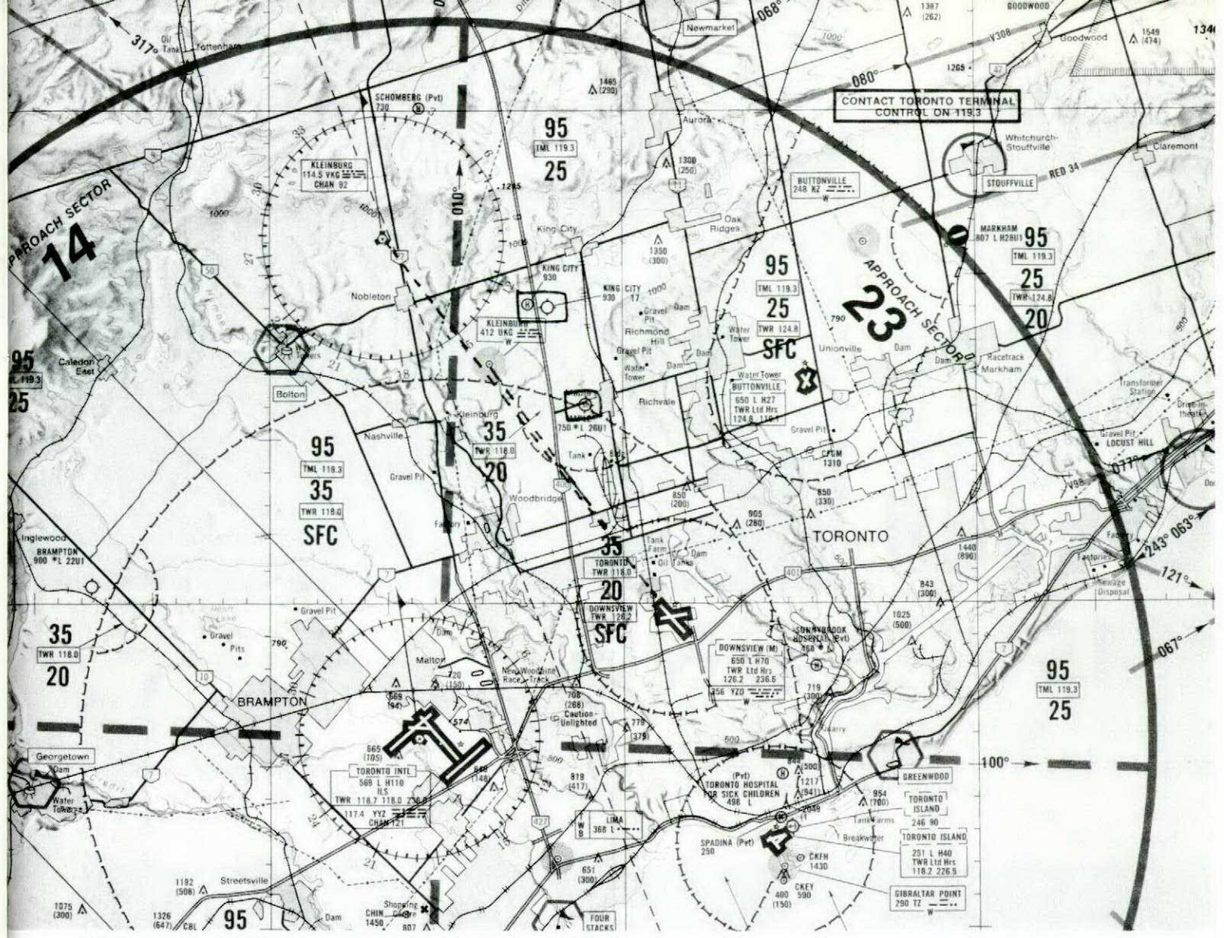
Aerodrome. So now you've gotten yourself to the airport. You've avoided all the VFRs and been lucky that there was no wake turbulence overhead. All you have to do now is put her down on 15/33 and roll out, taxi in, shut-down and you're off. Unfortunately you're wrong, or at least you may be.

If a thunderstorm or a heavy rainshower is overhead or has just passed, you may be in for a long slide with very little control. Runway 15/33 does not shed water like a duck does. In fact it tends to retain quite a lot of it. Last year a pilot in a T-33 was quite shocked to find out that his aircraft was hydroplaning merrily down the runway after touchdown. The pilot in another T-33 who came to rescue him had to abort three landings due to hydroplaning after touchdown. He was lucky because he was expecting it, was prepared for it, and able to overshoot.

Runway 15 has an MA-1A type barrier in the overrun and it will be up when the runway is in use. Don't be alarmed by it. It looks like a fence but it will bring you to a nice gentle stop before you get on highway 401.

Even with all that I've mentioned in the article, Downsview is not a difficult or dangerous airport to land at if you know the possible hazards and make allowances for them. Do a little mental preparation – read the GPH 205 and have a look at where the surrounding airports are situated and you'll be assured of starting that weekend trip on the right note.

Take heart – it's a lot easier to get out of.



The Toronto Control Zone: Take a good look at the number of airports in the area.

The final approach to RWY 15

Not meant to point fingers, but in the last 10 years there have been 12 aircraft-off-the-runway or blown tire incidents at CFB Toronto. In all fairness, it was obvious that psychological impression and/or environmental conditions (such as crosswind, no wind, rain, slush, snow or ice on the runway) were present. The problem may be astutely avoided by simply applying sound aircraft handling techniques of which we are all aware.

Editor

ABOUT THE AUTHOR

Captain M.F. (Mike) O'Shea received his wings in 1969 at Moose Jaw and proceeded onto Voodoos at 416 Squadron Chatham via 410 OTS Bagotville. In 1973 he moved on to Musketeers at 3CFFTS Portage La Prairie where he was a QFI, Standards Officer and Deputy BFSO. In 1976, he was posted to his current job at 2 RSU Toronto, where he functions as an Otter instructor, Standards Officer, ICP, Deputy UFSO and Operations Officer.

This change will also effect us in the Canadian Forces particularly in Europe. There is no plan at the present time to switch to JP8 in Canada. Further information about JP8 is contained in CFTO C-82-010-001/AM-000 and your AOI's. The degregation of air start capability using JP8 is minimal. Further investigations are continuing in order to detail any engine modifications or procedural changes for particular aircraft.

JP8 IS COMING

by Major Philip M. McAtee
Directorate of Aerospace Safety

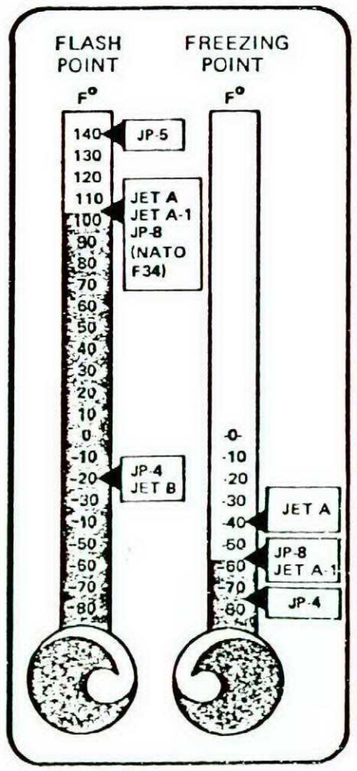
The proposal for the Air Force to convert from JP-4 to JP-8 fuel has been researched and discussed for the past several years. Now the day is coming. Beginning this summer, JP-8 will be introduced in the United Kingdom (U.K.) by the F-111E equipped 20 TFW at RAF Upper Heyford. All other wings in the U.K. will begin using it during 1979.

Why are we switching to JP-8? To see, let's review some background.

When there is an aircraft accident, a high probability for fire exists. Fire is even more common from battle damage. Because of this combat fire danger, Tactical Air Command requested, in 1967, that a fuel be found less susceptible than JP-4 to fire and explosion. Any fuel selected had to be a hydrocarbon fuel with required availability, reasonable cost, and suitable physical and chemical properties, to permit direct utilization in operational aircraft without extensive modifications or serious degradation of aircraft performance.

The majority of candidate fuels such as Jet A and Jet A-1 used by commercial aviation or JP-5 used by the US Navy are kerosene based. JP-4 and Jet B are fuels made by blending naphtha with kerosene. (Original JP-3 fuel was a mixture of gasoline and kerosene, and JP-4 is really just a lower vapor pressure JP-3.) All of these fuels have different characteristics and both good and bad points.

- JP-4 or Jet B is a wide cut mixture of heavy naphtha and kerosene with a vapor pressure of 2-3 psi, a freezing point of −72°F and a very low flash point of only −20°F. The relatively high vapor pressure and low flash point permits easier light-off at low temperatures, but also has made JP-4 frequently the cause of post crash fires. With only minor changes, it has been the standard Air Force jet fuel since 1951. JP-5 was adopted by the US Navy in 1952 as their standard fuel due to the need for a less hazardous fuel for shipboard use. It has a minimum flash point of 140°F. Navy aircraft have higher power ignition systems to permit better cold weather starting with the higher flash point fuel. Because of the restrictive specifications, production of JP-5 is limited, and the petroleum industry could not support an Air Force change from JP-4 to JP-5.



- Jet A or Jet A-1 is the standard for commercial airlines. Jet A has a −40°F freezing point with a flash point of 105°F and a vapor pressure of only 0.1 psi. Jet A-1 has the same properties, but a lower freezing point of −58°F. The high freeze point of −40°F for Jet A makes it unsuitable for USAF use and, in fact, most commercial aircraft use Jet A-1 for this same reason.
- JP-8 (NATO F34) is Jet A-1 with anti-ice and anti-corrosion inhibitors added. It is available from all sources that make commercial Jet A-1 fuel including European refineries.

Although safety was the first consideration in finding a substitute for JP-4, other reasons for changing have appeared. As we said, JP-4 is 50 per cent naphtha which is being used more and more for industrial purposes, including the manufacture of synthetic natural gas. This increased demand for naphtha is causing the price to soar, and the cost advantage of JP-4 will soon be gone.

Also, both the United Kingdom and France are already using JP-8 (NATO F34) and Italy is converting now. At the present time, only the military uses JP-4 in Europe, and during wartime we would have no back-up source of supply. But with JP-8, commercial jet A-1 fuel is available worldwide. Within NATO, one standard fuel should be adopted for inter operability, and it appears both the nations concerned as well as European manufacturers prefer JP-8.

So, as you can see, JP-8 quickly became the prime candidate for a replacement fuel. It has a much higher flash point than JP-4 (therefore is less susceptible to ground ignition), excellent availability, and is a common alternate fuel for many of our aircraft at the present time.

Like all things in life, all is not gold. Because of the higher flash point and lower vapor pressure (which makes it safer) JP-8 makes cold weather starting more difficult. Since the flash point of JP-8 is midway between JP-4 and JP-5, the properties are also midway between the two. Testing has shown that high altitude relight capability has proven not to be a big problem. At higher altitudes restart times have increased, but with no decrease in restart capability. Ground starting in extremely cold temperatures with JP-8 will be a problem that still needs to be solved.

However, all testing to date has shown few difficulties, and most of our aircraft and engines are already qualified on kerosene fuel as an alternate. Continuing testing will qualify aircraft on JP-8 as primary fuel and recommend necessary modifications that will differ from aircraft-to-aircraft.

Also, for a period of time, we will have both JP-4 and JP-8 being used within Europe. This will require new technical data on performance to cover four possible situations.

- JP-4 trimmed aircraft fueled with JP-4.
- JP-4 trimmed aircraft fueled with JP-8.
- JP-8 trimmed aircraft fueled with JP-8.
- JP-8 trimmed aircraft fueled with JP-4.

After JP-8 is proven operationally feasible at U.K. basis, the European continental bases will convert during the 1980 time frame. The Department of Defense has already directed that all new jet engines must be qualified on both JP-8 and JP-4.

So, the day of JP-8 is here, and with minor changes we won't know the difference.

POINTS TO PONDER

are you listening?

A medical accident report crossed my desk recently and the subject is worthy of comment. Seems that a photo technician suffered some permanent hearing damage when he was exposed to the start-up noise of a couple of Voodoos while photographing another aircraft parked on the tarmac. While one must concede that the base in question is not normally frequented by Voodoos, it must be re-iterated that tarmacs are areas where aural protection is usually mandatory, nevertheless, vigilence and common sense should prevail even if legislation does not exist or signs are not posted!

sucked-in again!

The last one happened in November 1976.

This time an armament technician had gone under the Voodoo to extend the missile launchers before shut down. (Standard procedure). Upon completion, he exited the area forward under the starboard engine. Unfortunately the engine was still running because the pilot did not see the "cut" signal given by the No. 1 man out front. The armament technician was lifted off the ground towards the intake but the pilot, sensing something was amiss, shut down the engine before the technician was ingested. His baseball cap was ingested but no damage was done. Fortunately, there was no injury! What was it we were saying about vigilence and common sense?

GOOD SHOW

CPL R.A. BROWNE
PTE(W) A.M. CZECK PTE(W) D. JEAN

On 29 August 1977, CFB Moose Jaw experienced an unexpected, severe wind storm. Immediate action was taken to add additional chocking to prevent the movement of parked aircraft. However, with sixty aircraft on the line, the maximum severity of the storm was on base before the entire fleet could be properly secured.

Within a few minutes, two Tutor aircraft were being turned by the wind. Noticing the movement of one aircraft, Pte Jean, who was driving a refuelling tender, and Pte Czeck, who was working on the line, ran to the aircraft and held the nose preventing any further movement until the aircraft was adequately secured. Cpl Browne also noticed an aircraft being turned by the strong wind towards an adjacent aircraft. He immediately ran to the aircraft, and by placing his arms around the nose section was able to prevent any further movement. The aircraft had already jumped the chocks and would soon have contacted a nearby aircraft.

Corporal Browne, Private Czeck and Private Jean's immediate actions demonstrated their alertness and concern for the safety of the aircraft, thereby preventing the inevitable damage of at least four aircraft.

MCPL J.H. GRAVES

While conducting a "Daily Inspection" on a CF5D aircraft, Master Corporal Graves discovered that the starboard upper inboard hinge pin grease fitting was not visible. Further investigation revealed that the hinge pin had backed out and was almost free of the hinge lobes. Had the hinge pin dropped out in flight, it would have resulted in a serious in-flight emergency.

Master Corporal Graves was on Duty Crew during a long week-end when he discovered this unserviceability. His dedication and professional approach to his duties prevented a serious in-flight emergency.

CPL L.M. CHAPMAN

On 27 September 1977, Corporal Chapman was carrying out a Primary Inspection on a Dual CF-5 aircraft of 434 Tactical Fighter Squadron located at CFB Cold Lake. During his inspection of the undercarriage system, Corporal Chapman noticed that the retaining nut on the bolt that holds the landing gear side-brace in position was missing. A further investigation by Corporal Chapman revealed that of the seven aircraft still at the home unit, three aircraft had

Cpl R.A. Browne
Pte(W) A.M. Czeck
Pte(W) D. Jean

Cpl L.M. Chapman

retaining nuts that were loose. The nuts were held in position by a locking wire that was lighter than that prescribed by specifications.

A closer inspection of the undercarriage system showed that it was possible for the bolt on the left side to work loose and thus cause the landing gear to collapse.

Corporal Chapman's attention to detail probably prevented a very serious accident. His initiative in inspecting the other CF-5 aircraft resulted in a Special Inspection of the CF-5 fleet. Corporal Chapman is to be commended for his professionalism and dedication to duty.

CPL R.J. MACLEOD

While conducting a preliminary visual inspection prior to a periodic major inspection on a CF101 aircraft which had undergone non Canadian Forces personnel maintenance, Corporal MacLeod discovered that the aft bearing on the armament rotary door was installed outside the bearing housing. This situation caused a quarter inch play between the armament rotary door trunion and the bearing housing.

Had this faulty installation been overlooked, severe damage to the armament door and possible in flight departure could have resulted. Due to the vigilance and alertness displayed coupled with a detailed knowledge of the CF101 aircraft armament system, Corporal MacLeod possibly may have prevented a serious accident or incident.

CPL D.A. HARTY

While Corporal Harty was in the process of carrying out an "A" check on CP107 Argus aircraft 10712 in the area of the hydraulic header tank, he decided to also look more closely at the other nearby components. Corporal Harty then noticed that a fuel line appeared to be too close to a bulkhead lightening hole. Closer inspection revealed that the fuel line had worn through a chafe collar and had begun to chafe through the fuel line itself.

Corporal Harty's thorough inspection plus his diligence in going beyond the requirements of the check prevented a serious flight safety hazard.

CPL D.J. DAIGLE

Corporal Daigle, an Air Reserve Technician with 402 Squadron, Winnipeg was assigned to do a Foreign Object Damage check on Dakota 12963.

The pilot had reported that a knob from the heating system spill valve control had come off in flight and appeared to roll beneath the floorboards.

Corporal Daigle removed the forward companionway floorboard, and found the knob with little difficulty but was not happy to stop there. He did a further inspection of the area, and noticed that the ferrule on the wing flap hydraulic down line was cracked where the line connects to the orifice check valve. This valve prevents the overspeeding of the flaps when they are selected up.

If this broken ferrule had gone unnoticed it could have worn through the flare, causing line failure which in turn would induce the flaps to rapidly retract to the up position, and the sudden loss of lift in flight could have been disasterous.

Corporal Daigle should be commended for his thoroughness and dedication which may have prevented a serious accident.

Cpl R.J. MacLeod

Cpl D.J. Daigle

MCpl C. Hillier

MWO C.L. Yearley

Cpl M.D. Steedman

Cpl D.A. Harty

Cpl R.A. Langston

Pte
R.G. Demontmorency

Cpl J.A. Rousseau

LT C.A. MAGEE CAPT R. SIMONSON
MWO C.L. YEARLEY CPL M.D. STEEDMAN
CPL J.A. ROUSSEAU CPL R.A. LANGSTON
MCPL C. HILLIER PTE R.G. DEMONTMORENCY

On 8 April, 1977, a PA28 Cherokee aircraft belonging to the Cape Breton Flying School was declared overdue by Sydney Airport officials. The aircraft was on a VFR flight plan from Charlottetown to Sydney via Trenton, Nova Scotia Sydney Tower notified Moncton air traffic control of the overdue aircraft and Moncton initiated a communications check. Moncton also requested assistance from 22nd NORAD Control Centre in locating the missing aircraft.

Captain Simonson, Lieutenant Magee, Master Warrant Officer Yearley, Corporals Steedman, Langston, and Rousseau were part of the duty crew at 22nd NORAD CC that evening and were assigned the task of aiding Moncton in locating the lost aircraft. Urgency was attached to the request since weather in the Maritimes was deteriorating in snow. Master Corporal Hillier and Private Demontmorency on duty at the Data Maintenance Control Centre of the Long Range Radar at CFS Sydney were alerted to assist in the radar search. Shortly thereafter they located a possible target about 40 nautical miles westsouthwest of Sydney Airport. Co-ordinating with CFS Sydney and Sydney Tower they were able to positively identify this target as the missing aircraft. By the teamwork of the personnel at both 22nd NORAD and CFS Sydney, the lost aircraft was vectored to within four miles of the Sydney Airport where it landed safely.

Through the combined knowledge, skill and expertise, Captain Simonson, Lieutenant Magee, Master Warrant Officer Yearley, Master Corporal Hillier, Corporals Steedman, Langston, Rousseau and Private Demontmorency were able to locate, track, identify and assist in directing the Cherokee to a safe and timely landing and prevent a potential aircraft accident.

MCPL E. WARD

Master Corporal Ward was carrying out a Primary Inspection on Argus aircraft 10713 which was being prepared for a test flight after a number eight Periodic Inspection when he noticed an uncommon amount of oil deposited around number three Power Recovery Turbine of number four engine. Even though the turbine looked normal, he removed the flight hood for a more thorough inspection of the turbine blades.

The turbine blades were found to be in such a thin state that they could easily be picked apart by a fingernail. There is no doubt that the turbine blades would have broken up at high RPM during the start for the airtest. The breakup of the blades would have caused damage to the engine and possibly to the fuselage of the aircraft. It is suspected that engine oil coming through the Power Recovery Turbine caused

the rapid deterioration of the turbine blades during the post-maintenance groundrun.

Master Corporal Ward's actions went beyond the normal activities for a member of Functional Crew since removal of the flight hood is usually done on inspections. His persistence and indepth knowledge of the engine undoubtedly prevented an aircraft incident. His actions indicate a truly professional attitude and a desire as a technician to provide a safe aircraft above all other considerations.

MCpl E. Ward

Pte J.L.J.P. Laperriere

MCpl J.G. Blake

MCPL N.F. DOWSLEY

On 30 October 1977, while carrying out a Cockpit Check during a Daily Inspection on Hercules C130332, Master Corporal Dowsley felt what appeared to be a slight restriction in the brake pedal movement. Although this Check was not called for during this particular Inspection, he decided to investigate further. On removal of inspection panels and with the use of a mirror, he found one of the Brake Crossover Cables almost completely frayed through. Failure of this cable would have caused the loss of all differential braking. Inspection of the area in question is very difficult as access and visibility is extremely limited.

Master Corporal Dowsley has displayed a keen sense of integrity and perseverance in the performance of his duties.

MCpl N.F. Dowsley

Cpl J.A.B. Pedneault

Lt H.A. Knox

PTE J.L.J.P. LAPERRIERRE

While carrying out a Pre Taxi Check on a CP107 Argus Aircraft, Private Laperriere noticed a panel flapping on number four engine. Following engine shutdown, investigation revealed that the fibreglass fairing behind the oil cooler door was beginning to separate from the engine. This separation was caused by deterioration of the riveting and vibrations during engine start. It is worthy to note that this was Private Laperriere's first day on the job since completing his initial course at Borden. Private Laperriere's keen observation and thoroughness prevented aircraft damage and a possible in-flight incident.

CPL J.A.B. PEDNEAULT

While conducting a turnaround inspection of a CF101 aircraft which had just undergone non Canadian Forces maintenance, Corporal Pedneault found the first stage stator inner shroud, on the port engine, out of position. The engine was removed at Bagotville and sent to the Engine Bay for further investigation. The stator was found to have been improperly manufactured and had gone undetected through many levels of maintenance inspection.

Corporal Pedneault is a radar systems technician. Because of his habitual attention to detail, he possibly avoided extensive damage to the engine and an inflight emergency. Corporal Pedneault takes great pride in the quality of his work and is highly deserving of recognition in the form of this Good Show Award.

LT H.A. KNOX

During a glider towing mission in an L-19 at an altitude of 1500 feet above ground level, a sudden and complete loss of engine oil pressure was experienced by Lieutenant Knox. He immediately notified the Glider to release, throttled his engine to idle and executed a successful forced landing to an out-of-wind runway.

Lieutenant Knox demonstrated sound airmanship and exceptional flying skill during this critical emergency. His prompt and professional response saved injury to himself, possible damage to the aircraft and inevitable damage to the engine had he attempted a normal approach and landing.

MCPL J.G. BLAKE

On 14 December 1977, Master Corporal Blake was conducting a "B" check on a Kiowa helicopter when he discovered a crack in the engine diffuser scroll. The discovery of this crack was obviously the result of dedication and attention to duty well beyond the norm since the crack was most inconspicuous, being hidden under a bubble of paint. In addition to the extra precautions taken during the inspection of the first aircraft, he followed through to check all the other Kiowas on the base and discovered two more in a similar condition.

An in-flight failure of a diffuser scroll would most assuredly cause a large power loss or complete engine failure and lead to an emergency or possible loss of a helicopter and crew. Master Corporal Blake has therefore contributed significantly to Flight Safety and possibly even to the saving of lives through his expert performance on the job.

Hanna Reitsch

Sparrow in an Eagles' Aerie

specially for Flight Comment

by Robert Rickerd/*Airdigest © 1978*

An area largely neglected in writings about World War II is the contribution of women to the respective war efforts. Though most of them served "behind the lines" in roles designed to free men for actual combat, their contributions are no less important. Such a story is that of the aviatrix Hanna Reitsch. Regardless of the fact that she was "on the other side", her story ranks with the greatest female achievements of the war. Her unswerving loyalty to Germany and total disregard for personal safety would have brought much greater distinction to a male counterpart, but because she was a woman, the influence and respect engendered by this mere civilian among her male peers in the military is all the more remarkable.

Hanna was first and foremost a test pilot. But it was her skill in piloting every type of aircraft, including gliders, which resulted in her being involved in so many adventures. She has received many medals and awards, both civil and military, some for the first time by a woman. But the most signal honor was her induction into the very exclusive international Society of Experimental Test Pilots alongside such male giants of the aeronautical world as Lindbergh, Doolittle and Whittle.

Hanna, the second of three children, born in 1912 to Willy and Emy Reitsch in Hirschberg Silesia, first wanted to be an ophthalmologist like her father. By the time she had reached her teens, this ambition was already tempered by another – flying – and she revised her dreams to becoming a flying doctor! However, she became more and more involved in gliding, and soon gave her life completely to flying.

Wolf Hirth was the German patriarch of gliding and head of the Grunau school not far from Hanna's home town. He not only taught her to fly, but introduced her to other excellent pilots who shared their skills with her. Hirth's acceptance of a female also helped Hanna rise through the predominately male ranks of professional glider pilots where she probably otherwise would have been ignored.

Soon she was ready for powered flight and began to study aero engines. But this did not prejudice her gliding. She was not yet 20 when she set the world's record for women in non-stop flight. By the end of 1933, she had become an instructor of mostly male students and had set a new world record of 11 hours and 20 minutes, surpassing her old record by six hours.

In the summer of 1933, Hanna was flattered when, at the close of the Rhön soaring competitions, she was invited by Professor Walter Georgii, a highly respected designer and researcher to join her close friend Wolf Hirth, Peter Riedel and Heini Dittmar in a gliding junket to South America. To help finance the trip, Hanna flew stunt scenes in a movie culminating in a deliberate crash into a lake!

Gliding conditions in the warm thin air over Argentina and Brazil were an unknown quantity and the young pilot nearly came to grief when she ran out of height and was forced to land on a soccer field in Sao Paulo during a game! Despite this embarrassing incident, she continued to pile up records and distinctions. Before the year's end, she had set a new world's attitude record for women, received the Silver Performance Pin, and was invited to join the German Research Institute for Gliding at Darmstadt-Greisheim under the appreciative Professor. The Institute (DFS), like most German civil flying organizations in those days, had clandestine military overtones and by the time Hanna joined the ranks, DFS had already built a very large glider which in no way resembled a sport sailplane. The OBS, as it was called, had been designed by Professor Georgii and Dr. Alexander Lippisch. The wing span was almost 92 feet and the huge glider could carry two crew members as well as a substantial load of instrumentation.

When Georgii showed the OBS to Hitler at Munich in 1934, there is no doubt that the subject of its possible military application entered the conversation. Men like Udet, von Greim, Jeschonnek and Student, who were later to surface as senior military leaders, had already expressed interest in the glider as a strategic weapon. Trials with "commercial" models were therefore carried out, and subsequently, DFS was asked to develop a military glider capable of being towed at 130 mph by a JU 52 transport plane while carrying a pilot and nine fully-equipped troops. The first prototype "DFS 230" was successful and before production closed in 1942 more than 1,600 of the gliders had been built for the assault role.

On May 10, 1940, nine DFS 230 gliders under the command of the German Airborne General Kurt Student, were towed across the Siegfried Line and landed unseen and unheard in the middle of Belgium's Eben-Emael fortress which was built to be virtually impregnable. Hours later, the gliders' tactical worth was proven when the garrison was overcome. DFS 230's were also used in the successful but costly invasion of Crete, but the most interesting part they played was a political role, when they were used to liberate Hitler's old friend Benito Mussolini from a mountaintop prison in the Appenines after the capitulation of Italy.

Hanna contributed a great deal to the development and flight testing of the OBS, DFS 230, and other designs. In

addition, she did research on catapults, dive brakes, amphibious gliders, towed gasoline tanks and radio-controlled aircraft. She also participated in the study of meteorology, instrumentation, training and wind tunnels as they applied to this new form of aircraft.

Before war broke, Hanna continued to make public appearances and post gliding records while with DFS, but late in 1937 Udet promoted her to Flight Captain and ordered her to the Rechlin Military Test Centre where she flew powered aircraft. She flew fighters, bombers and dive bombers but was particularly fond of the twin-engined Dornier 17 "Flying Pencil" bomber which became infamous for its part in the Battle of Britain. She was also offered the chance to test fly the Focke helicopter and was enthusiastic about this new type of aircraft. Hanna later flew it for Charles Lindbergh on one of his visits to Germany in late 1937 and in the spring of 1938 demonstrated it every day for three weeks inside the Berlin Deutschland Hall! She also used it to establish several new world's records.

Between military assignments she returned to competitive gliding and in August, 1938, performed aerobatics at the National Air Races in the U.S. In 1939, she went on gliding expeditions to Africa and the Balkans and the same year set a new women's record for point-to-point flight.

When war came, Hanna became more and more involved with powered aircraft and in March 1941, received the Flying Medal with Diamonds from Goering for her contributions to military research and the following day, the Iron Cross Second Class from Hitler.

In October 1942, Hanna achieved her ambition to fly the new ME 163 "Komet" rocket plane at Augsburg, but the flight almost had fatal results. Delays in development and delivery of the Komet's rocket engines had necessitated that a number of the experimental flights be carried out without power. Therefore, it was necessary to tow the Komet into the air as a pure glider. The plane was designed to take off on a two-wheel dolly which was dropped shortly after it became airborne, and it carried a skid on which it later landed. On Hanna's fifth flight, the wheels would not separate from the aricraft which made it difficult to handle at the relatively slow towing speed. Unable to shake the wheels loose, she dropped the tow line at 10,000 feet and in an attempt to save the precious prototype, endeavored to land in the normal fashion. But the wheels spoiled the aerodynamics of the Komet and Hanna, unused to the new feel of the controls, undershot the runway and impacted heavily with the ground. The plane survived to fly another day but Hanna suffered serious injuries when she was thrown forward in the cockpit against the gunsight.

She spent over five months in hospital with six skull fractures, brain compression, displacement of jaw bones and a smashed nose which had to be rebuilt with plastic surgery. And when she finally left hospital in March 1943, she spent weeks wrestling with her confidence before she could fly again.

Hitler awarded her the Iron Cross First Class in recognition of her flight test work and in November she spent three weeks "vacation" at the front in Russia on a morale-building tour with her friend General von Greim! This experience confirmed what she had suspected for some time – the war was lost and unless something spectacular could be done to check the Allied onslaught and give Germany a better basis for negotiating peace, the nation would not survive.

In August, Hanna had discussed with friends the possibility of forming a squadron of volunteers which would be used to launch aerial attacks on strategically important Allied targets. Encouraged, she presented the idea to Hitler, but in his out-of-touch dreamworld he could not entertain the possibility that the Germans needed such extreme measures. Undaunted, the persistent young women placed the plan before leading scientists, technicians and military men in Berlin in January 1944 and this time the concensus was that the measure was justified and given a suitable weapon, the idea could have success. One proviso dominated the discussions however, there was no time to design and develop a new aircraft for the project.

It was first decided that the "Leonidas Squadron" (named after the legendary King of Sparta who fought a suicidal battle against the Persians to save Thermopylae) would use the unsuccessful Messerschmitt 328. This had been an expendable single-seat escort fighter/bomber which could be towed behind a mother plane and released over enemy territory, the pilot bailing out or regaining friendly soil before his fuel ran out.

Hanna carried out tests on an engineless glider version of this type which was lifted into the air piggyback on a Dornier 217 bomber. In its new role, the craft, loaded with explosives, was to be carried to the vicinity of its target by the mother plane, then released for a diving attack. But to everyone's dismay, the factory which was to build the aircraft was destroyed by Allied bombing before it could go into production and another mount had to be quickly found for the Leonidas group.

One very good alternative Hanna thought, would be a piloted version of the "Vengeance Weapon I" or VI flying bomb which was scheduled to be launched against England in June. She has participated in its development and therefore knew its potential. The VI had the advantage of being powered, and later proved to be fairly reliable to the regret of the British.

The normal ramp launch with a human on board was of course out of the question because of the high acceleration of the catapult start, but Hanna had already participated in air launches from mother aircraft and so there remained only to rearrange the internal components and construct a cockpit to accommodate the pilot. Both test and operational models were designed and built in just 14 days!

A piloted version of the flying bomb slung under the wing of a Heinkel 111 bomber was first tested by Hanna as a glider and without power she likened its flight characteristics to that of a piano! But after adjustments and minor modifications were made as a result of this testing the "Reichenberg" as it had been code named, performed very well.

Next, a two-seat version was built to train the dozens of pilots who had volunteered for the squadron. But six of the original seven test pilots had already been killed or injured in early flights and so Hanna continued alone.

Meanwhile, the Allies had invaded Europe and it was obvious that in the rapidly deteriorating military situation there was little hope that even the suicide squadron could influence the eventual outcome. In October 1944, a new commander took over the Leonidas group and further preparations were suppressed. But Hanna's death-defying adventures were not over yet!

By the middle of April 1945, both the military and political situation in Germany was desperate. The rats were leaving the sinking ship on the one hand, and the fanatics were scheming to save as much as possible for another try, on the other. In between, opportunists like Goering, Chief of the Luftwaffe, were looking to capitalize on the situation.

Goering had always been number two and heir-apparent to Hitler. When the Fuhrer decided to barricade himself in his bunker in Berlin, leaving the armed forces without a leader, the Reichsmarshall sent Hitler a telegram. In essence, the message suggested that since Hitler had decided to remain at his "post" in Berlin, thus depriving himself of the freedom of movement and communication, that Goering should exercise his right of succession and take over the leadership of the Reich. He specified a deadline for the reply in the event Hitler was already cut off or dead, since time for negotiation with the Allies was getting short.

A reply was quickly sent to Goering confirming that Hitler was still in command and forbidding any independent move. The Fuhrer felt he had been betrayed by the Reichsmarshall, immediately dismissed him from all offices and had him put under house arrest with his staff!

On April 24th, General von Greim was summoned from Munich to Hilter's bunker under the Chancellery to be vested with Goering's responsibilities. Greim suspected a helicopter would be necessary for the trip, as Berlin was completely surrounded by the Russians, and called Hanna to fly him in. On the night of April 25th, she and Greim flew to Rechlin. Both were still strong supporters of the National Socialists despite the hopelessness of the situation. Hanna, of course, had known Greim for years and respected him as a friend and distinguished Luftwaffe officer, and as mentioned, her love of Germany extended even to personal sacrifice.

On arrival at Rechlin, they found that the only available helicopter had been damaged in an air raid and it was quickly decided to use a Focke Wulf 190 single-seat fighter plane for the next stage of the journey to Gatow, the only Berlin airport still in German hands. A sergeant pilot who had made the trip earlier was ordered to recreate the miracle!

Greim wedged in behind him, and the five-foot 100 pound Hanna, totally fearless, crawled feet first through a maintenance door and rode in the cramped rear fuselage! Forty fighter planes flew cover for the trio, many of them, including Greim's plane, being damaged as they hedge-hopped safely through continuous Russian air and ground fire, but they arrived safely.

Finding a light two-seater observation plane at Gatow, Greim decided they should attempt to fly it into Berlin and land on the street close to the bunker. As Hanna had no experience under fire, he flew the plane while fighters covered for them. Flying at tree-top level over the street fighting, the little plane was an easy target for ground fire. The bottom of the plane was soon raked by Russian bullets, the fuel tank holed, and von Greim's foot shattered, rendering him unconscious. Hanna, from the passenger seat behind Greim, leaned over his shoulder, took over the controls and somehow managed to land the plane safely on the street! A passing car was commandeered and the pair soon found themselves shaky but alive in Hitler's bunker.

For three days, Hanna and Greim were imprisoned by Russian artillery in the underground bunker fully expecting to die there. On the second day, their plane was destroyed by Russian shellfire. Hitler provided them with phials of cyanide to take when the end came, announcing that he and Eva Braun were prepared to die too.

On the third day, Hitler received word by radio that SS Chief Himmler was attempting to negotiate a surrender with the Allies. It was this message which was to save Hanna's life. She and Greim were ordered to fly out of Berlin to stop the Himmler sellout and to organize the few remaining Luftwaffe aircraft to fly cover for the Twelfth Army which Hitler was convinced could still relieve Berlin and the bunker.

In the small hours of April 29th, the pair raced through the dark Berlin streets in an armored car dodging shellfire, shell holes, and Russian bullets to the little Arado training plane which had been flown in for their escape. To have landed there intact was only slightly less impossible than flying out in one piece, but the pair had no alternative!

Greim was hobbling on crutches now, and in great pain, so this time Hanna would have to face the odds alone. A motorcycle rider was sent out to check the pock-marked road, and when he returned, reported the way was clear for only 400 yards. There was no time to lose. Hanna gunned the engine, sped down the street through the gauntlet of smoke and fire, and took off. Safely in the air, she still had to avoid the probing Russian searchlights but soon gained the merciful cloud cover, emerging into the clear, peaceful moonlit sky beyond.

Landing safely at 3:00 a.m. in Rechlin, Greim vainly ordered every available aircraft mustered to aid in the relief of Berlin. But his new Command was by now virtually non-existent as was the Twelfth Army, due to lack of fuel and communications. Himmler's defection no longer mattered, so resigned to the hopelessness of the situation, they flew North for talks with Greim's opposite numbers in the Army and Navy. The next day, they heard the announcement of Hitler's death on the radio.

Greim was impatient to return to his command in the South to say goodbye to his men, so despite the discomfort of his wound and an allergy to tetanus injections, he had Hanna fly him briefly to Karl Donitz, the new head of government, to pay his respects, and thence to Bohemia where he was forced to spend four days in hospital while events swiftly wound down toward Germany's capitulation.

On May 7th, Albert Jodl of the General Staff signed the instrument of unconditional surrender and Hanna flew Greim to Zell-am-See where he entered the civilian hospital at nearby Kitzbuhel. Next day, they were both captured there by the Americans. Less than three weeks later, Greim, to Hanna's horror, took his own life in despair.

For Hanna, peace was also to bring news of a second tragedy. Her family had successfully escaped to Salzburg to avoid capture by the advancing Russians, but a rumor spread that the Western Allies had signed an agreement with the Soviets that all refugees were to be repatriated to their original homes. Her father, who had ministered to refugees from some of the occupied villages, had learned from them of the terrible fate that awaited captured German families and despaired of the consequences should they return. Not knowing what had happened to Hanna and believing his son was dead, he found no reason to continue. Hanna, still in a detention camp, received no reply to her messages and later learned through the Red Cross that the people closest to her were dead.

Hanna was interrogated persistently by her captors who thought that perhaps she had flown Hitler out of Berlin at the last moment! But after fifteen months, when no evidence of this could be established, she was finally freed to begin life anew.

She could never return to her beloved Hirschberg which was permanently occupied by the Communists but with her unique courage and determination, she did return to flying and gliding and today lives a happy and active life, still immersed in the profession she knows and loves so well.

THE EJECTION DECISION

by Capt Erika Seeger

The decision to eject is an irrevocable one – there is no turning back once the sequence has been initiated. This is one reason why the decision is difficult to make. Hopefully, this article will encourage you *not* to delay the decision to eject until you reach the absolute limits of the ejection envelope.

Four factors are critical in influencing the success rate of ejections: the altitude, attitude, flight path and airspeed of the aircraft at the time of ejection. The Americans in Southeast Asia had 18% of the combat ejections at 400 knots and above, which carry a poor prognosis as can be seen by the graph in Table I (taken from an article "Injury Severity and Airspeed at the Time of Ejection", in the USAF Study Kit, Apr 1978). Even so, they had a success rate of approximately 95% (compared to 85% in noncombat ejections). This is due to the fact that there is no delay in the ejection decision when reacting to a hit by hostile fire, and the fact that the 101 reported combat ejections were all above 500' AGL. In the C.A. F. experience, there were only two ejections at high speed from 1972-1977, and these were at 450 KIAS and resulted in only minor injuries.

By contrast, Table II shows that, of fifty-one ejections in the C.A.F. between 1972 and 1977, 13 (25.5%) were below 500' AGL, and these contributed all 6 of the fatalities for that period.

Looking at the statistics in Table II, it would appear that our gross survival rate for ejections is fairly satisfactory at 88.2% . However, it is misleading, because there were at least seven very close calls among the survivors, where the decision to eject was delayed to a critical point at approximately 1000' AGL. These are aircrew who admitted to having delayed the decision to eject, not those who were forced by circumstances to eject at low altitude.

Those ejectees who live to tell their tale are required to complete an "Emergency Escape From Aircraft" report. The following are résumés of the reports completed by the seven close-call survivors.

Pilot A had a compressor stall in a Tutor at 3000' AGL. He tried to restart and finally ejected at 1000' AGL.

Pilot B in a Tutor had an engine failure at 3000' AGL. He tried to relight twice, ejected at 800' AGL and spent only 25-30 seconds in the chute before landing.

Pilot C, with an engine failure in a CF-104 at 2500' AGL, made three attempts at compressor stall clearing before ejecting at approximately 500' AGL.

Pilot D, in a CF-104, had an engine failure after take-off at 2000' AGL. He delayed ejection until 500' AGL in order to avoid a populated area.

Pilot E experienced a double flame-out at 1800' AGL in his CF-5. He attempted to relight twice (in his own words, he felt guilty about losing one of the Commander's aircraft!). Luckily, he survived his ejection at 500' AGL.

Table I

PERCENT INJURED VS AIRSPEED;
ALL OPEN SEAT EJECTIONS; 1973-1977

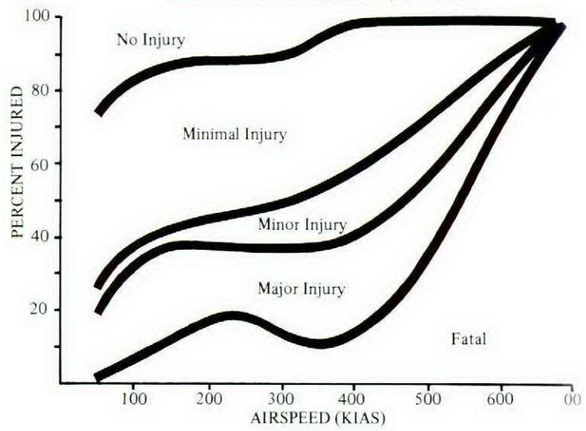


Table II

CANADIAN FORCES EJECTION STATISTICS
1972 - 1977

Type of Injuries	All Ejections	Ejections Above 1000' AGL	Ejections Between 500-1000' AGL	Ejections Below 500' AGL
Nil	8	3	4	1
Minor	32	24	2	6
Serious	5	4	1	0
Fatal	6	0	0	6*
Total =	51	31	7	13
% Survivors =	88.2	100	100	53.8

*Note: All fatalities occurred below 500' AGL.

Pilot F and Nav G had an in-flight fire in a CF-101 at 1000' AGL. They waited between 3 seconds (Pilot's opinion) to 8 seconds (Nav) to see if the fire would go out. They ejected at 1500' AGL.

Do you think these aircrew took necessary risks in these situations? Keep in mind that a human life can never be replaced but a machine can.

The final question of the "Emergency Escape From Aircraft" report asks the ejectee what he would do differently if he were in the same situation again. Pilots A, C, D, F and Nav G all wrote that they would eject earlier, as did two of the group who had actually ejected with time to spare. So, in retrospect, 14% of survivors felt they should have abandoned the aircraft earlier. And one can only speculate about the six men who died, because they can never have another chance.

From what is known about the six fatalities, it does appear that a delay in ejection was involved in four cases (two accidents). The other two aircraft were already outside the ejection envelope at the time of the emergency. Both occupants of the fatal CF-101 accident might have survived if they had ejected when the aircraft was in the nose-up attitude; a few seconds hesitation and the aircraft was nose down, and both occupants ejected into the ground. In the Tutor accident which resulted in two fatalities, at the time of emergency (birdstrike), the aircraft had sufficient altitude and speed for survivable ejection, but the ejections were delayed beyond the critical point.

Time is of essence in any emergency, but especially so in the jet aircraft, where seconds are critical in terms of altitude lost. Also, to minimize injuries, it is advisable to leave some time for proper positioning of the body prior to ejection. By delaying the ejection decision, you are wasting precious time that could mean the difference between a successful and a fatal ejection – which would you choose?

ABOUT THE AUTHOR

Captain Seeger was a direct entry Medical Officer in 1975, and was posted to CFB Ottawa. She attended the Flight Surgeon's Course in 1976 and is currently employed as Flight surgeon at CFB Shearwater.

THE 'A' FACTOR

by LCol Jack Hicks

Former RCAF aircrew members may remember being designated AIB or A3B insofar as their medical fitness was concerned, or if they became unfit, designations such as A4B (PUA 123). An A1 indicated a pilot fit for full flying duties anywhere and under any conditions. The 'B' designated fitness for ground duties. The 'A' designator was therefore an exclusive hallmark of the aviator. In that continued employment as an aviator is intimately dependant on medical fitness, any changes to a member's A factor is viewed with understandable concern.

The current medical category system (GO factors) came into effect in 1968 superceding the previous Navy, Army and Air Force systems. It is described in CFP 154, Medical Standards for the Canadian Forces, and you should note that an 'A' factor to denote medical fitness for flying duty was retained. This might be construed as privileged consideration as there is no equivalent factor for the land and sea elements, but it is considered that appropriate application of the geographic and occupational factors adequately denotes employability in these 'other' environments. The medical standard required of aircrew is particularly selective to ensure the highest degree of human reliability possible under the unique stresses created by the greater speed, higher altitude, extended range, and increased complexity which characterize our present and proposed aircraft inventory.

The aircrew medical categories were revised in August, 1977 and published as CFSO 95/77. The High Performance (HP) addendum to the 'A' factor was discontinued as it was felt that the physical parameters of good health normally investigated annually for all pilots and navigators are sufficient criteria to use as judgemental factors for assessing a member's fitness to fly in *any* of our aircraft.

At this time, pilots who are medically fit for unrestricted duty in all CF aircraft are awarded an A1. Navigators, flight engineers, observers and helicopter reconnaissance observers who are equally fit are awarded an A2. Aircrew members who must be restricted to certain aircraft for medical reasons or who have a medical restriction are awarded an A3. Members who have been awarded a permanent A3 must be considered by the Career Medical Review Board in view of the limitations to their employment.

Those aircrew who are medically fit for unrestricted flying duty but whose duties do not entail actual operation of the aircraft to which they are assigned are awarded an A4, for example, the loadmaster and flight attendant. All CF members who are medically fit to fly as passengers are A5; those who are not are A6. Aircrew who become medically unfit for any flight duty must be awarded an A7.

You can be assured that your 'A' factor is not changed on the whim of any one flight surgeon. There are at least four levels of review. Your flight surgeon will most often consult one or more medical specialists before making his recommendation. If he and the Base Surgeon are not one and the same, it will be discussed between them. Review by the Command Surgeon at Air Command (or CFE) is obligatory and it must then be considered by the Central Medical Board at DCIEM in Toronto where additional medical specialist opinion may be obtained. Finally, the Director of Medical Treatment Services acting for the Surgeon General must approve the category – and a military physician from that directorate acts as an advisor to the Career Medical Review Board.

Our CF aircraft also have a 'medical' classification. This classification came into being with the recent revisions to the aircrew medical categories, and it equates very nicely with the aeromedical training requirements.

Class A – high performance ejector seat equipped,
Class B – pressurized fixed wing transport,
Class C – non-pressurized fixed wing, and
Class D – rotary wing

It is also a practical classification in that aircrew with some medical problem will usually be unfit for one or more of these classes of aircraft, for example, the pilot with recurrent kidney stones who can only fly with or as a co-pilot in case of sudden incapacitation in flight.

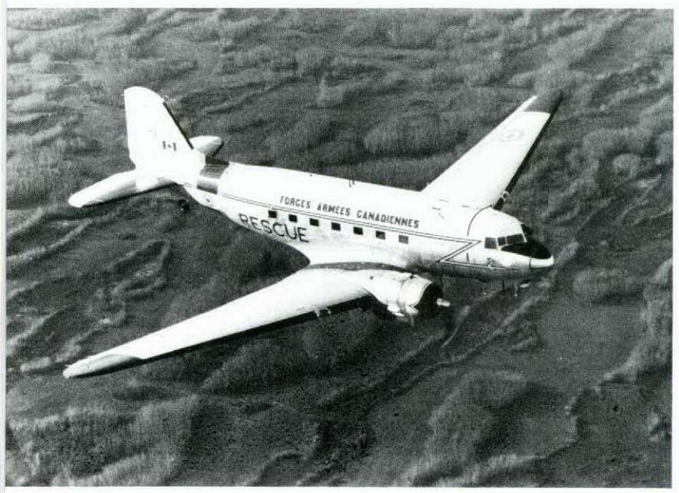
It is appreciated that aircrew are not very familiar with this classification, but exposure to it through aeromedical training should help you better appreciate statements such as "Fit all but Class A aircraft" if you are asked to sign that CF 2088 (Change of Medical Category)!

ABOUT THE AUTHOR

LCol Jack Hicks graduated from RMC in 1957, then served as a Navigator in 419 Squadron and 405 Squadron till 1965. He graduated from Dalhousie Medical School in 1970 and subsequently served as Flight and Base Surgeon in Trenton. He is currently at the Directorate of Medical Treatment Services, NDHQ.

ETERNAL DAKOTAS

by Capt G. Beauchamp
DDDS 2-2-4



The service life of the Canadian Forces nine venerable CC-129 Dakota aircraft has recently been extended, for the umpteenth time, till 1983. They were due for phase-out on 1 April 78, but because of operational requirements . . . With a little bit of luck they may well see the dawning of the 21st Century.

A total of 168 C-47, military version of the commercial DC-3, served with the RCAF during the 1943 – June 1952 period when their number began to dwindle to the present level of nine, or rather six, as three are not currently flying (See table). Procurement of the Daks was as follows:

47 from Douglas Aircraft (new),
35 from Lend-Lease (wartime purchasing program),
75 received overseas (ex-RAF),
11 from various sources.

Specifications — All metal stressed skin fuselage of semi-monocoque construction. All metal low wing of cantilever design. All metal tail surfaces. Movables surfaces fabric covered. Hydraulically operated, retractable main landing gear, flaps and brakes. Fixed steerable tailwheel.

Crew: Two pilots, a navigator and radio operator, plus 21 passengers.

Engine: Two Pratt & Whitney R-1830-92 'Twin-Wasp' 14 cylinder two row radial of 1200 hp, driving three-bladed Hamilton-Standard quick feathering constant speed propellors.

Dimensions: Span 95 ft. Length 65.5 ft. Height 17 ft.

Weights: Maximum 29,000 lbs. Empty 18,500 lbs.

Performance: Max. speed 200 mph. Crusing 150 mph. Ceiling 20,000 ft. Endurance 8.8 hrs. Range 1,200 miles.

Old Number	New Number	Hours Since New	Date Manufactured	Date in RCAF	
KN 258	12907 A 754	11,094	1943	1946	Non-flying trainer with No. 402 Air Reserve Squadron in Winnipeg.
FZ 671	12944	18,255	1942	1946	Flying with
FZ 963	12950	18,575	1942	1944	No. 429 Communication Squadron at
FZ 976	12957	12,873	u/k	1944	CFB Winnipeg as
FZ 992	12963	16,336	1942	1946	multipurpose transport
KG 623	12933	15,685	1942	1946	aircraft.
FZ 979	12959	9,695	u/k	1944	CFB Cold Lake, NASARR configuration = radar training for CF 104 pilots. Was to be phased out in April 1980.
FZ 653	12937	17,133	1943	1943	Mountainview Maintenance Depot storage, in transport configuration.
FZ 656	12938	10,025	1942	1943	Mountainview Maintenance Depot storage, in NASAAR configuration.

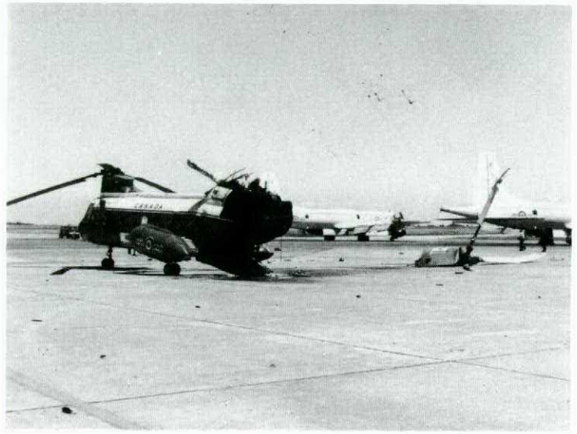
ACCIDENT RESUMÉS

Communication is the Problem

The pilot started-up a Labrador on the tarmac to verify a reported engine oil leak. After the rotors were engaged, the nose of the aircraft rose off the ground to a near vertical attitude. The aft rotor blades struck the ground with such severity that the upper half of the aft pylon was torn from the aircraft. Pieces of aircraft were thrown considerable distances, even off the flight line. Fortunately no serious injuries resulted and although several aircraft were parked nearby, they were not damaged.

Investigation revealed that two key components had been removed from the rotor control system to service another aircraft. Appropriate entries were made in the Maintenance Record Set (MRS) to reflect the action but the pilot was unaware because he did not read the MRS prior to start-up. Although the pilots' actions were contrary to a Technical Order, he (and several other pilots) were unaware of the order. Aircrew orders did not reflect the policy and are being amended.

In spite of the above anomaly and the added circumstance of lack of qualified technicians and consequent high workload which were contributing factors, the problem is basically one of *communication.* In view of this and the fact that other maintenance duties of a possibly critical nature could have been on progress at the same time, the only reliable source of



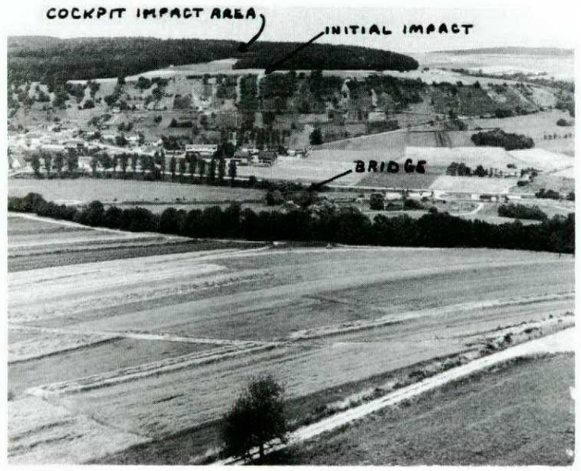
communication is the MRS. Hindsight perhaps, but more logical in rationale than trying to understand why qualified personnel would act on presumption when the facts are available.

CF104 Close-Air Support Mission

The pilot was flying a CF104 close-air support mission, working with an airborne Forward Air Controller (FAC) in a USAF OV-10. Because minimum RT tactics were in effect, the pilot did not receive target elevation and terrain obstructions. Following a simulated 10° dive attack on a small rail bridge, the aircraft struck rising terrain beyond the target. The pilot was killed in the crash.

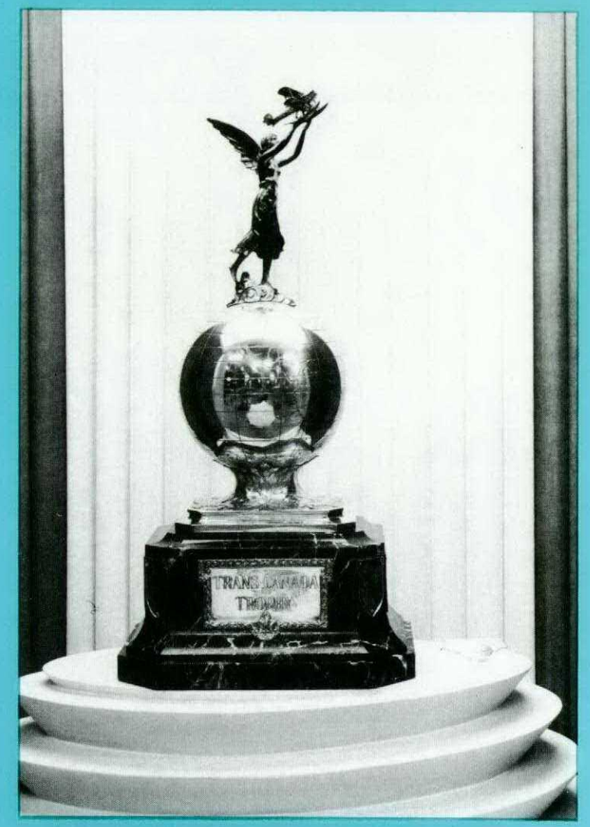
Investigation was assisted by the recovery of the gun camera film which gave a complete visual account of the accident. It revealed that the pilot had initially begun his attack on the wrong target. During the dive, he realized his error and very rapidly switched his delivery to the correct target, located a mile to the left. During this manoeuvre, involving a bank angle of 120°, the airspeed decreased, altitude of course decreased and dive angle increased. At release the aircraft was 500 feet too close, 300 feet too low, with 15° dive angle and airspeed 50 KTS slower than planned. The pilot then initiated a recovery, experienced and overcame the APC "kicker", but was unable to clear the hill. The aircraft struck the ground tail first, 40° nose-up attitude with left wing down. The pilot made no attempt to eject.

Preventive action has stressed that operating outside established delivery parameters leaves little margin to allow for unforeseen circumstances, to the point where every second can



become critical. In addition the gun film has been enhanced and reproduced as a training aid with maximum distribution to related users.

McKee Trophy



In May of this year, Colonel R.D. Schultz was awarded the Trans-Canada (McKee) Trophy. The trophy was conceived to honour those who follow the pioneering standard set by first Trans-Canada seaplane flight, sponsored in 1926 by Captain James Dalzell McKee. It is awarded annually in recognition of outstanding contribution or spectacular achievement in the field of flying operations and the pioneering of new areas of aircraft operations.

Colonel Schultz's credentials are well known in aviation circles and it is indeed appropriate that he be given this ultimate recognition of his exceptional contribution to Canadian military aviation. Congratulations, Colonel Schultz!

Col R.D. Schultz receiving the Trans-Canada (McKee) Trophy from Lt Gen. A. MacKenzie.

Comments
to the editor

Dear John

I echo Capt Cushman's opening remarks in his recent article "I have not written a letter to a military publication for years . . . ", although I have written a great deal about flight safety in the ten years since stepping down from editing Flight Comment.

Capt Cushman says in his "Communications" that Flight Comment should be a forum for others besides the editor. I often agonized over the trickle of contributions in my six years on the magazine, but concluded that the safety people are, after all, full-time professionals whose job is to provide that vital safety feedback. My approach was to urge readers to send in *ideas* because so few feel at home with pen in hand.

Having said that, may I also comment on the philosophy expressed by Col Chisholm in his editorial characterizing safety as the "soft" approach. I ask him to cast his mind back to the days of the early fifties when the "hard" approach was used. You have only to look at the reduction of accidents following the abandonment of the court-martial and the upgrading of the safety feedback process. After all, what pilot wants to have an accident? If he's given two things: *a feeling of professional worth in a challenging role, and being alerted to where the hazards are*, he'll respond. If, as is intimated that there is to be ". . . a return of some form of hard-line approach to flight safety . . . " then I would suggest that experience would guide him to do otherwise. In any case, service discipline is strictly not the purview of flight safety; it's the line commander's.

There! I said it!

Let's get behind Flight Comment; the life it saves could be your own.

John T Richards

Regrettably, the Colonal's remarks were misinterpreted. The intent was to support our present posture by rationalizing the alternatives and showing that the logical choice was the existing one, all things considered.
P.S. Thanks for the free plug.

Dear Sir,

Congratulations on the aircraft photograph featured on the covers of the Flight Comment, Edition 1, 1978.

The photo purported to be Lancaster QY – C of 6 (R.C.A.F.) Group, Bomber Command deserves a word of praise for the person or persons responsible for the disguise work done on the original photo.

The original in question was taken by Charles E. Brown in March, 1945 of Lancaster B1 PP 687. The aircraft was on a test flight from the Vickers – Armstrong Factory at Castle Bromwich.

At that time PP 687 carried no individual unit code and had pieces of masking tape around the four fuselage sections, vertical stabilizer leading edges and machine gun barrels.

The tape has been effectively hidden in the Flight Comment photo, with the exception of the vertical stabilizers and mid-upper turret guns.

To make things look even more authentic the addition of the unit code QY was a wise choice. This being the code allocated to 1666 H.C.U. Wombleton Yorkshire, a unit of 61 (Training) Base 6 (R.C.A.F.) Group.

A lithograph from the original negative is available from Plaistow Publication, London, England at a cost of 90 Pence for a 25 x 35 inch print. It makes a great framed picture of the finest bomber in service in Europe during World War 2. I have one hanging in my apartment.

Yours truly,

Mr. Harold W. Holmes.
#324 – 3220 Quadra Street
Victoria, B.C., V8X 1G3

The picture referred to is actually a photograph of a *painting* of the original. My predecessor had the painting done to present to his father, who had flown with 1666 H.C.U. during the war. The additions were made to enhance the sentimental value of the painting.

Mr. Holmes, incidentally, retired four years ago, after 28 years service with the RCAF/CAF, having also served in the RAF and RNZAF during the war. He is an accomplished photographer and an authority on Lancasters.

Dear Editor

With reference to Flight Comment, Edition 1, 1978, Page 5, photo, captioned "Weather briefing ole style", if I'm not mistaken, the name of the pilot nearest the forecaster is none other than the Flying Officer Roy Sturgiss.

Not much, but it's a start!

Good to see Flight Comment over here.

Thanks

Lieutenant-Colonel James E. Kupkee
Headquarters AFCENT Brunssum
The Netherlands

Lettres
au rédacteur

Cher John,

J'aimerais faire écho aux remarques préliminaires du Capitaine Cushman dans son récent article "je n'ai pas écrit une lettre à une publication militaire depuis des années", bien que j'ai beaucoup écrit sur la sécurité des vols au cours de ces dix années qui ont suivi mon départ de la rédaction du "Flight Comment".

Le capitaine Cushman soutient que le "Flight Comment" devrait être une tribune libre pour tous, autre que pour l'éditeur. J'ai souvent été torturé par la faiblesse de ma contribution au cours de mes six ans passés à cette revue, mais j'en ai conclu, que les gens qui s'occupent de la sécurité sont, avant tout des spécialistes à plein temps dont le rôle est de fournir cette analyse des accidents, tirée à la source même et qui est si vitale à la sécurité des vols. Ma façon d'attaquer le problème a toujours été d'inciter le lecteur à m'envoyer des idées, car bien peu sont ceux qui se sentent à l'aise une plume à la main.

Ceci étant dit, j'aimerais également vous faire part de quelques réflexions concernant la philosophie du colonel Chisholm dans son éditorial où il dépeint la sécurité, comme un sujet de moindre importance. Je lui demande de se remettre dans le contexte des années 50 où on employait la méthode disciplinaire. Il suffit seulement de jeter un regard sur la réduction du nombre d'accidents qui a suivi l'abandon de la comparution devant un tribunal militaire et de l'amélioration du processus de discussion sur la sécurité des vols. Après tout, quel est le pilote qui veut avoir un accident? Si on lui donne deux choses; le sens d'une valeur professionnelle dans le cadre de son métier et qu'on le tient au courant des dangers qu'il peut rencontrer, il réagira favorablement. Si, par contre, comme on semble vouloir le sous entendre ici, il y avait un retour sous une forme quelconque vers "l'ancien système dur pour traiter les questions de sécurité des vols", je me permettrai de suggérer au colonnel que l'expérience devrait l'en dissuader. De toute façon, la discipline militaire n'est absolument pas du ressort de la sécurité en vol, mais elle appartient au commandant des opérations.

Voilà; C'est dit!

Suivons le "Flight Comment"; toute vie sauvé peut être la nôtre.

John T Richards

Malheureusement les propos du Colonel ont mal été interprétés. Le but était d'appuyer le système actuel après avoir pesé et comparé, car il représente le choix le plus logique. P.S. Merci pour le gracieux coup de main.

Monsieur,

Félicitations pour la photographie de l'avion qui apparait en page couverture du numéro 1 du Flight Comment de 1978.

La personne ou les personnes qui ont retouché la photo originale du Lancaster QY-C du 6e groupe (RCAF) du commandement du bombardement, méritent des éloges.

La photo originale en question, prise par Charles E. Brown au mois de mars 1945 était celle du Lancaster B1 PP 687. L'avion effectuait un vol d'essai après avoir décollé de l'usine Vickers-Armstrong de Castle Bromwich.

Le PP 687 ne portait alors aucun code d'unité et du ruban adhésif marquait les quatre sections du fuselage, recouvrait les bords d'attaque du stabilisateur vertical et enveloppait les canons des mitrailleuses.

Sur la photo du Flight Comment, le ruban a été subtilement camouflé à l'exception des stabilisateurs verticaux et des canons de la tourelle supérieure médiane.

Pour rendre les choses encore plus authentiques, vous avez eu la remarquable idée de rajouter le code de l'unité QY. Ce code était assigné au 1666 H.C.U. de Wombleton Yorkshire, une unité de la base de formation 61 du 6e groupe (RCAF).

On peut se procurer une lithographie de négatif original auprès des publications Plaistow, à Londres en Angleterre, au prix de 90 pences pour une reproduction de 25 pouces sur 35. Une fois encadré, c'est un gravure formidable du meilleur bombardier en service en Europe durant la deuxième guerre mondiale. Personnellement, j'en ai une dans mon appartement.

Bien à vous.

M. Harold W. Holmes.
#324 – 3220 Quadra Street
Victoria, B.C., V8X 1G3

La photo à laquelle il est fait allusion, est en fait, une reproduction d'une peinture faite à partir de l'original. Mon prédecesseur avait fait faire cette peinture pour l'offrir à son père, pilote dans le H.C.U. 1666 durant la guerre. Les retouches servent à rehausser la valeur sentimentale de la peinture.

A propos, M. Holmes a pris sa retraite il y a quatre ans, après 28 ans de service dans la RCAF/CAF, en ayant servi dans la RAF et la RNZAF durant la guerre. Il est un photographe accompli et un expert en Lancasters.

Cher rédacteur

À propos du premier numéro de 1978 de Flight Comment, où en page 5 apparait une photo intitulée "Exposés météo à l'ancienne mode", si je ne me trompe pas, le pilote le plus proche du prévisionniste n'est autre que le Lieutenant (Flying Officer) Roy Sturgiss. Les autres me sont inconnus; mais en voilà au moins un!

Très heureux de voir "Flight Comment" parmi nous.

Merci,

Lieutenant-Colonel James E. Kupkee
Quartiers généraux AFCENT Brunssum
Pays Bas