FLIGHT COMMENT

MAY • JUNE • 1970

Served alt Page 11

Comments

Occurrences have been reported recently in which pilots cancelled IFR approaching Downsview and then requested it again after encountering local IFR weather. Since Toronto Centre relies on YZ and ZD reports which do not necessarily reflect the weather over the 300 square-mile Toronto area, pilots should maintain IFR to minimums unless they can confirm excellent ceilings and visibility.

A recent experience of a T33 pilot reveals how easily a lapse in vigilance by both aircrew and groundcrew can set the scene for an in-flight emergency. The pilot signed out the aircraft (full fuel load) and when he discovered on his pre-flight inspection that the fuel counter read only 490 gallons, he reset it to 677 without visually checking the fuel. Fortunately he was able to abort the round-robin safely when the tips went dry at 476 gallons. The servicing technicians had put a full load in an aircraft with a similar number, but signed out the wrong aircraft.

Experience of a T33 instructor and his student recently, suggests that chances for a trouble-free RON are enhanced when parachutes and equipment are removed from the aircraft. These pilots spent many frustrating hours the following day drying their parachutes after a servicing crew had left the canopy open during a heavy overnight rain. Needless to say, the captain didn't recommend the base for a TSR award.

A manual for life support equipment and techniques is being prepared by the CFHQ Directorate of Operational Readiness Air. It is expected to be distributed late this year.

The 190K maximum deployment speed given for the CF5 ribbon drag chute in the article "Ribbon Chutes" (Jan/Feb), implied that the deployment speed had changed. Not so; 190K is the *chute* capability - the 165K speed listed in AOIs still stands.

Our thanks to CFB Trenton Photo Section for the cover shot of ATC's first 707, shortly after its arrival at Trenton.

CANADIAN FORCES HEADQUARTERS
DIRECTORATE OF FLIGHT SAFETY

COL R. D. SCHULTZ
DIRECTOR OF FLIGHT SAFETY

MAJ J. G. JOY
Education and analysis

LCOL W. W. GARNER
Investigation and prevention

Editor Capt P. J. Barrett
Art and Layout CFHQ Graphic Arts

Flight Comment is produced by the CFHQ Directorate of Flight Safety. The contents do not necessarily reflect official policy and unless otherwise stated should not be construed as regulations, orders or directives. Contributions, comments and criticisms are welcome; the promotion of flight safety is best served by disseminating ideas and on-the-job experience. Send submissions to: Editor, Flight Comment, CFHQ/DFS, Ottawa 4, Ontario. Subscription orders should be directed to the Department of Supply and Services, Publications Distribution Division, Blvd. Sacré Coeur, Hull, P.Q. Annual subscription rate is $1.50 for Canada and the USA.

TOO MUCH HARPING

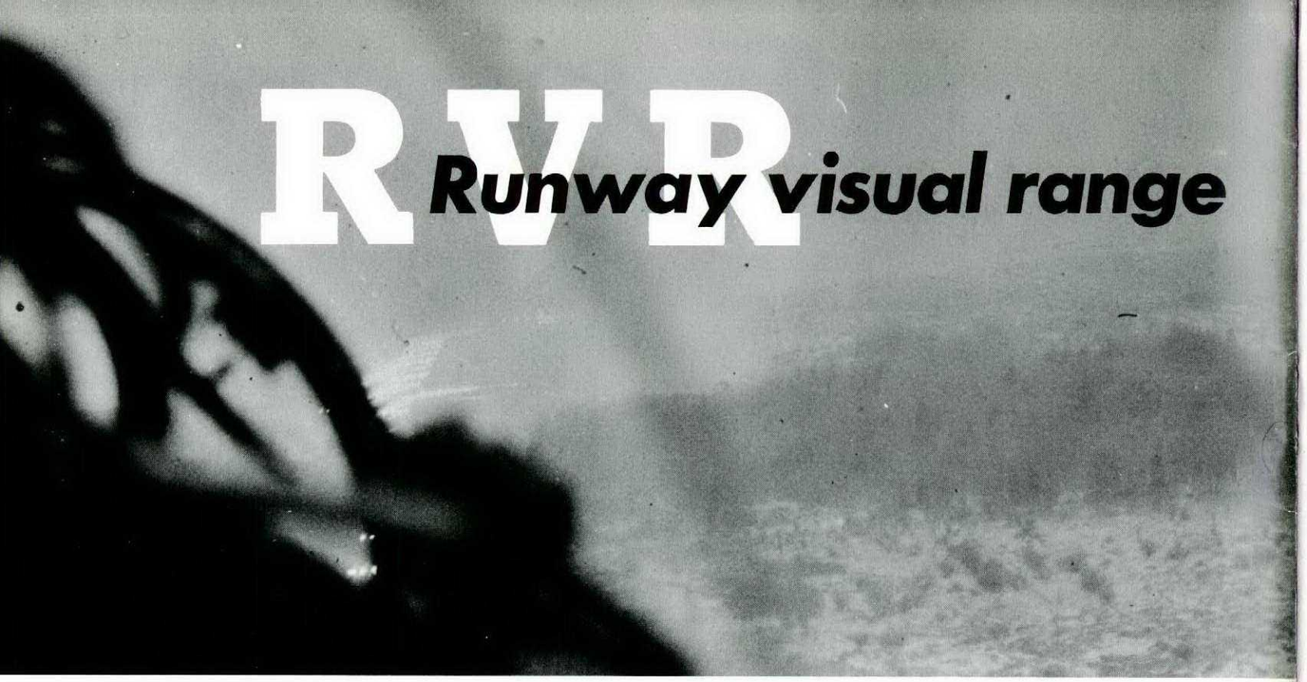
When is enough, enough? This is the question we keep asking when a particular flight safety issue is brought up repeatedly and the same or similar observations are made; usually critical.

We admit to being repetitious in our treatment of many flight safety subjects but our accident and incident record is repetitious too. It would be easy to decide that a subject has been given enough coverage and leave it to the organizations primarily concerned to take appropriate follow-up action. To a degree this is what happens at present, however, the system is anything but foolproof as in many instances the import of the message appears to be lost relatively quickly. I am sure that you can think of many glaring examples which have immediate application to your job. A few that recur with regularity are:

- Insecure panels, hatches and doors on all aircraft types with particular reference to T33 armament doors and plenum chamber panels;
- Technicians working in the landing gear area without making absolutely sure that hydraulic and/or electrical power is off. At least seven injuries in the past five years should be warning enough;
- Towing and ground handling of all types of aircraft without taking adequate precautions to avoid the numerous known hazards.

I realize that many conscientious supervisors have their own method of bringing specific dangers to the attention of their personnel on a regular basis. This is good as far as it goes; however, it would be more effective if supervisors at every level instituted such a system, and reviewed its effectiveness on a regular basis. At the least this would reduce the need for us to harp on certain issues as much as we do, but more important, it would help to counter complacency through constant reminders that awareness is the key to avoiding accidents.

COL R. D. SCHULTZ
DIRECTOR OF FLIGHT SAFETY



RVR
Runway visual range

"...By the end of World War II, aerodromes had become much larger...it was no longer possible for the met observer to monitor visibility satisfactorily...Some airports started placing observers near the runway in use when there was mist or fog, to measure runway visibility...experience has shown that runway observers face considerable risks in manning their posts in poor visibility..."

ICAO Bulletin

Runway Visual Range (RVR) digital readout displays at tower, terminal and radar controller positions give the maximum horizontal distance a pilot should see along the runway from the approach end. The equipment has been installed at several DOT and CF bases and it will be introduced at others during the period 1970-75. At CF bases the installation is in conjunction with present transmissometer equipment.

Readout information is derived from a transmissometer located near the touchdown point of a runway and is based on the sighting of either the high intensity runway lights or the visual contrast of other targets. To provide a realistic visibility reading, a computer adjusts for the intensity of the runway lights. When the lights are off or are set at one, two or three, normal readings occur; when the intensity setting is increased to four or five the RVR reading is automatically increased relative to the higher intensity.

The readouts provide RVR values from 1000 to 6000 feet:

- above 4000 feet, in 500-foot increments
- from 1000 feet to 4000 feet, in 200-foot increments

Projector –

Receiver –

New readings are presented at intervals of 48 seconds, as well as when runway lighting intensity is changed to or from the two high settings.

Effective exploitation of the equipment requires that operating procedures for controller and pilot be standard throughout the CAF and compatible with those of DOT.

Controller Responsibilities

Prevailing visibility and RVR will be provided to pilots intending to use a transmissometer equipped runway when RVR is less than 6000 feet or when requested by the pilot. This information will be provided to:

- departing aircraft in taxi instructions
- arriving aircraft immediately prior to initial descent
- aircraft on final approach

Subsequently controllers will inform the pilot of any change in the prevailing visibility or RVR.

Pilot Procedures

Pilots will continue to use the reported visibility for takeoff and landing minima except that for a runway with digital readout equipment RVR may be used in lieu of the prevailing visibility. The following comparative scales will be used:

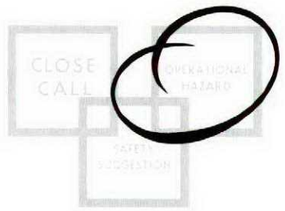
1 mile = 5000 feet
3/4 mile = 4000 feet
1/2 mile = 2600 feet
1/4 mile = 1600 feet

RVR reports are intended to provide an indication of how far the pilot should be able to see along the runway in the touchdown area; visibility at other points along the runway may differ. This should be taken into account when decisions are being made on the strength of the reported RVR.

Certain DOT airfields having runways designed for category II operations will be equipped with transmissometers at the mid point along the runway as well as in the touchdown area. Where two such installations are provided, respective RVR values will be identified as "ALPHA" for the touchdown location and "BRAVO" for the mid point location.

RVR information will not be included in aviation weather reports or forecasts. Accordingly RVR is not to be used for flight planning purposes. The minima box on terminal approach procedure plates (GPH 200 and 201), published for RVR-equipped runways, will show RVR values equivalent to the straight-in approach visibility limits.

Instructions and Procedures, for pilots and air traffic controllers, in the use of RVR were issued to Commands by CFHQ in Oct 69. This information will also be published in forthcoming amendments to CFP 164, Air Traffic Control Orders for the Canadian Forces, and FLIP GPH 204, Flight Planning and Procedures Canada. Amended publications should be available by 1 Jul 70.

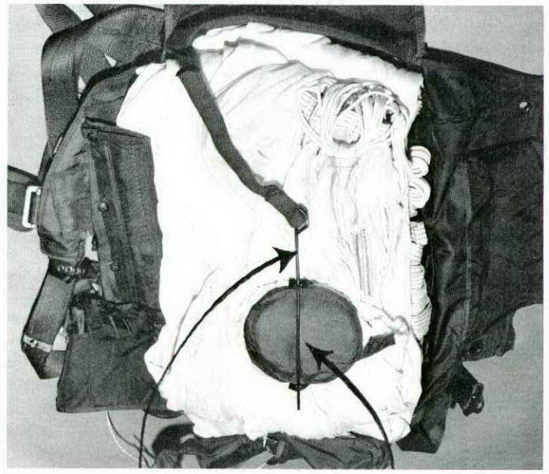


FOD in chute

Opening the parachute the safety systems tech found a packing rod firmly holding down the pilot chute...

The story begins at an airbase of another service where the T33 pilot had popped his chute getting out of the aircraft. Local safety systems people were able to repack his chute, but they lacked the equipment to re-arm the automatic device, thus a choice had to be made whether to have a new chute sent, or to accept the reduced capability of an unarmed one.

Taking the latter course, the pilot flew back to his home base where he returned the chute for repacking. At the S.E. section a technician found that a packing rod had been left in the chute - *in a position that would have prevented deployment of the pilot chute,* thereby delaying main chute opening and further reducing chances for a successful low-level ejection.



Packing rod and safety flag

Pilot chute (compressed for packing)

This incident, along with reports of pilots packing their own chutes under similar circumstances indicates an acceptance of risks that routine training flights don't justify.

Good Show

CAPT W.T. FLOYD

Shortly after takeoff on a SAL acceptance flight, Captain Floyd was forced to abort the CF104 airtest because of an unsafe landing gear. He proceeded to the local holding point in IFR conditions to burn off fuel and await barrier erection at Prestwick. Thirty five minutes after takeoff, progressive failure of the aircraft electrical system began. First the cockpit heat failed to the "full-hot" position and then the tacan failed. Using his radar for navigating, and obtaining radar vectors from Approach Control, Captain Floyd reached the downwind leg of the approach, and was still IFR when the main attitude indicator (MAI) failed in all planes. The cross hairs in the MAI indicated a complete generator failure and all attempts to reset the generators were unsuccessful. Next, the UFH, SIF, standby compass, emergency UHF, trim, flaps, power brakes and nose wheel steering failed.

At this point Captain Floyd decided to go for VFR conditions, and using his still-serviceable radar and altimeter he descended below cloud for a visual, take-off-flap approach. His troubles were not yet over however as he had a 90° crosswind at 12 knots to contend with as he successfully landed the disabled aircraft.

Technicians found that leakage from the cockpit pressurization package into the electronics bay had caused overheating of electrical wiring and avionics equipment which progressively popped 41 circuit breakers in the DC junction box.

Captain Floyd's professional ability and knowledge of aircraft systems enabled him to properly evaluate this in-flight emergency and recover a valuable aircraft under extremely adverse conditions.

MAJOR R. KENDRICK and CAPTAIN R. AITKEN

During a low level reconnaissance mission, Major Kendrick's CF104 flew into a flock of pigeons. Multiple bird strikes occurred, causing considerable airframe damage and shattering the centre windscreen. Major Kendrick was momentarily dazed and blinded by windblast and debris, but maintained the presence of mind to ease back on the control column and transmit a distress call. Another CF104, piloted by Captain R. Aitken, was in the general area; upon hearing the distress call Captain Aitken advised Major Kendrick to eject if positive control was not assurred, however Major Kendrick transmitted that he was definitely climbing and his engine

Major R. Kendrick and Captain R. Aitken

Captain R.J. Manley

Lt P.S. Mawle

Sgt A.B. Lathem

appeared to be functioning properly. After reducing airspeed and discussing the problem with Captain Aitken, Major Kendrick elected to return the aircraft to base. (A major factor in the decision was that an IFR approach would have been required at the nearest base. Hence the decision to return the 100 miles to home base where it was VFR.) Captain Aitken located the disabled aircraft and continued to provide assistance until the aircraft was safely on the ground.

Captain Aitken's advice to eject, could under different circumstances, have saved Major Kendrick's life. On the other hand, by his calm reaction, Major Kendrick was able to stay with an aircraft that might well have been abandoned immediately. Their immediate response to impending disaster demonstrated the professional skill of these two pilots.

CAPTAIN R.J. MANLEY and LT P.S. MAWLE

Lt Mawle, a controller at Summerside, picked up a call from Greenwood tower to a light aircraft flying from Halifax to Greenwood. He immediately passed this information on to an Albatross flown by Captain Manley which was about to land at Summerside. Captain Manley took his aircraft to 6000 feet from where he was advised by Moncton that Halifax had radio contact with the lost aircraft. Setting an intercept course for a point between Halifax and Greenwood, the Albatross crew, by means of VHF bearings soon determined that the aircraft was actually east of Halifax and they instructed its hopelessly lost pilot to turn west. A successful intercept was carried out and the pilot was guided to Halifax where he landed safely - his first night landing.

The course this pilot had been on was taking him towards Newfoundland. Lt Mawle's timely call to the airborne Albatross made possible a quick intercept; had it been necessary to alert and launch another SAR aircraft, it is doubtful if an intercept would have been made before the light aircraft ran out of fuel.

By their professional handling of this situation Lt Mawle and Captain Manley prevented the probable loss of a civilian aircraft as well as a costly search.

SGT A.B. LATHEM

A Belgian Airforce DC6 carrying 18 passengers was diverted from Gander to Greenwood due to adverse weather. When the aircraft arrived overhead Greenwood the pilot reported airspeed indicator problems. Sgt Lathem, who was duty radar controller that night, directed the aircraft for two radar circuits while the crew worked on the problem, but they had no success and eventually reported that all three of their airspeed indicators were inoperative.

At this point Sgt Lathem suggested that he could provide the crew with groundspeed checks; this was agreed to and a precision approach was commenced during which groundspeed checks in the range of 115 to 125K, as well as heading and glideslope information was relayed by Sgt Lathem. The DC6 crossed the threshold approximately 10 knots higher than normal - ideal under the circumstances.

The initiative and professionalism displayed by Sgt Lathem in his competent handling of this emergency situation reflects credit upon himself, his base, and the Canadian Forces.

CPL P.H. STEFFIN

During a Sea King BFI in a hangar on the Bonaventure, Cpl Steffin noticed a barely discernible nick on the trailing edge of one of the inlet guide vanes. He reported his discovery to a supervisor and an investigation revealed that 156 blades in the engine had been damaged by an unidentified foreign object.

The portion of the hangar where the BFI took place was poorly lighted and the ship was rolling considerably due to a beam sea and heavy swell. In addition, the position of the engine work-platform in relation to the engine intakes requires the technician to take a precarious position to carry out an inspection in that area.

In spite of these environmental factors and a personal problem of chronic sea sickness, Cpl Steffin conducted a thorough inspection. By discovering the extensive FOD damage he prevented a possible in-flight emergency.

Cpl P.H. Steffin

Cpl A.G. MacIntosh

CPL A.G. MACINTOSH

Returning from a cross-country, a CF104 was diverted due to deteriorating weather at home base. As the pilot approached his alternate, fuel was becoming critical, an additional problem as his tacan and all directional equipment had previously failed. Cpl MacIntosh, a radar controller at the alternate base, responded with a precise no-compass, low-fuel radar approach in weather that was rapidly lowering to minimums.

Through his cool reaction to this critical situation, Cpl MacIntosh enabled the pilot to safely land his aircraft.

CPL M.C. LAWRENCE

Cpl Lawrence was performing a daily inspection on a CH113A helicopter when he detected what appeared to be cracks on the lugs of the forward rotorhead pitch shaft. His suspicions were confirmed by a dye penetrant check which revealed cracks in all four lugs.

A special inspection was ordered and one other helicopter was found with the same fault. The lugs provide an attachment point for the lead and lag dampers, which keep each of the three rotor blades at 120° in relation to each other. If the damper breaks loose the blade is unrestricted in its lead and lag axis, a situation which would almost certainly lead to a major accident. Cpl Lawrence's alertness in detecting this defect possibly averted a very serious in-flight failure.

CPL J.C. VALLÉE

While carrying out a DI on a Voodoo, Cpl Vallée noticed an unusual grayish tint in the fluid from the reservoir of the utility hydraulic system. Further investigation revealed that the fluid was contaminated with dirt, metal particles and water.

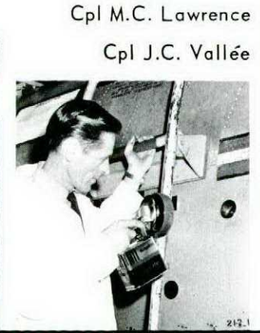
Considering that this check was carried out at night and that the checklist required only a fluid-level check, Cpl Vallee displayed initiative and professional competence, possibly preventing another accident due to fluid contamination.

CPL P.E. RONAYNE

Cpl Ronayne was performing a routine IGV check on a J79 after it had been removed from the CF104 in order to rectify an airframe unserviceability. During the check he noticed that a one-inch section of blade was missing from the compressor fifth stage, an observation

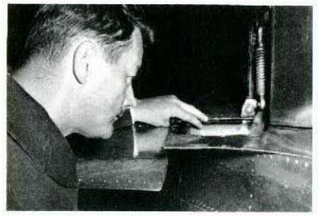
Cpl M.C. Lawrence

Cpl J.C. Vallée



GOOD SHOW

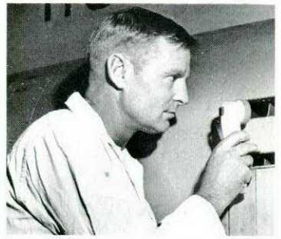
Cpl P.E. Ronayne



Cpl M.D. Viklund

Cpl J.A.L. Gallant

Cpl D.R. Weisgerber



MCPL E. Sawatzky

that any but the most careful inspection would have missed.

Through his extra effort and conscientious workmanship Cpl Ronayne displayed a fine example of dedication to his trade and possibly prevented the development of an in-flight emergency.

CPL M.D. VIKLUND

While inspecting the trim system on a T33 during a periodic inspection, Cpl Viklund observed that a washer was missing under the head of one of the bolts holding the vertical fin to the horizontal stabilizer. Investigating further, he discovered that the head of the bolt was actually sheared off; only a locking wire was holding it in position. This discovery prompted additional checking during which two more bolts and a bracket were discovered to be cracked.

Through his alertness and keen observation Cpl Viklund prevented the development of a serious flight safety hazard.

CPL J.A.L. GALLANT

During a routine Daily Inspection on a transient T33, Cpl Gallant noticed an unnatural odour when he pulled the oil dip stick. As the odour seemed to be right in the oil, he put the aircraft u/s and had it towed inside. When the suction filter was dropped an accumulation of deteriorated rubber material was found in it.

Cpl Gallant's perceptive inspection prevented further deterioration of the engine and possibly averted an in-flight failure.

MCPL E. SAWATZKY

MCPL Sawatzky was conducting an engine inspection on a CF5D. While checking the bleed valve ports (1/4 inch in area) he noticed a piece of loose metal in the compressor section. Although no damage to the compressor blades was evident, MCPL Sawatzky suspected FOD ingestion and had the engine removed for a more comprehensive inspection. Damage was detected on the compressor stator and rotor blades.

Through this professional approach to his job MCPL Sawatzky prevented further damage to the engine and possibly its destruction.

CPL D.R. WEISGERBER

During a routine primary inspection on an Argus, Cpl Weisgerber noticed a small crack in the area where the main horseshoe frame is attached to the front spar on the port wing. The discovery of this crack led to an inspection of the entire fleet; similar cracking was found in three other Argus aircraft.

Cpl Weisgerber extended his inspection beyond what was called for on the work card. This involved the removal of a hot air duct in order to thoroughly check the area where he found the crack. A conscientious approach to his job resulted in the stemming of a serious flight safety hazard in the early stages of development.

Hail Warning — how's yours?

Following hail damage to a Tutor it was decided to review the present hail warning system.

- Flight Safety Committee

Get in the swim!

On several occasions during sea survival training, aircrew being towed have panicked and have been in danger of drowning because of their inability to swim. Even strong swimmers have had difficulty after ejection; ejection over water for non-swimmers would therefore be especially hazardous.

- Flight Safety Committee

Identified FOD

The BFSO reported that much of the FOD found on the airfield originated in sections well removed from the field. He suggested that the FOD hazard be brought to the attention of sections not directly concerned with flying operations, through Routine Orders and the Base Newspaper.

- Flight Safety Committee

Seeing in the dark

Several hours in strong sunlight can temporarily reduce a pilot's night vision. Remembering a few hints can help you avoid this problem.

If you have ever decided, while flying at night, that your night vision is certainly not what it was, you were probably right. The ability to see in the dark, on any given night, depends very much on how much bright light you have exposed your eyes to recently. Medical officers estimate that a pilot can experience a 30 to 50 percent reduction in his night vision, as a result of several hours exposure to bright sunlight, especially in a light-covered environment, such as sand or water or snow. The effect is cumulative, and repeated exposure may leave you with night-poor vision for as long as a week. Recovery normally follows simply as a result of resting the eyes or protecting them from bright light, but restoration of visual powers is a gradual process. Don't expect good night vision after a day on the beach.

In any event, if you are a pilot who flies at night occasionally, you will do well to form the habit of carrying sunglasses at all times and wearing them whenever the sunlight is strong.

Other factors which affect night vision are fatigue, inadequate oxygen, cigarette smoking and distraction from bright lights or reflection in the cockpit.

Advancing years, beginning usually about age 40, bring about a weakening of night vision, but eyes that are properly protected during the day will at least give you their full measure at night.

adapted from FAA Aviation News

CLOSE CALL | OPERATIONAL HAZARD | SAFETY SUGGESTION

A real ringer

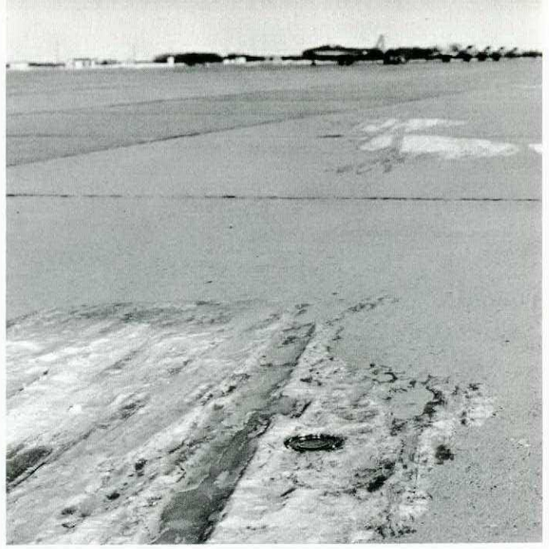
During the mid-morning turn-arounds identical circular cuts were discovered on the tires of both a Tutor and a T33. Air Traffic Control was alerted and a thorough runway FOD check conducted; sweepers and snow blowers had been in action during the morning and it was suspected that perhaps a broken runway light had been blown onto the runway. But several searches, including one by men on foot, turned up nothing. Possibly the FOD had been swept away - in any case flying continued during the rest of the day without a recurrence of the tire damage.

Next day the same markings again turned up on a T33 tire. More checks were carried out; this time inside the hangars. Maybe the edges of the grounding wire recesses? But they weren't quite the right size. An alert technician then suggested a coffee can lid. When the marks were compared, they matched perfectly.

The great coffee-can lid search began and sure enough, in the centre of the taxiway leading back to the line, a lid was found frozen in a patch of snow and ice, its razor edge ready to cause more damage.

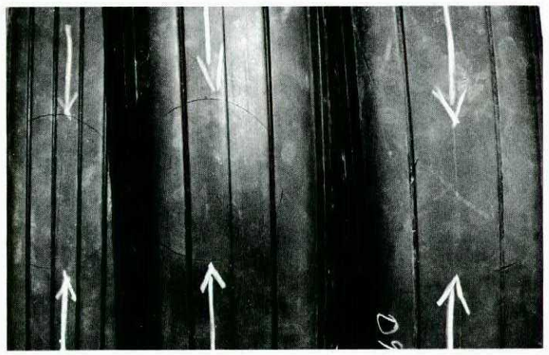
The result:
- several tires replaced
- considerable expenditure in manhours

A needless waste caused by someone's careless garbage disposal.



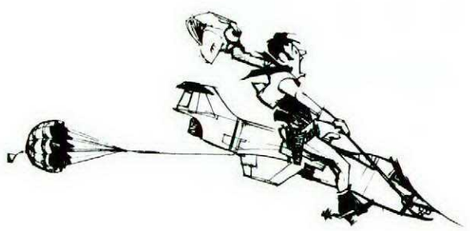
Lid laying in wait

The marks matched perfectly



. . . night fright

Wahoo!



The 104 pilot (from another service) was cruising along peacefully on his way home when he suddenly felt a rapid deceleration, followed by a nose-down attitude change. All engine instruments were normal and flaps, speed brakes, and landing gear were all in their places. Military thrust and nose-up trim were used to counter the rapid rate of descent and airspeed loss. Nothing worked till the pilot moved the drag chute handle to the jettison position. Deceleration ceased immediately. The aircraft began to pitch up due to the previously applied trim; at 250 knots the stick shaker actuated and takeoff flaps were lowered. Recovery was affected from that point.

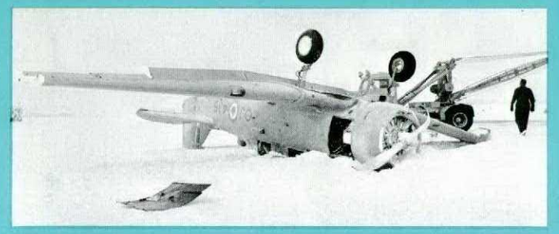
The drag chute had come out in flight. It had been repacked and installed by a transient alert crew at the departure base. It's a good thing the chute deployed at thirty-one thousand, instead of on takeoff. As it was the pilot lost about five thousand feet during the sequence of events - oh yes, it was a night flight.

TAC Attack

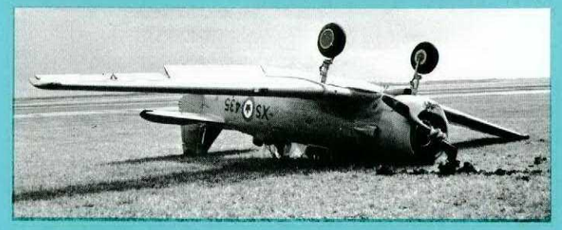
Flash-back

The trials of Harvard 435

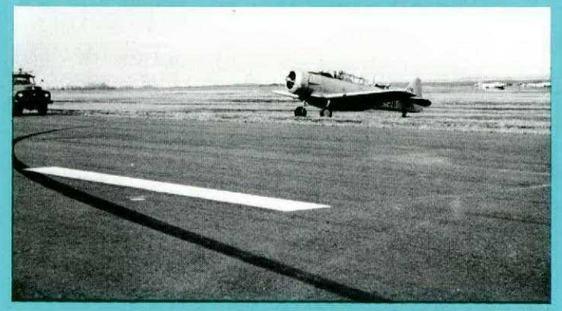
Don't argue, Bloggs, just breathe into this contraption!



It's okay Smedley, we'll get you out in the spring.



You can come out now, Smedley.



The crosswind at MJ is notorious - but this is ridiculous!

CF survival procedures...

Parachute water entry

"The parachute descent was uneventful; there was time to deploy the seatpack, knee pad, gloves and O_2 mask... I released the chute as I touched the water, having previously inflated my mae west. During water entry the wind caused my right boot to become entangled in the parachute harness..."

In the past, water entry procedures have varied widely from one Command to another, resulting in some confusion and unnecessary apprehension on the part of aircrew. For example, Training Command advocated undoing the QRB prior to entry - the exact opposite of the technique taught in Air Division. The pilot transferred from Training Command to Air Division was thus left in some doubt as to the safest technique. To correct this deficiency in survival training, CFHQ has detailed procedures to be used by all Commands. They are of a general nature and will require some adaption to the type of aircraft. At the same time, CFIEM has been tasked with correcting the major deficiencies in our present equipment, and as modifications are made, the procedures will have to be amended. The following then, is the *interim* standard water entry procedure:

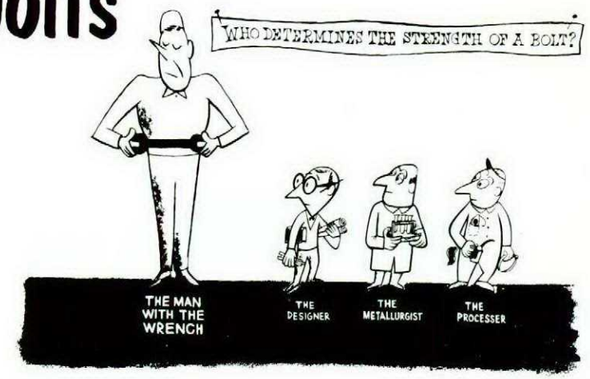
Procedure 1 (when altitude permits maximum preparation)

- Check parachute deployment and cut away lines over canopy
- Disconnect bailout bottle hose and undo O_2 hose from parachute shoulder harness (If this step is not carried out by T33 and Tutor drivers, they could be trapped in their harness by the emergency O_2 hose which crosses the chest and fastens onto the other side of the parachute harness)
- The O_2 mask must be discarded if at all possible
- Inflate life preserver and use oral inflation valve to bleed off any over-inflation
- Discard spurs to avoid puncturing dinghy
- Deploy seatpack (This should be delayed until the last few thousand feet as deployment of the pack and dinghy may induce parachute oscillations)

cont'd on next page

Know your bolts

The report read "When landing gear was selected down a loud thump was heard. The gear locked down okay, however pressure in number two hydraulic system dropped from 3000 to 2200 psi. Aircraft landed safely without speed brakes, nose wheel steering or power brakes. Piston and cylinder on main landing gear door were found separated" - a bolt had fractured because of overtorquing.

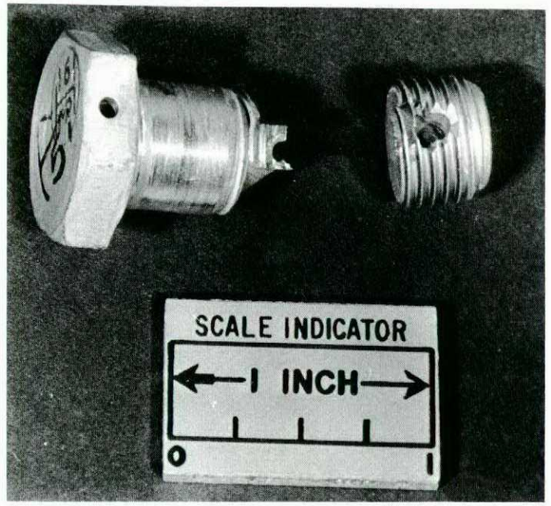


The selection of the correct bolt to do the job may not always depend on size or shape alone. To serve a wide range of installation requirements, bolts must also conform to certain standards relating to corrosion resistance, finish, material, temperature, tensile strength, and tolerance, and must embody other features such as special threading, self-locking devices, and head clearances.

Identification markings on the heads of bolts are the only safe criterion in selecting the correct bolt for a specific application. While most bolts and screws used in aircraft structures, components, and equipment are either AN, MS, or NAS (National Aircraft Standard) numerous cases exist where manufacturers have designed special bolts.

In cases where a special bolt is found in an installation, and a replacement is needed, it is of extreme importance that a like bolt be used for replacement. Such special bolts will have the part number on the head, or if the head is too small the mark "SPL" will be found stamped on the bolt head.

For common torque values consult the Dash 2 EO or the general aircraft EO 05-1-3/25.



result of overtorquing

parachute water entry

- ▷ Visor down
- ▷ Rotate QRB to release position and keep both hands on it
- ▷ Squeeze off QRB with both hands as you touch the water. There will be a short period of time when the lines are slack and the QRB will be easiest to open. If one hand is injured reach across the QRB with the other hand, hooking three or four fingers behind the release mechanism and pressing the palm of the hand on the faceplate. The QRB should not be released until the feet touch the water
- ▷ Once in the water, if entangled, move slowly to remove the shroud lines and come out from under the canopy by pulling it forward from behind the head
- ▷ If being dragged in the water, get onto your back in the *stable drag position* (feet and arms spread). When stabilized, squeeze off the QRB
- ▷ Keep hard hat; it protects from the elements and is an excellent bailer

Procedure 2 (when bailout takes place too low to carry out procedure one)

- ▷ Inflate life preserver
- ▷ Deploy survival pack
- ▷ Rotate QRB to release position and keep both hands on it

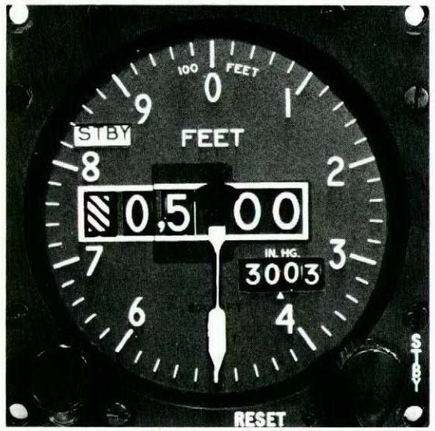
1000 or 10,000?

Have you misread it?

For years there has been a flight safety problem with the three-pointer altimeter. Misreading the aircraft's altitude by 1000 feet or 10,000 feet has caused *some* accidents and has been the prime suspect in many others.

The solution seemed simple; replace the three-pointer readout with a digital readout and the problem is solved. Unfortunately pneumatic capsules did not have enough torque to drive the digital readouts, and a digital readout did not provide any rate of altitude change to the pilot, making it confusing at high rates of climb or descent.

In the coming year, pilots of all fixed-wing aircraft which normally fly above 10,000 feet will encounter the Servoed Digital-Pointer Altimeter System. This system combines the best of both the digital and the analogue systems.



Each revolution of the single pointer designates a one-thousand foot altitude change and the speed of the pointer indicates to the pilot the rate of change. On the left side of the instrument is a three-digit readout which indicates hundreds, thousands and tens of thousands of feet. (The two zeros on the right are fixed.)

The system consists of two units; an AAU19/A servoed altimeter with a pressure back-up, and a computer indicator, signals from which drive the servoes in the AAU19/A. The computer has a cam which corrects for the position error vs Mach curve. The system accuracy from -1000 feet to 80,000 feet is ±25 feet or 0.25%. This will allow IFR flight with a separation of 1000 feet above FL 250.

OPERATION. The AAU19/A will be mounted on the left instrument panel in aircraft with side-by-side seating, and in the front cockpit in all others. On start-up the altimeter is on STBY; switching from the back-up pressure mode to the servoed mode is accomplished by turning the reset knob. (In the event of power failure or failure of the servo or computer, the unit switches automatically to the STBY mode.)

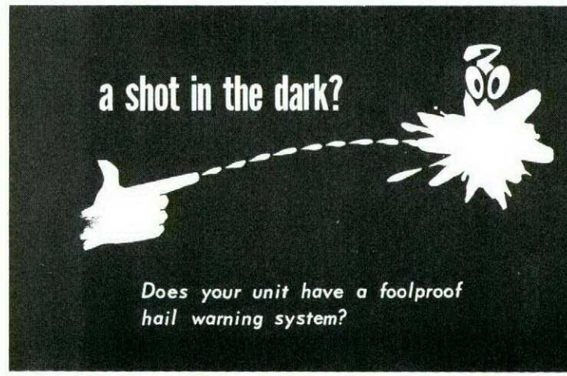
The computer can also be fitted with an altitude encoder (this has been done on the Falcon, Cosmopolitan and Hercules computers) which, in conjunction with the APX-77 IFF/SIF, will give automatic altitude reporting to the ground control radar. This capability will be mandatory for flight in controlled airspace within the next five years.

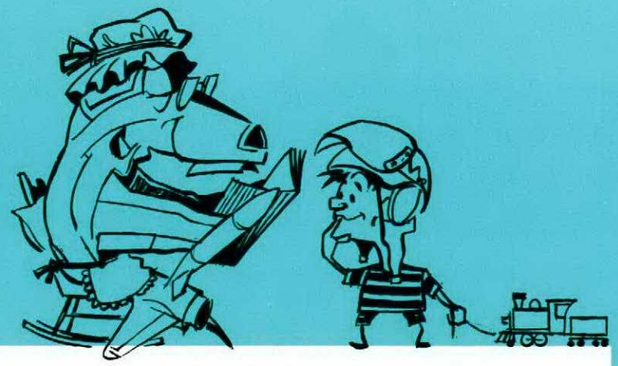
If you have ever misread your altimeter you will be sure to appreciate this new one. If on the other hand, you have never misread your altimeter, then keep up the good work. Your task will be easier in another few months when the counter-pointer altimeter is fitted into your aircraft.

parachute water entry

- ▷ Squeeze QRB on contact with the water
- ▷ Carry out procedure 1 steps to clear the canopy and harness, and enter the dinghy

NOTE: Aircrew should abandon their dinghy during a helicopter rescue because the downwash will blow the dinghy away from the sling. The visor should be kept down to avoid impaired vision caused by spray from the downwash. (Maritime Command policy is to fill the dinghy with water prior to pickup, rather than re-entering the water. This policy is unchanged.)

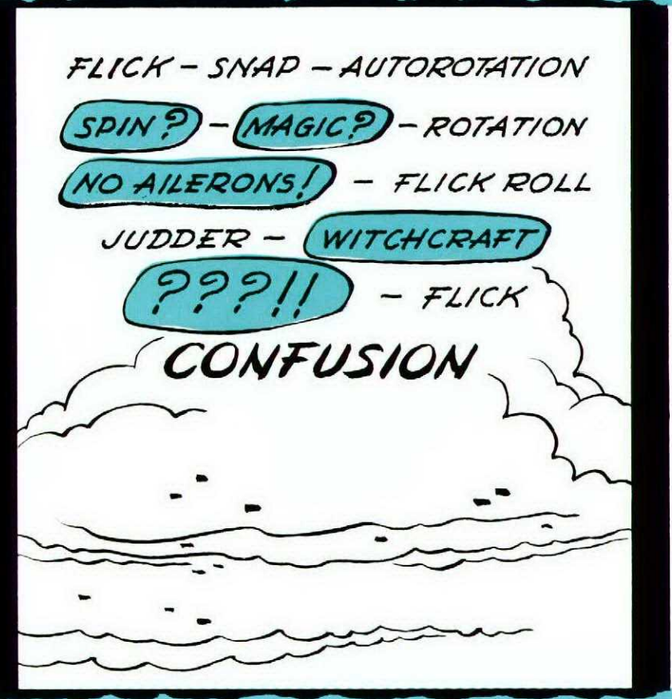




AIRSOP'S FABLE

Maj SO Fritsch
DFS

There is magic in flying?



MORAL:

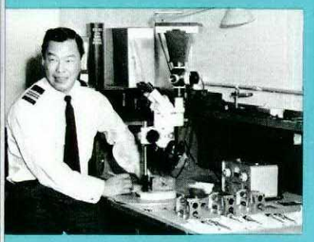
RUDDER AND JUDDER = ROUND AND ROUND
OR
LOOK MA, ROLLING WITHOUT AILERONS
OR
SIR, I DON'T KNOW WHY MY KITE IS BENT

TO FEEL BETTER: CENTRALIZE!
TO FEEL WORSE: DO IT AT HIGH SPEED

SOME GUYS COME DOWN IN THE CHUTE.
THAT'S NICE, BUT HARD ON THE KITE.

an introduction...

Directorate of Flight Safety



MAJ KS WONG
Jet Engineering

MAJ WA SPECK
Jet Investigation Coordinator

Investigation and Prevention

LCOL WW GARNER

CF104

MAJ WR BARNES

Otter
Chipmunk
L182
L19
Labrador
Voyageur
H34
H21/44
CUH1H
CUH1N
OH58A
CH112

MAJ JR PUGH

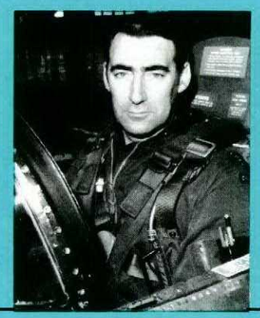
CAPT A COOPER

CF101
CF5
CF100

CAPT RJ KELLY

MAJ GF SAGE

Argus
Yukon
Hercules
707
Buffalo
Caribou
Cosmo
Falcon
C45
Albatross
Dakota



T33
Tutor

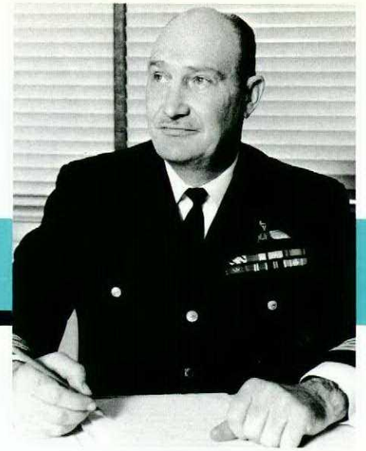
CAPT J KRAMAR

MAJ SO FRITSCH

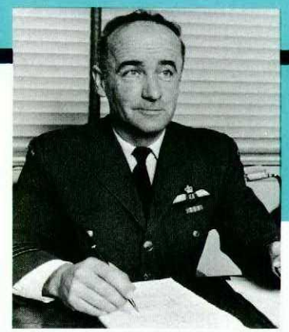
CAPT DW RUMBOLD
Heavy Aircraft Engineering

Tracker
Sea King
HO4S-3
CX84

MAJ RL ROGERS



COL RD SCHULTZ
Director



MAJ JG JOY

Education and Analysis

Annual Stats Analysis
Monthly FSO Kit
MAID
Flight Safety Surveys
Stanags
Life Support Equipment
Operational Facilities
Bird Hazards

CAPT BR ARNOTT

CAPT GH COLLISON

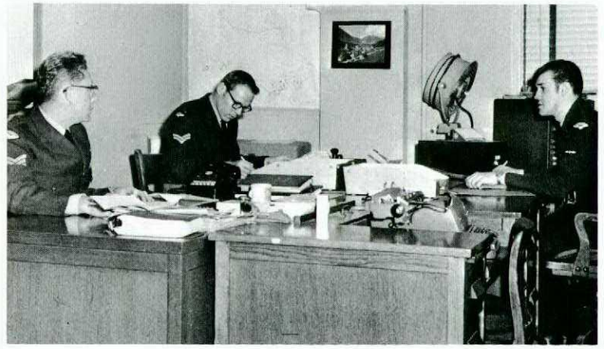
CAPT JG CHRISTISON
Projects Coordinator
Flight Safety Magazine Distribution

CAPT PJ BARRETT
Editor
Flight Comment

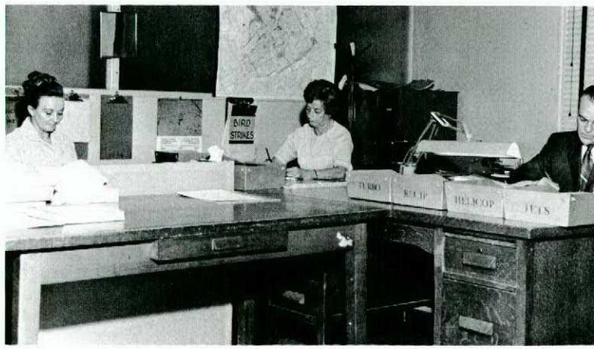
MR JA DUBORD
CFHQ Graphic Arts, Flight Comment Artist

MRS MG SMITH
Stenographer

MISS MA CORCORAN
Stenographer



SGT D LAWRENCE CPL WR SHORTT PTE JFL ALLAIRE
Administration



MRS H THIBAULT MRS FD BENNETT MR RJ EMOND
Statistics Analysis

"On a nice day...strange things can happen"

We're grateful to this pilot for his interest in passing along an important lesson....

The search for a missing civilian helicopter with two men on board, was in its second week. I was aircraft commander and our Albatross had been airborne for approximately five hours on a beautiful sunny Spring day. We were full of certainty that this was the day and the aircraft that would find the survivors.

Our assigned tracks ran in an east-west direction over relatively flat terrain. There was one exception to the general flatness, a long narrow hill, running at 90° to our flight path, that we were gradually approaching with the completion of each track.

The top of the hill was slightly higher than our assigned search altitude so I had to climb momentarily and then ease down the other side. The winds were comparatively light and there was no turbulence. On two occasions I broke off our track to investigate sightings by our spotters; one turned out to be a white wolf on the edge of a cut line and the other a set of elk antlers in the trees. The routine of picking up our track was repeated and the search went on. On one particular track I failed to notice that part of the ridge coming up was higher than the rest; the map did not show a higher spot height. As I approached the hill, I increased power slightly, as on every previous pass, and eased the nose up.

It should be pointed out that although my responsibility consisted of completing each mission in an accurate and safe manner there have been several occasions where pilots, with their better forward view, have sighted survivors. Therefore, I was only half concentrating on the fast approaching hill and automatically adjusted the attitude to compensate for the apparent slow rate of climb. Since cruise for searching is at a low indicated airspeed, it was only a matter of seconds until I felt the first indications of a stall. Pitch and power were applied with adrenalin reinforced speed and the aircraft cleared the tree tops by about 50 feet. Perhaps that doesn't sound too close, but the dear old Albert, loaded to the hilt with spotters, crew, para-rescue gear, droppable stores and bags of fuel isn't known for its aerobatic characteristics. A key factor was that recovery was initiated at the very first indication of an approaching stall. A slightly higher ridge or slower reaction and scratch one Albatross.

I had at that time about 5,000 hours on a variety of aircraft. I was in good health and took pride in my responsibilities, and yet I had jeopardized the lives of a dozen people and my aircraft. Subsequently the crew didn't appear upset, but I was, for months. What had happened? Inattention, complacency, boredom, routine, lack of ability, stupidity?

Perhaps a bit of each, but in addition to the fact that one part of the ridge was higher than the remainder, one other factor was present. As the spotters and crew rotated positions there was a gradual concentration of people in the aft of the aircraft where the biggest search windows are located.

The result was a gradual change of aircraft attitude while maintaining a constant height. Looking forward through the windscreen as we approached the hill it appeared that we would safely clear it as on all previous passes. The added pitch and power, however, was not sufficient as a result of the increased height. Flight and engine instruments had been monitored regularly throughout the trip, but regularly doesn't mean continually. On a nice clear day after five hours airborne, strange things can happen. ■

antihistamines and aircrew

LCOL W.J.C. Stevenson CFIEM

A single-engine private aircraft was cleared to takeoff and climb to an altitude of 2500 ft; cloud base was approximately 300 ft. About three minutes after takeoff the aircraft descended below cloud and crashed killing both occupants.

Investigation revealed that the pilot had reported sick in the morning with a head cold and sore throat and that medication had been prescribed. Traces of this medication were found in his kidneys.

Although the cause of the accident was not determined, it was believed that the pilot, who had considerable flying and instrument experience, had probably become disoriented and was unable to correct the situation due to the effect of this medication.

The medication involved was an antihistamine. Next to Aspirin, antihistamines are probably the most commonly used drug on the market today. Their effectiveness as a relief from a head cold, hay fever, asthma, allergic reaction and motion sickness are well known. Unfortunately, their side effects are not. These side effects which can seriously compromise flight safety may include any one or more of the following:

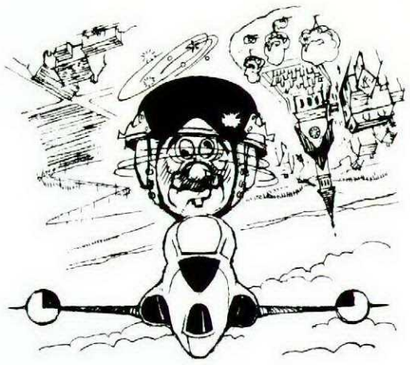
Drowsiness
Inattention
Nervousness, uneasiness, "jumpy or jittery" sensations
Weakness, fatigue
Dizziness, vertigo
Headache
Double vision, blurred vision
Dryness of mouth

There are more reported effects that can be added to this list. Unfortunately many may not be apparent to the individual, especially in the ground environment; he may also be unaware of them while flying.

Side effects are dependent on such factors as type of antihistamine used, dosage, age, physical condition, whether short or long-acting and individual reaction to drugs. Nearly all antihistamines will produce some undesirable effects. These vary in severity with each individual as much as with each drug; some have more side effects than others. Drug companies caution that antihistamines may cause drowsiness and dulling of mental alertness, and that individuals undergoing treatment with this medication should not operate vehicles or other means of transport, or machinery, where inattention may lead to an accident.

It is obvious that antihistamines are not compatible with the demanding role of aircrew in the Canadian Forces. Usually the symptoms that require use of the drug are sufficient to cause pilots to ground themselves.

cont'd on next page



Unfortunately some individuals, unaware of the side effects, take antihistamines, which are available at any pharmacy without prescription, for head cold, wheeziness, hay fever, and so on. An understanding of the hazards of self-medication with antihistamine as with any other medication is essential.

Antihistamines are available as cough mixtures, nasal sprays and drops, capsules or spansules, and tablets. They often contain other ingredients such as analgesics, sedatives and stimulants. The numerous trade names include: Contac C, Dristan, Ornade and Benylin cough mixture. None of these drugs should be taken when flying.

Next time you have a blocked nose or hay fever do not be tempted to use the capsules in the medicine cabinet that you got for your wife when she had a cold. *If you do, avoid flying.*

It must be repeated that antihistamines have a very useful and beneficial effect on many ailments that afflict us. *Your Flight Surgeon is the best person to advise you which ones to take and how long you should remain on the ground. Seek his advice and avoid the temptation of self-medication.*

LCOL Stevenson joined the RCAF in 1954 after serving as a Transport Command pilot and flying instructor with the RAF during WWII. A native of Dublin, Ireland, he is a graduate (M.A., M.B., B.Ch) of Trinity College, Dublin and of the Harvard University School of Public Health. He served at Marcom (1954) and CFB Portage from 1955 to 1958. In 1958 he was transferred overseas as Air Division Flight Surgeon. Returning to Canada in 1963, he assumed the posts of Training Command Flight Surgeon and Deputy Regional Surgeon for the Prairie Medical Region. Since 1967 LCOL Stevenson has been OC of the central Aircrew Medical Board at CFIEM.

Summer FOD

The Base FOD officer stated that a large amount of FOD is being found - especially now that the summer maintenance equipment is being employed.

- Flight Safety Committee

Another "O" ring breakdown?

The pilot was on a CF104 low-level training mission when the oil low-level light illuminated. He immediately fired the emergency nozzle closure system (ENCS), declared an emergency and landed the aircraft safely at base.

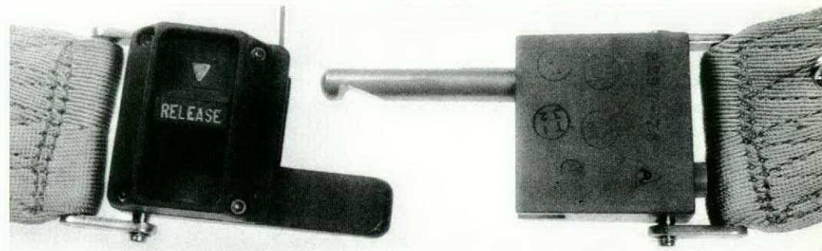
Large accumulations of oil were found in the hydraulic bay area and the AB nozzles. A leak was found in the connection of the gearcase vent line at the transfer gearcase end. Another, at the control alternator mounting pad, came from the transfer gearcase lip seal and required replacement of the lip seal and "O" ring.

This is a reminder that these are vulnerable areas which require expert maintenance procedures. We've already lost two CF104s due to "O" rings.

design and acquisition status of...

LIFE SUPPORT EQUIPMENT

PARACHUTE CANOPY POCKETS Parachutes modified to include exterior canopy pockets are undergoing testing this summer. By scooping up water or snagging on the ground, it is hoped that this system (already in use in some other services) will partially overcome the problem of spilling a parachute canopy after landing during high wind conditions.



ROCKET POWER INCORPORATED (RPI) LAPBELT Some dissatisfaction has been expressed by aircrew with the recently introduced RPI Lapbelt. In general the criticism centres around lack of comfort and convenience, and the occasional binding of the mechanism during manual release. The comments indicate a lack of awareness among aircrew of the improvements the new lapbelt brings to the escape system.

With statistics of unsuccessful ejections since 1965 indicating that most were the result of too-low too-late initiation, efforts have been directed towards shortening the sequencing time and improving the overall escape system.

To this end the RPI lapbelt was a necessary first step on which other improvements (BIR and mortar deployed parachute) are based. In addition the RPI ensures parachute arming and reduces opening time by approximately 0.4 seconds.

None of these improvements are possible using the MA6 lapbelt. For example, the mortar deployed chute requires a cable arming assembly that will provide positive insurance against inadvertent deployment; this assembly is incompatible with the MA6. The decrease in comfort and convenience was apparent during testing and user trials, however to achieve necessary improvements in the equipment capability it was considered necessary to accept compromises in these less important qualities.

New two-piece transport flying suits on user trials.

MORTAR DEPLOYED PARACHUTES Results of testing to date indicate that this equipment will provide a significant improvement in the low-altitude, low-speed ejection envelope. Static tests, with one exception, were successful. The unsuccessful test resulted in a design change and no further problems were encountered. Equipment for the CF5 has now been fully tested and approved. Initial installation is planned for the CF5, and tentative plans have been made to modify the CF104, Tutor and T33 parachutes. There are presently no plans to equip the CF101 and CF100 chutes because the equipment concept is that it be integrated with a rocket catapult ejection seat.

LIFE PRESERVERS Tests conducted by IEM in response to concern voiced by aircrew, confirmed that the present mae wests, worn under the parachute harness and using a 19 gram CO_2 cylinder, do not elevate the head sufficiently to keep it out of the water. Several currently available life preservers have been tested but none has proven completely acceptable. Testing is continuing.

A promising modification to the present design incorporates a filament between the two layers of the life preserver, in the portion under the parachute chest straps. Inflation pressure under a fastened parachute is thereby directed to the lower portion of the life preserver, permitting a 23 gram charge in the CO_2 cylinder which is sufficient to keep the wearer's head above water.

STRAP-IN: ROUTING OF MARITIME LANYARDS Aircraft AOIs are being amended to indicate that the seatpack maritime lanyard will be routed under the seat lapbelt and over the parachute harness. CFIEM and the CFHQ Directorate of Aeronautical Engineering (DAE) are determining the modifications required to reroute the lanyard from the left to the right side of the CF101 seatpack, thereby ensuring standard routing in all CF aircraft.

On the Dials

In our travels we're often faced with "Hey you're an ICP, what about such-and-such?" "Usually, these questions cannot be answered out of hand; if it were that easy the question wouldn't have been asked in the first place. Questions, suggestions, or rebuttals will be happily entertained and if not answered in print we shall attempt to give a personal answer. Please direct any communication to: Commandant, CFFTSU, CFB Winnipeg, Westwin, Man. Attn: ICPS.

In the Nov/Dec issue this column outlined the criteria for taking special weather observations. Continuing with Met topics, here are some short notes on terminal forecasting and SIGMETS.

Terminal Forecast Amendments

Terminal forecasts are normally amended when conditions change or are expected to deviate significantly from those forecast.

Amendments to terminal forecasts are required when:

a. the forecast ceiling changes or is expected to change by an amount sufficient to move from one to another of the following increments:
   (1) 1000 feet or more
   (2) less than 1000 feet but not less than 300 feet
   (3) less than 300 feet
b. the forecast visibility changes or is expected to change by an amount sufficient to move from one to another of the following classes:
   (1) 3 miles or more
   (2) less than 3 miles but not less than 1 mile
   (3) less than 1 mile but not less than ½ mile
   (4) less than ½ mile

In addition, local factors at various bases may produce other significant changes requiring forecast amendments; the forecaster must be the judge.

Effective amendment service requires rapid dissemination of amended terminal forecasts and special weather reports to pilots. To this end an improved meteorological telecommunications system, designed to deliver such information within ten minutes 85% of the time, has recently been implemented in Canada.

Significant Meteorological Phenomena (SIGMETS)

SIGMETS are intended to provide short-term warnings to aircraft of potentially hazardous weather conditions occurring between the surface and 45,000 feet. The warnings may be based on forecasts or on PIREPS.

The list of significant phenomena is defined by international agreement, and is limited to the more serious hazards which are of importance to all types of aircraft. It does not necessarily include those of importance only to light aircraft or to VFR operations.

The phenomena include:

active thunderstorm areas
lines of thunderstorms
hurricanes
heavy hail
heavy or severe turbulence
heavy or severe icing
marked mountain waves
widespread sand or dust storms

NOTE: Ordinarily, SIGMETS are not issued for scattered, unorganized airmass thunderstorms and their associated turbulence since these storms can be avoided.

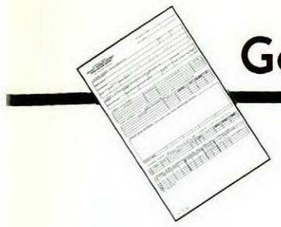
When a significant meteorological phenomena is reported or is expected to occur within a two-hour period, a SIGMET is issued. It is valid for four hours and if the condition is expected to continue beyond four hours a new SIGMET is issued in time to ensure continuous coverage. If the phenomena does not develop or dissipates before the four-hour period ends, a SIGMET is issued to cancel the warning.

SIGMETS consist of a heading, followed by a text, which is given in plain language or standard abbreviations. The heading includes the designator "FL", the identifier of the originating office, and the time of issue, a six digit date-time group (in GMT). This is followed on the second line by the *valid period* consisting of two six-figure date-time groups, and on the third line by the word SIGMET, the serial number and text. Originating weather offices number SIGMETS serially beginning each day at OOZ.

The text describes the phenomena, detail as necessary, whether the phenomena is forecast or observed, location (area and altitude) and expected movement and development.

The following examples illustrate the kind of information these warnings contain:

a. FL CYYR 171600
   171800-172000
   SIGMET 1. LINE OF TSTMS FCST
   FROM 55N 61W TO 50N 65W MOVG SE 25
   INTSFYG END.
b. FL WG 292030
   292030-300030
   SIGMET 3. SVR TURBC OBSD IN CLR AIR
   2015Z AT 32 THSD 60 MI W OF RIVERS
   NO CHG IN INTENSITY END.
c. FL YZ 202100
   202100-210000
   SIGMET 5. HVY HAIL IN TSTM OBSD 2045Z
   50 MI E OF XU MOVG NE 25 WKNG END.
d. FL YZ 202130
   SIGMET 6. CANCEL SIGMET 5. TSTM
   DSIPTG EARLIER THAN XPCD END.



Gen from Two-Ten

LEARN FROM OTHERS' MISTAKES—you'll not live long enough to make them all yourself!

CF104, H-LINK FAILURE A fully-manned crew was towing the CF104 to the tarmac area in front of a repair hangar. As the aircraft was turned from the taxiway to the tarmac the starboard wheel dropped into the gutter along the edge. The driver of the towing vehicle was unable to pull the wheel out of the gutter and then was unable to stop the aircraft before it struck a concrete block. At this point the H-link failed and the starboard wheel folded rearwards.

The towing procedures at this unit, established and accepted by common usage, were in fact contrary to base orders. All concerned assumed that the driver was in charge of the operation but base orders said otherwise...

The added hazard created by the concrete blocks in the gutter had existed for over two years, but had never been reported.

This occurrence, one of many in recent months, illustrates the costly results of complacency.

T33, O-RING FAILURE At the start of the after-landing roll a pronounced swing to the right developed. Attempts to regain directional control were ineffective and the pilot decided to overshoot. The aircraft got airborne at the runway edge, but collided with a runway light destroying the light, damaging the D-doors and a brake-line.

Coming around for another attempt, the pilot set up for a minimum roll landing. By heavy braking, stopcocking the engine, and opening the canopy, he brought the aircraft to a stop just short of the right-hand edge of the runway.

Failed O-ring

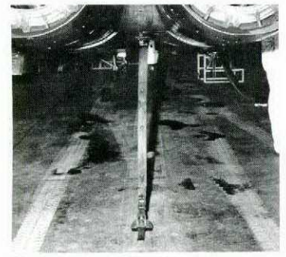
The pilot's directional control problem was caused by the combination of a flat starboard oleo and 40 gallons of fuel trapped in the starboard tiptank, the latter a result of an air pressure regulator failure in the tank.

Marks on a failed O-ring in the oleo indicated that it had been damaged during installation. Similar occurrences in recent months may reveal a lack of appreciation among technicians for the consequences of O-ring failures.

CF101, LETHAL TAIL HOOK After completion of a maintenance job, technicians raised the tail hook to its stowed position. Several seconds later as one of the technicians was about to install the safety pin, the hook dropped, striking him a glancing blow in the face. Although the injury was relatively minor, anyone who has witnessed the vigour with which the Voodoo tail hook drops will agree that fatal consequences could easily have resulted.

The subsequent investigation brought to light some disturbing shortcomings:

- the latching mechanism was out of rig
- the latching link was worn so that the hook was not properly engaged
- elongated bolt holes at the pivot point on the latching link
- inspection of all unit aircraft and two visiting aircraft revealed all aircraft slightly out of rig - and in two cases the latching link was Murphied.



Obviously this important equipment was not receiving its proper share of maintenance.

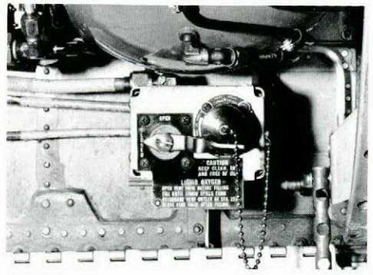
CF104, OXYGEN VALVE OPEN After thirty minutes on a low-level route the pilot took the dual to 30,000 feet to demonstrate an APC check to his non-aircrew passenger. (During the check, cockpit pressure slowly bled off, increasing the cabin altitude to 25,000 feet.) In a short time the pilot detected symptoms of anoxia. Upon checking the oxygen system and discovering that oxygen was not being delivered to either cockpit, he pulled the emergency bailout bottle and returned to base without incident.

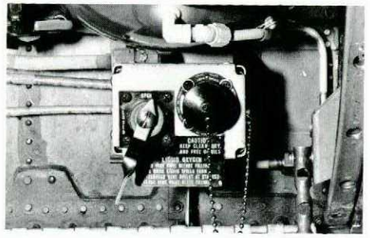
Investigation revealed that the oxygen system access panel had been closed with the "build-up and vent" handle rotated to the OPEN position. The access panel is designed so that it closes only when the handle is in the CLOSED (build-up) position, however this did not prevent a technician from forcing the panel closed, although he had to bend the handle and its mounting bracket, as well as the panel itself to accomplish it.

With the handle open, oxygen pressure bled off as the pressure

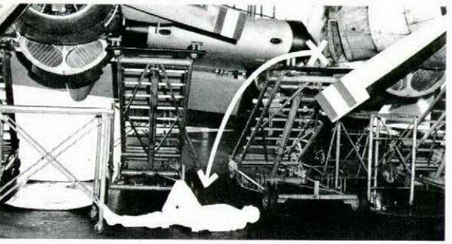
built up and did not flow to either cockpit, a fact which went unnoticed for most of this trip *and on one previous low-level mission flown on the aircraft by two qualified pilots.*

In view of anxiety voiced by pilots over oxygen regulator failures during the preceding months, the disregard of basic oxygen checks indicates the worst possible complacency.





Note frost on venting O_2 line.



ARGUS, TECHNICIAN INJURED While adjusting the cowl gills on number 3 engine, a technician sustained serious back injuries when he fell to the hangar floor from a maintenance platform. The platform was designed to be fitted with guard rails, but for convenience in moving it under wings, engines and propellers, *the rails were not installed.*

The EO covering Safety Precautions General (EO 00-80-4), clearly states that guard rails are mandatory when provided. Apparently safety for technicians was outweighed by the convenience factor.

CH113, UPSETS LIGHT AIRCRAFT The helicopter was making an unscheduled stop to refuel during an airevac mission. While the aircraft was being marshalled to the landing position, a light aircraft, parked nearby with its engine running, was upset by the helicopter rotor wash.

The helicopter had been directed to the *upwind* side of the light aircraft (which was parked 120 degrees out of wind) in 30 mph. wind conditions. This occurrence is another reminder that routine helicopter

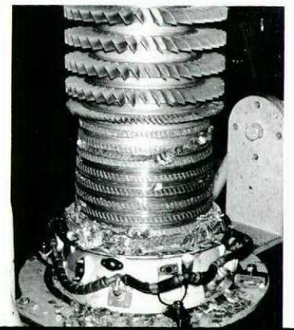
manoeuvring from time to time continues to provide that operational gap that opens the door to accidents.

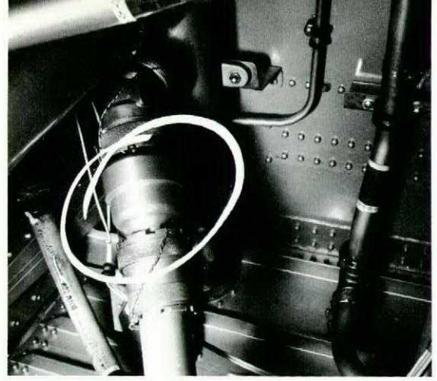
CHSS-2, INADVERTENT DINGHY INFLATION While preparing to taxi, the pilot's backpack dinghy suddenly inflated forcing him forward into the restraining straps with sufficient force to restrict breathing and speaking. On the verge of losing consciousness the pilot managed to release the harness and was immediately thrown forward, striking his head on the instrument panel and breaking the helmet visor and visor cover. His alert co-pilot meanwhile applied cyclic back pressure, preventing the aircraft from nosing over.

Investigation revealed that the CO_2 cylinder had slipped to the bottom of its container thus making actuation possible by any movement of the shoulder harness. A permanent block is *now* being installed to hold the cylinder firmly in place.

HERCULES, UNIDENTIFIED FOD The engines were being ground run after a propeller change. When power was reduced on number three engine the torque and the turbine inlet temperature began to rise. The engine was quickly shut down, but not before the T.I.T. had risen to 850° and the torque had gone off the clock.

An unidentified object similar to a 3/8" nut had been ingested by the engine, inflicting severe damage to the compressor - another dramatic example of the tremendous resource loss attributable to FOD.





Check valve correctly installed.

HERCULES, MURPHIED FUEL CHECK VALVE During maintenance of the fuel system the automatic level shutoff valve in the port external tank had been changed. At the same time, because it had previously been troublesome, the low-pressure fuel check valve was removed for a visual inspection, checked serviceable and re-installed - *in the reverse position.* Because a fuel tender was not available, the port external tank was checked for leaks by transferring fuel into it; the check proved that the automatic level shutoff valve worked, but did not confirm low-pressure fuel check valve operation - as filling from a tender would have done. Difficulty was experienced in filling the port external tank so it was fuelled externally through the filler cap.

While taxiing, the fuel system checked serviceable because the dump shutoff valves were held closed by the touchdown relay. However, once airborne with the gear raised, the dump shutoff valves opened and the "murphied" low-pressure check valve allowed fuel to vent from the masts via the dump manifold. And, to make matters worse, the venturi action that this created was drawing fuel from other tanks as well. Fortunately, an alert crew landed the aircraft before any further trouble developed.

ARGUS, THROTTLE JAMMED During a patrol the flight engineer reported a jammed throttle on number 2 engine, however, after a few minutes he was able to move it freely again and no further problems were encountered.

Later, one of the main landing-gear pins was found to be the cause; it had been forced through the thin metal panel behind the co-pilot's seat (where safety pins have traditionally been *thrown)* and had lodged between the number-one and number-two vertical throttle rods causing them to jam. Apparently, vibration or turbulence had aligned the pin fore-and-aft, and when the seat was moved back it shoved the pin into the throttle linkage housing area.

Provisions are *now* being made for proper stowage of landing gear pins.

CF101, STRUCK TOWING TRACTOR Three aircraft started simultaneously during a TAC EVAL; they had taxied out and were awaiting takeoff clearance when all three flights were cancelled. Backtracking from the button, their route to the line could not be seen by the servicing crew spotter, therefore marshallers were not sent out. (The tower had not yet passed the word along.)

A weapons technician, noticing the lack of parking crews, decided to lend a hand, however with no marshalling experience he was ill-equipped to judge whether there was adequate clearance between the aircraft wing, and equipment adjacent to the parking spots. As one of the aircraft was marshalled in, its starboard wingtip struck a towing tractor. *The pilot believed that towing vehicles were designed to permit wing clearance.*

This occurrence led to the following preventive action:

- all squadron pilots have been made aware of the height of D8 towing tractors;
- towing tractors will no longer be left attached to starting equipment;
- approval has been sought for closed circuit TV to control line activities during exercises, and for a technical control centre with an unrestricted view of the flight line;
- a new squadron order directs pilots to a specific route back to the line when a takeoff is cancelled.

Comments

to the editor

T33 escape system dangers.

Having participated in investigation of fatal accidents caused by low speed, low altitude ejections from T33 aircraft, I was pleased to see Major Poole's article (Nov/Dec) outlining the considerable improvement made in the T33 escape system. However, I wish to point out that we may experience more fatal accidents with this system.

That's right! A better system - more deaths. A long hard look at USAF ejection experience with improved systems is enlightening, and a little frightening.

Their experience with retro fitting F100, F105, and F104 aircraft with rockets as opposed to ballistic systems during the period 1962 to 1965 showed better performance by ballistic than by the new rocket systems with their associated improved seat/man separation, etc. Closer analysis showed that the increased fatality rate was associated with an increased number of low level ejections with superior hardware.

Improved escape systems give a better escape chance below 500 feet, but if the number of ejections at low altitude increase, no advantage has been gained and in fact, more fatalities will ensue.

The obvious solution is to again stress that improved escape systems do not eliminate the problems of sink rate and aircraft attitude. Pilots' survival chances remain best when ejection takes place above 500 feet and circumstances permitting, they should not delay ejection below 2000 feet.

Maj J. Hodgkinson
CFB North Bay

We couldn't agree more. The necessity for aircrew to make an early decision is of vital importance.

Explosive Safety

Your February issue of Flight Comment stressing the importance of preventing ground incidents and accidents was most welcome. It brings to mind an area which I feel requires improved dissemination of information - EXPLOSIVE SAFETY. I am unaware of the existence of a Canadian Forces publication to inform people of matters pertinent to this topic.

Keeping in mind Col Schultz's philosophy of "let's not wait for an accident to happen before instituting corrective action", it would indeed be timely if some space in Flight Comment was devoted to explosive incidents and accidents and the encouragement of unit explosive safety programs. Conventional weapons are once more assuming a major role in the Canadian Forces with the CF5 aircraft and Huey helicopter becoming operational in Mobile Command. The many pros and cons of handling, loading and arming conventional weapons are either new to our younger weapons technicians or stored back in the recesses of the minds of those old timers with previous experience on the Sabres and CF100s.

Let's devote some space in Flight Comment to examples of inadvertent actuations and firings. Remembering the old adage that "an ounce of prevention is worth a pound of cure", a few reminders of explosive safety might help eliminate some hazards which could cause future accidents.

Capt L.K. Shields
CFB Borden

Capt Shields' letter arrived during distribution of the Mar/Apr issue of Flight Comment, which included an article on explosives safety. With the cooperation of the Directorate of Armament and Standard Maintenance we have arranged to cover this angle of flight safety from time to time.

Explosive safety in general is the concern of Explosive Safety Newsletter, eight issues of which have been published during the past year by the Directorate of Ammunition. It is distributed to bases and units by Command and Regional Headquarters.

Cabless towing vehicles.

I am writing this letter to you in the hope that someone up there will read and heed.

For nineteen years and some odd months I have given my 'best' to the service (this statement may be in dispute as I have not risen above Corporal) on flight lines across Canada. Any travelled Canadian will readily admit that our winter conditions range from bad to bloody awful. In the course of my duties I have ridden and driven an assortment of vehicles used to tow aircraft from place to place: Davy Browns, Cletracs, Clarktors, Raplers and Latille and shop mules of all sizes and shapes, none of which have ever been blessed with a roof or windshield. I have sat aboard these beasts, as have my colleagues, in driving rain, blowing snow and freezing cold. As a result I have to divert a small portion of my meager pay to the monthly purchase of a certain preparation to relieve an unmentionable discomfort. (I am presently investigating the possibility that my discomfort may be pensionable.)

As any other "thinking aircraftsman" I noticed the lack of driver and passenger protection aboard shop mules during my first cold weather towing chore. I shortly set out to right the "Great Wrong". This proved to be another exercise in futility; my Senior NCOs could offer no encouragement as they had had the same thoughts and had been beaten down and eventually given up.

At every new unit I tried in vain to smoke through my proposals for enclosed cabs on towing vehicles, always with the same reason for refusal:

> "Drivers working around aircraft must have an unrestricted view."

If an enclosed cockpit on a shop mule, driven, in all probability by a technician who will have to assist in repairing any damage he might cause by a careless act is a hazard to aircraft, then what about the vehicles that run among them daily driven by people who are not connected in any way with aircraft maintenance? Would not a warm, dry driver be a safer one?

Cpl L.G. McCaffrey
CFB Comox

We agree that in most situations he would be. The decision to fit cabs to towing vehicles presently rests with individual bases; they initiate procurement action by submitting a Material Authorization Change Request (MACR).

GABBLING GOTCHA

From a roost high above ground clutter comes the staccato gabble of a strident birdland oddity. Considered a blacksheep among the species by seasoned bird watchers, his forte is perpetrating hairy directions which he spews with gusto and dispatch to other winged creatures. This renowned propensity to veil vital information in a welter of complex verbiage, combined with clever timing, can so consternate the receiver birds that they unwittingly begin to imitate the well-known flight characteristics of the plummet. Whether manoeuvering before flight, in-flight or after landing (strangers to the nesting ground are favoured targets), one and all fall prey to the Gotcha's befuddling birdsongs. Following each raspy utterance he chortles to himself:

IFITKAWZUZPERPLEXION ICANBLAMETHERECEPTION

? HYPOXIC ?

PRESS TO TEST

IF NO PRESSURE:
PULL EMERGENCY O^2

IF PRESSURE FELT:
- SELECT SAFETY
- BREATHE NORMALLY

IF NO IMPROVEMENT

DESCEND BELOW 10,000 FT. CABIN ALT.

ADVISE SOMEONE

AVOID:

Pulling 'G'
Extreme head movements
High cockpit temperature
Straining manoeuvres

BREATHE NORMALLY

LAND AT NEAREST SUITABLE AIRFIELD

REPORT *immediately* TO YOUR M.O.