FLIGHT COMMENT

THE FLIGHT SAFETY DIGEST OF THE CANADIAN ARMED FORCES

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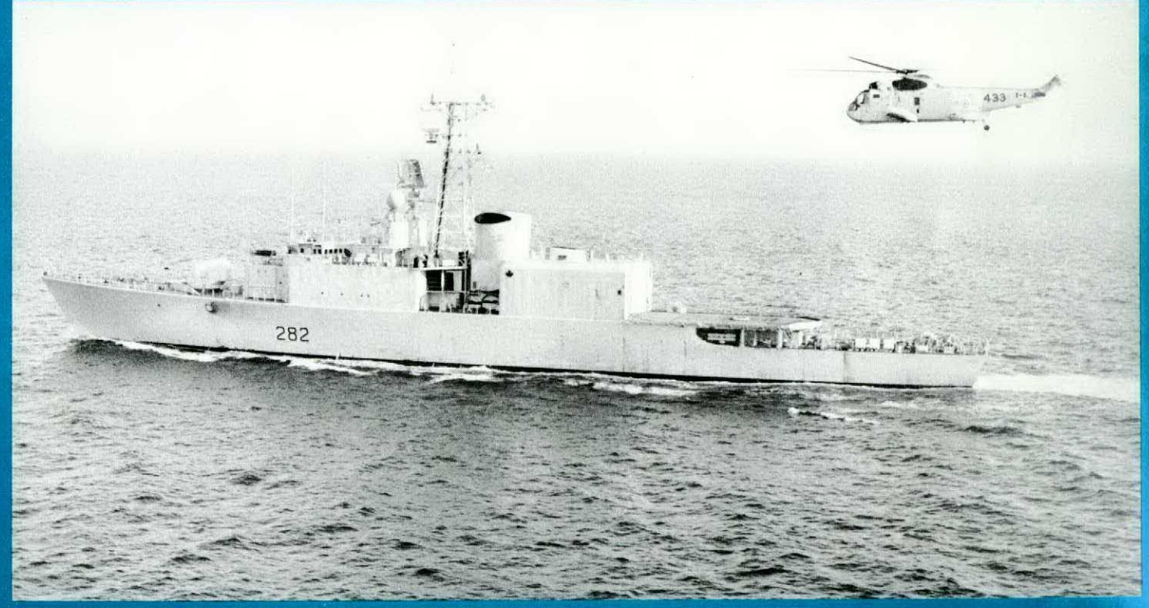
The older HMCS Huron - the original Tribal



The new HMCS Huron

TRIBAL – a destroyer with a history

by Capt J. D. Williams

I fell in love with Tribal class destroyers the first time I saw one. That was in Kitchener Ontario in 1950, and I was seven years old. Now before our naval readers dash to their desks to write in to refute this statement by pointing out that Kitchener is fifty miles from water deep enough to float a Tribal, I hasten to point out that the Tribal I refer to was HMCS Sioux, and although she was plunging headlong through heavy seas, she was doing so from the safety of a calendar on the wall of a friends fathers workroom deep in the basement of his home.

Young boys born in the early forties were weaned on ships, tanks and aircraft the way young boys of today are weaned on working models of the bionic man. The war was just over, our fathers had fought it, and we were fascinated by the machinery of it – the implements, the uniforms, the mystique – whatever.

So there it was pounding along at thirty knots with a bone in its teeth and all guns manned. There were guns all over it as I recall – two twin mounts forward – probably five inch guns, and two more of the same variety aft, plus a dozen or more Bofors guns, a few Oerlikons, and miscellaneous machineguns. Naturally there were torpedoes too, and depth charges. Like I said – they bristled – they had to – for they were built to go where the enemy was – and destroy him. Kids understood that then. Even the admirals, the politicians, the general public – the ADULTS understood then.

My buddy and I both loved that HMCS Sioux. We fantasized about sea battles in which we manned the guns in our flash hoods, conned the ship in the worst of weather from the open bridge, bundled in our convoy coats savouring the hot cocoa brought to us even in the heat of battle by our faithful steward. We knew what war at sea was all about. We stood long hours at action stations waiting for the deadly wail of Stukas or the telltale streak of an incoming torpedo. Our eyes strained for the feather of water thrown up by a periscope slicing through the water and our ears could almost hear the guttural tones of the U Boat commander (Korvetten Kapitan Ghastly L. Villain) shouting out the litany

"Range – Mark"

"Bearing – Mark"

and then slapping up the twin handles on his periscope while simultaneously shouting "Fire". Naturally they always shouted in English.

It was amazing how we could manage to be in both ships at once when that was appropriate. We commanded MTBs (motor torpedo boats) or even flotillas of them. We suffered through sinkings of them. We suffered through sinkings of our corvette, floated drenched, starved and seasick in our Carley floats, scanned the horizon despairingly for the coming of our rescuers, cheered at the sight of the Supermarine Walrus which finally found us, and delighted in the warmth of the rum-laced coffee which we were fed in the wardroom of the destroyer which eventually picked us up. Lord! We really lived it.

Don't get the mistaken impression that we were young warmongers-in-the-making though. We knew then that war was terrible. We knew the horror of burning tankers, the terror of depth charge attack, the discomfort of the freezing cold Murmansk run, the boredom of the long passage through the Indian Ocean with its stifling heat and its ever present sun. What we admired was the functional beauty of the machinery and the moral fibre of the men. We wanted to face the dangers of the quest – as had our fathers – and we hoped that having been tested we would not be found wanting. We knew that nothing in life was more exciting than the testing process with all its hazards and risks – and that nothing was more important than coming through. Moral fibre was important to us. Strength in adversity, dedication to the defeat of an immoral enemy at all costs. Come to think of it – maybe it wasn't such a bad time to grow up.

Anyway, naval action was well known to us. Movies like "The Cruel Sea", "Above Us the Waves", "The Sea Shall Not Have Them", "The Ship that Died of Shame", "The Fighting Lady", "They Were Expendable" and a host of others provided our technical knowledge and visual images, and if that were not enough there were newsreels showing our beloved Tribals off the coast of Korea shelling railway trains and intercepting enemy sampans. There they were with their sharp bows and lean and hungry look. We heard and adopted the term "Greyhounds of the fleet", and even watched an American TV program "Navy Log" starring our own "Athabaskan". Readers Digest told us of "The Great Imposter" – and even he knew enough to pick the very best – a Canadian Tribal – the Cayuga.

And then slowly but surely they began to fade from our minds. Korea was over and exchanged for the quite unsatisfactory Cold War. There were no more heroes to admire – and besides that, other interests developed. Schoolwork, flying, girls – not necessarily in that order took the place of dreams of glory. Coincidentally, as the destroyers faded from the minds of a generation they faded too from our naval inventory, being replaced by the highly functional but not nearly so attractive DDEs which we now operate in some numbers. Finally, just like in the song about the "Ten Little Indians" – then there was one – and her name was Haida – and she sat alongside by the CNE grounds in Toronto looking at the same time beautiful and deadly. Alive and vibrant even though permanently at rest.

Many are the times I drove past that ship and wondered what it would have been like to serve in her. Wondered for that matter what it would be like to go to sea at all – my nautical experience being limited to sailing the family fourteen foot dinghy and taking the ferry across the English Channel a couple of times, "but" I said to myself, "you'll never get the chance to know. There are no more Tribals."

Well, as it turns out, I was wrong. Our government in its wisdom chose to build four new destroyers, and the decision was made to carry on the names of previous ships of the Tribal class. And so it came to pass that the 280 class of helicopter carrying destroyer was born with the names Algonquin, Athabaskan, Huron and Iroquois.

In fact, I wasn't just wrong about whether or not there were any more Tribals. I was also wrong whether I'd get a chance to sail in one. I got the chance, took advantage of it, and am now about to tell you of the experience.

"You will proceed to Bermuda where you will join HMCS Huron, presently engaged in naval manoeuvres as part of MARCOT 76. You will remain in Huron and observe opera-

HMCS Sioux

tions until the return of the Fifth Canadian Destroyer Squadron to Halifax in mid December."

Shades of Horatio Hornblower!

And then of course the questions. What do they wear on those things? Will I get seasick? What about all that saluting they do when they come aboard? How will they look upon an Air Force officer invading their territory? Is there anything I should study before I go?

Many of the answers were forthcoming from friends who had served with the RCN, and some would only be answered with the passage of time. It will suffice to say that on the evening of the first of December I stood humbly on the pier at the USN base in Bermuda looking up at the towering superstructure of HMCS Huron DDH 281, my floating home for the next few weeks.

She stood glistening in the sun, silver grey and shiny-new. The grey was lighter than I had expected – closer to white than to the battleship grey which I'd seen on American ships. As I found out later the apparent newness was provided by the elbow-grease of the ships company – she was launched over five years ago in Sorel Quebec and has "put a lot of miles on" since then. Her bows had the classic Tribal sheer, and her forecastle was dominated by a single gun turret with a protruding barrel of a good twenty feet. She seemed to tower over me, with an apparent masthead height of a hundred feet or more, and enough radar equipment to stock a few International Airports. Also she was long, over four hundred feet from "pointy end to back" and fifty feet wide.

I struggled up the gangway with all the attendent dignity of anyone carrying two large bags plus a camera case, clothed in a flying suit rumpled by five hours in an Argus. At the top (or "brow" as they apparently call it) I put down about half my cargo, saluted the quarterdeck (which I was about to stand on) introduced myself to the officer of the deck – who turned out to be a most understanding sort – and waited.

"Oh yes, you're our visitor from Ottawa. We've been expecting you, put your bags down over here and I'll go get the duty zoomie for you."

Well I, of course, was delighted to hear those words, never having seen a zoomie before. I didn't know if it would be something to carry my bags, wear, or what. Turned out it was a helicopter pilot. He did carry some of my bags to what he described as my "temporary quarters in sickbay". Visions of operating-room-table-as-bed danced in my head, but not for long since we quickly arrived there (you do tend to arrive quickly in ships with their minimal distances) and found a small but comfortable cabin with two bunks at chair level and two stowed railway-type berths. The "zoomie" explained that destroyers aren't big enough for guestrooms, so visitors get the hospital. "Fair enough", I said, I had expected perhaps a hammock and was not at all likely to complain.

Having squared away most of my baggage and readied my camera for action I was about to venture forth when a knock sounded at the door and in came the Air Detachment Commander who introduced himself and offered to take me on a tour of the ship. He explained the importance of getting "oriented" rapidly – since a collision or other emergency in mid ocean is no place or time for wandering around seeking a "way out". He further recommended that I keep my mae west and appropriate clothing close at hand while sleeping, explaining that the biggest threat after drowning is exposure and it would be a pity to avoid one and succumb to the other. It all seemed logical to me – and I wouldn't have thought of it myself.

Enough radar equipment to stock an International Airport.

Formalities completed we repaired to the "Wardroom" which is the mess by any other name, had a drink, and met some of the ships officers and air detachment officers who were present. From the beginning it was clear that Huron was an extremely friendly and happy ship. From the Executive Officer who is in charge of the day to day operation of the ship and its crew to the lowliest rating, I never encountered one sailor who wasn't eager to explain his part in the operation of Huron and to help me in learning just how the ship worked.

The next morning bright and early we began the process of putting to sea. This process can be quite straightforward in some harbours and quite complicated in others. Bermuda it would seem rates about average in degree of difficulty but the thirty knot wind which was blowing offered some challenge to those doing the "driving" since the ship presents a substantial sail area to blow against, and like aircraft, ships can progress sidewards due to drift.

Fortunately there are all manner of personnel and mechanical goodies to help in the evolution. Typically for instance the captain will be standing on the left side of the bridge looking forward, the navigator will be out on the right wing of the bridge taking a sighting on some landmark and comparing its bearing with his precalculated figures, and the ships combat information centre will be providing radar coverage with raw readouts and computer inputs. The dialogue then might go like this.

Navigator: Captain Sir, I make our position three cables from turning point, just slightly to starboard of track recommend holding present heading of 281 degrees.

Combat Information Centre: Bridge, CIC, we make our position two and one half cables short of the turning point, five meters starboard of track, in safe waters.

Navigator: Captain Sir, we are at our turning point now, recommend turn to 300 for the next leg.

Combat Information Centre: Bridge, CIC, at turning point this time

Captain: Very well, steer 300

Navigator: Starboard ten

Helmsman: Ten degrees of starboard wheel on sir

Navigator: Midships

Helmsman: Wheel's amidships

Navigator: Steer 300 degrees

Helmsman: 300 degrees sir

Combat Information Centre: Bridge, CIC, we hold buoy 23 bearing 305 degrees range 4,500 meters. We are on track and in safe waters

From this you can see that a great deal of teamwork is involved in the process of manoeuvering in confined waters. It isn't like driving a car or flying an airplane because for one thing the road isn't visible, and for another you can't just pull up and go over an obstacle. So you use every aid available from the old reliable human eyeball to charts created in the 19th century by men who measured the depth of the bottom by suspending a lead on a line, to sonar depth finders and radar plan position indicators. And in the last analysis, as with an airplane, the captain is totally responsible for taking his craft from a to b undamaged. Watching it one realizes that there are elements in this drama which haven't changed since the days of Sir Francis Drake, and others which would have seemed like science fiction ten years ago.

Leaving harbour in a ship is interesting enough but doing so in a combat vessel is particularly so because of the tactical thinking involved. Wartime experience showed that a high percentage of shipping losses to submarine action occurred just outside the harbour – so now the ships helicopters are dispatched to clear the way. They of course, are not threatened by the presence of subs but can both detect and destroy any they might find lurking offshore waiting for the outbound convoy. In our exercise the "high value unit" or the "protectee" was the replenishment ship HMCS Protecteur which was screened by several other destroyers including the Iroquois a sistership of Huron, and the American USS Richard E Byrd. The sight of the entire group steaming out of port and slipping into battle formation was impressive to say the least.

In the case of Huron of course, the term "steaming" is a misnomer, since this ship is propelled by a jet engine or rather by four of them. Two high speed engines roughly equivalent to those which power our 707s drive the ship to maximum speeds of 30 knots or more, while the smaller cruise engines can keep up a speed of 12 knots with lower fuel consumption. Throttle control of these power units is handled directly from the bridge where the officer of the watch sets the desired speed in knots and the engine control mechanism automatically provides the required rpm or propellor pitch. Acceleration with these engines is amazingly fast when you consider that you are moving a mass of 4,200 tons, and since the turbines provide power with no warmup time required this type of ship can be "scrambled" on extremely short notice. "Scrambled for what purpose?" you might well ask.

Watch officer relays commands

Power is adjusted by throttle

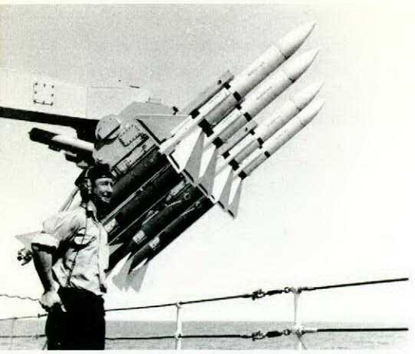
Helmsman carries out steering orders

Well, it becomes pretty obvious fairly quickly that this sort of ship was not designed as a fisheries patroller. Sure it has that capability as a fringe benefit, but the primary design role of the Tribal class is the seeking out, tracking and destruction of hostile submarines. Naturally this function could be assigned to a ship working as part of a hunter-killer task group or one working as a member of a convoy escort. Either way it would seem that the primary weapons system of the ship is its two Sea King helicopters with their variable depth sonar, their radar, and their ASW homing torpedoes. These aircraft are capable of ranging far ahead of the ship itself, or abeam, or even astern, and hence can provide coverage against attack from hostile submarines or surface ships. In the simple economics of Maritime Warfare, it is better to risk a relatively low value unit such as a helicopter, than a high value unit such as a destroyer. Similarly the destroyer would be prepared to sacrifice itself to prevent the loss of a carrier.

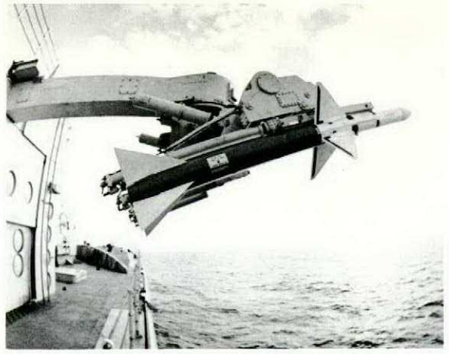
With a speed advantage of three to one or better over most conventional surface or sub surface ships, the helicopter can dash to the probable position of a potential attacker, dip its sonar, and confirm or disprove the contact in a minimum time frame. In other circumstances the helicopter actually takes up a screening position and "flies formation" on the task group guide ship, in a sense taking the place of a destroyer.

Lets say that the suspected contact proves to be "hot". What can the helo do about it? Well, in essence it can attempt to destroy it by launching a homing torpedo which will seek out the submarine using passive means. Furthermore, it can call in help in the form of other helos or ships. Many believe however that the helo serves its main purpose just in "keeping the enemies heads down" which in some ways is just as effective as destroying them anyway.

Of course there is no guarantee that a sub will be destroyed through the launching of one or even two homing torpedoes. There are countermeasures available to the sub commander and undoubtedly some of them would succeed. The question then becomes one of "Who can put the maximum amount of force into the area in the minimum period of time?" Everything then boils down to the traditional one for one tradeoff of weapon and countermeasure until someone gets sunk.



Sea Sparrow missiles on launcher



Sea Sparrow launching from 280 class destroyer

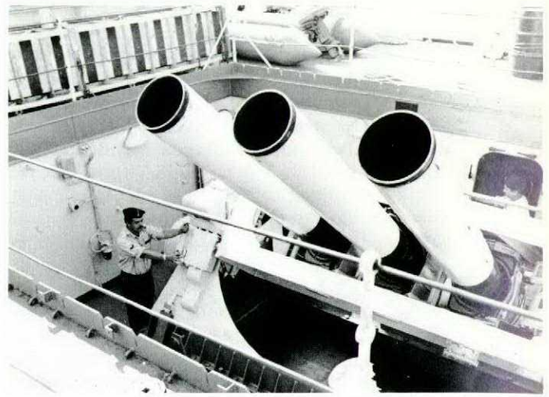
To take part in this tradeoff the destroyer itself carries a sizeable stock of homing torpedoes. Furthermore for close in combat it carries a triple barreled punch in the form of an anti-submarine mortar which is capable of projecting the modern-day equivalent of the depth charge they used in all those U-boat movies out to a range of 1,500 metres with great accuracy and a high rate of fire, the idea being to "bracket" the sub between two of these charges and crush its pressure hull in the ensuing explosion. It is quite impressive for a "landlubber" to watch the whole evolution back by the mortar well. The triple barreled mortar swings down so the snouts of the tubes are aligned with loading ports in the magazine, huge rammers push the bomb-shaped projectiles into the tubes, the mortar swings upward and begins its computer driven and gyro stabilized tracking of its quarry. The clang of an electric bell signals the moment of firing and within seconds three charges are arcing towards their target and the reloading process has begun again.

While the mortar system in its present form is definitely outmoded (any system in this day and age which allows an enemy to close to a range of 1,500 metres is) it has potential for upgrading through thrust augmentation, and is valuable as a last ditch weapon.

As a further attraction, dominating the entire forecastle (pointy end) of the Tribal is the imposing turret of the 5 inch 54 automatic cannon. This weapon is by coincidence the same calibre as the guns carried by the earlier class of Tribal, but therein ends the comparison. While the older guns were housed in an open turret with twin guns and a sizeable crew to man them, this gun is fully automatic in function, requiring no one in the turret itself and only a minimal number of ammunition handlers below to keep the feed mechanism full. It is said that in the event of an urgent need for the services of the gun, forty four or more rounds can be fired before the guns crew actually reaches general quarters.

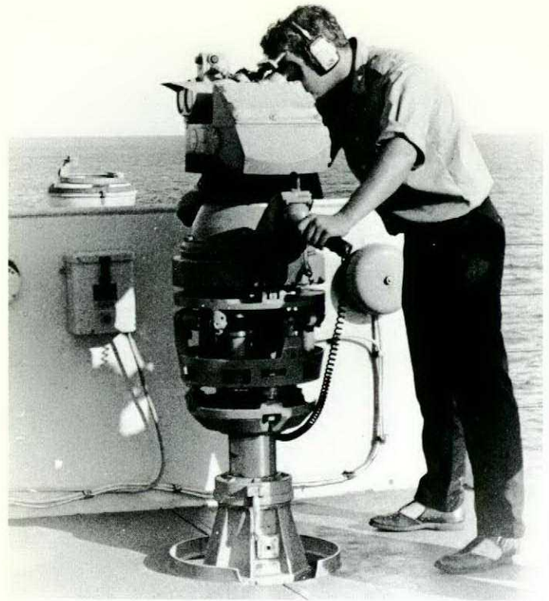
By now you may well be wondering what controls this weaponry. Some may picture a salt-encrusted figure standing on a sea-swept bridge with a massive set of binoculars, surrounded by stolid ratings waiting to relay vital orders down highly polished voice tubes. That (fortunately) is not at all the case.

Control of all the weaponry and of the ship itself in combat, takes place in a dimly lit room one deck below and slightly aft of the bridge. In this combat information centre or operations room are found the supercomplex cathode ray tubes which make it possible to visualize the entire "field of battle" at one time. Long gone is the single raw readout radar with its "blip" for each ship and nothing more. Look at one of these scopes and push the appropriate function button and



"Before" – Anti submarine mortar.

"After" – note projectile climbing out of smoke.

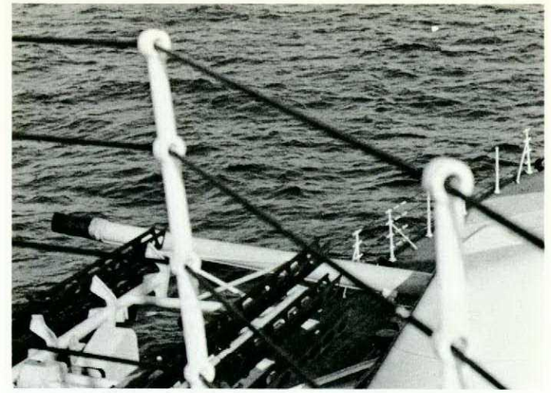


Manual gunfire director as backup for 5 inch 54.

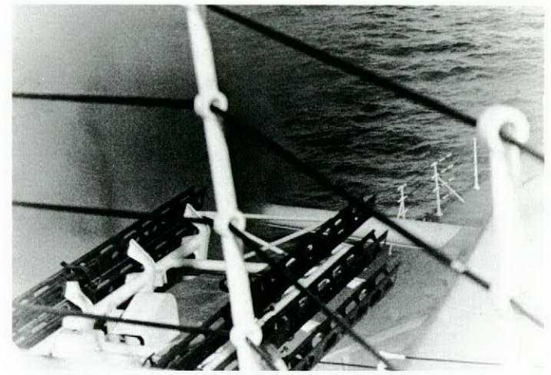
I swear you could get the name and birthdate of the captain of any other ship on the scope. At least you can get its range, its heading, its speed, and a little goodie called "closest point of approach" which means essentially that if you and he maintain present course and speed the computer will predict what the minimum distance between you will be, and when and where that will occur. With a machine like this collisions could become a thing of the past, and interceptions a simple matter. Our navy friends have really outdone themselves in the provision of sophisticated firecontrol and navigation devices, and their communications equipment is on a par – yet they retain some interesting changes of pace – such as signalling lamps flags, and plain old fashioned flagwaving semaphore. Once while observing a replenishment at sea I observed a very senior officer in the supply ship alongside which we were steaming apparently wringing his hands in a most agitated fashion. "Frankly", I thought, "I can understand his concern", but further questioning revealed that he was having a conversation in semaphore shorthand with someone aboard Huron. Why bother moving your arms when you can simply align your hands appropriately and get the point across?

Don't get the wrong idea about the communications equipment carried though, there is one at least of everything conceiveable on board in the radio line, plus encoding and decoding gear, and some highly sophisticated electronic warfare equipment. I would hazard a guess that electronics probably accounted for half or more of the off the shelf price of these ships. You really have to pay for capability these days. Wooden ships and iron men is a long forgotten concept. The men still have to be outstanding, but they need the equipment to do the job, and it would certainly appear to this layman at least that they have been given it.

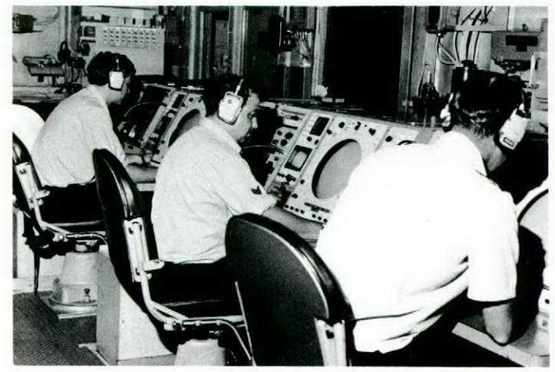
Beep, beep, beep, beep, sounds the bosuns pipe – then the voice announcement. "Flying Stations. No caps to be worn on weather decks, no gash to be dumped". This was the signal that Flight operations were about to begin, and much of the ships company would take an active part in one way or another.



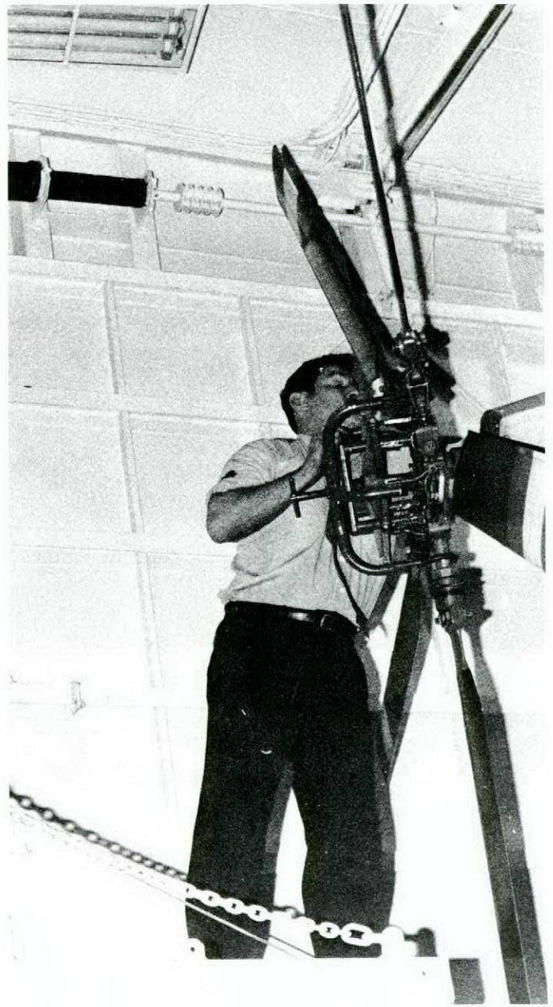
The business end of the cannon before firing.



A puff of smoke, an almighty roar and the brick is on its way.



Heavy weather.



Groundcrew operates under cramped conditions.

First of all, within the large hangar just forward of the flight deck, the helicopter chosen for the flight (the ship carries two) has been readied by the groundcrew. This involves the same level of cooperation as it would for any shore based aircraft, but throw into the equation the crowded conditions made necessary by shipboard operation and the unique variable of deck motion and its an entirely different story. For the first few days of this particular trip the winds were 50 to 60 knots much of the time, and this tends to whip up some pretty heavy seas to which the ship naturally responds. Picture your hangar floor rising and falling ten feet or so three or four times per minute, and add to that a roll of ten or fifteen degrees. If it doesn't make you ill, it sure makes it hard to work efficiently, particularly if heavy lifting is required yet the same amount of work is required as in a stationary building – or more. The movement of course makes it necessary that the aircraft be secured with heavy chains against movement in all directions. Imagine the havoc which would be created if one broke loose and went thundering around the hangar. Bear in mind that this hangar is also part of everyones house – so what might elsewhere be a little insignificant fire could be disasterous here. Below the flight deck there is torpedo stowage, and below that fuel, and forward of all that the hundreds of rounds of ammunition for the gun. There just isn't room for even the remote possibility of fire, explosion, or any other form of mishap.

So first of all the chain lashings must be removed so that the helo can be moved onto the flight deck. Most of this work is carried out by firefighters who double as flightdeck crew. When the helo is ready to move it is pulled into position by the beartrap mechanism which is operated by the landing signals officer (LSO) from his howdah on the deck. This being done, the crew clambers aboard and begins the traditional litany of preflight, prestart, start, blade unfold, and pretakeoff checks. This takes in the area of twenty minutes from start to finish – and just before it is completed the ship turns to the desired flying course and awaits takeoff of the helo.

I as a fixed wing pilot am always impressed with the coming alive as it were of a helicopter, the moment of liftoff – but never more impressed than aboard Huron where it always took the form of an upward bound of ten feet or so, followed by a stable hover above the heaving deck while the pilots decided if the thing would fly (it always seemed a little late to me). Hovering there with the forward perspex panel filled with ship and the side panels filled with sea was always interesting and usually exciting. This is not at all the leisurely hover experienced over your average grassy field, and it is apparent from the beginning that the pilots involved are a very special breed.

So, for that matter are the two crewmen in the back, the TACCO and the Sonar Operator who between them change the helo from an interesting form of transport to a vital weapons system.

Torpedo stowage – directly beneath the flight deck.

Flight deck firefighters suited up for action.

It is these two gentlemen monitoring their cathode ray tubes and operating their (to me) incomprehensibly complicated equipment – who actively seek out the submarine enemy. The pilots respond to their information by moving the aircraft to desired locations and then hovering while the sonar dome is "dipped" to the appropriate depth and a sonar search is carried out. All the while the Tacco is keeping track of the location of the surface fleet and other helos on his radar, and watching for the telltale blip of a periscope. If a contact is confirmed, the pilots then take action by dropping homing torpedoes which swim at high speed in ever increasing circles ever listening for the sound emissions of a sub and turning toward them until the almost inevitable collision and explosion occurs.

All of this sounds quite uncomplicated, and perhaps at times when the sea is glassy smooth like the local fishpond it might be, but picture this entire procedure being carried out IFR on a horizonless night with twenty or thirty foot seas and the whole story changes. A tremendous amount of faith is required to sit there in auto hover monitoring a radar altimeter, a cable angle indicator which helps you to remain vertically over the dome, and a gauge which tells you how much dry cable there is (between the water and the bottom of the helo). Bear in mind that due to wind and sea conditions there is the occasional freak wave which is double the height of its predecessors and followers, so a safe forty foot hover can degenerate rapidly into a distinctly uncomfortable twenty feet under water in seconds. This is one of the operational hazards you've heard about.

Another of course is landing on the ship in bad weather.

Being accustomed to airports which haven't moved an inch in years I was fascinated by the concept of one which travels sixty miles or more from the time we took off until the time we completed each mission and landed. Normal flights ran three hours or so, and all the while we plotted the position of the ship through dead reckoning, TACAN, and Radar. All this plotting was not, as you might imagine, for triple redundancy, but simply in case radio silence suddenly was imposed. Then it wouldn't be cricket to yell on UHF "hey Huron" and hope for an answer.

Then of course, in the fixed wing world, once you find the airport and get yourself to IFR minima, you are faced only with the matter of landing. This is no small thing – just how small it isn't is obvious when you're hovering over the deck watching it rise and fall, roll and yaw.

The Royal Canadian Navy however, developed a little goody called a "beartrap" which helps both in getting you

The flight deck looks awfully small from even a few hundred feet.

down to that deck in one piece and in holding you there after you arrive, all in a deceivingly simple appearing fashion.

First of all, the helicopter lowers its landing gear plus two stainless steel pipes called "probes" located on the aircraft centreline one amidships and the other close to the tail. Out of the centre of the forward probe is lowered a messenger wire which is sent down to the ship to bring up the hauldown cable. This messenger is first grounded by one of the firefighter flightdeck crewmembers and then plugged into the hauldown cable attachment which is then reeled back into the helo and made secure. The helo is then loosely attached to the ship by a high strength steel cable.

Once this procedure is carried out, the helo is hovered over the landing area and an ever increasing tension is applied to the cable by the LSO, lets say initially 700 pounds. Well naturally the helo is exerting more "up" force than that, so it doesn't come down, but it is pulled into a position above the beartrap mechanism since this is the location of the hauldown. The procedure then takes on many of the aspects of the contact between angler and fish. The LSO sets the desired tension so that if the deck drops away from the helo a little cable is let out, but slowly he "plays" the helicopter ever downward until it is hovering perhaps three feet above the deck. There then occurs a pause in which the LSO observes the deck motion, awaiting a relatively smooth moment. When he gets the rhythm down, he transmits the words "Land now,

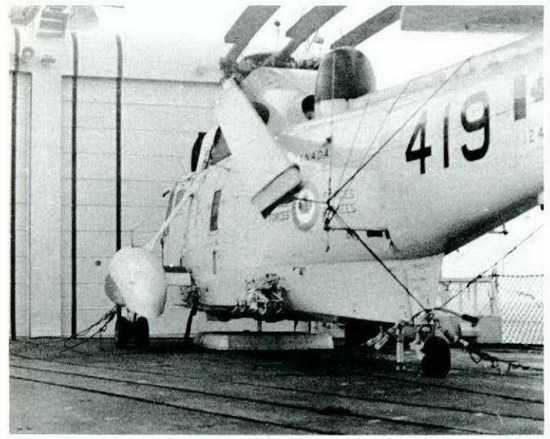
Grounding the messenger before hauldown.

Landing Signals Officer gestures from "howdah".

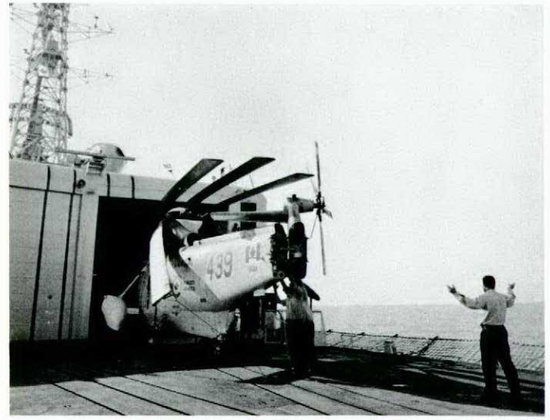
Down, Down, Down" at the same time as he increases cable tension to 3,000 pounds. The helicopter which is incapable of doing much of anything else, since the pilot has lowered his collective and the cable is pulling it, drops to the deck, and as the line on a fishing rod always tightens the lure snugly against the end of the pole, so the hauldown cable pulls its lure – the main probe – snugly into the beartrap mechanism. The LSO, seeing the helo safely down, plays his ace card by firing the beartrap which closes steel jaws around the probe itself, replacing cable tension then as the holding mechanism.

Now all this I think is pretty smart, but the additional feature which makes the system outstanding is the fact that the beartrap then becomes the transportation mechanism to move the helo into the barn. Naturally it wouldn't be possible for men to manhandle the helo by physically pushing it in, nor would it be convenient to operate a "mule" within the confines of the flightdeck and hangar. The solution was found in making the beartrap itself mobile on tracks set into the flightdeck. The beartrap itself moves through the opened doors of the hangar following the procedure of bladefold and engine shutdown, and so, of necessity does the helo. Once inside its lashed down with chains as described earlier, until needed once more.

Now for just a few words on the subject of "Life on the Bounding Main".



Helo tied down on deck, note beartrap and probes.



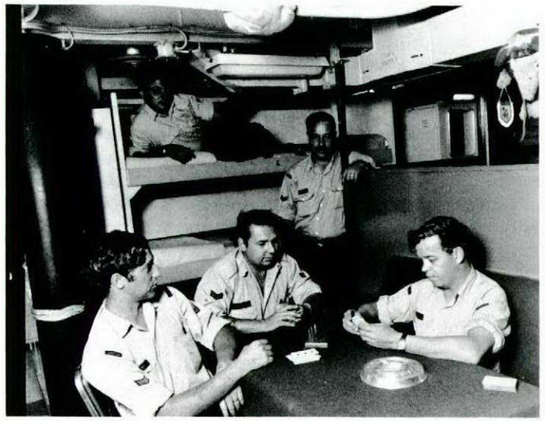
Living and working on a ship is simply not at all like life on a conventional Canadian Forces Base. First of all, and most obviously, the ship moves, and I am told that this has an adverse affect on the feeling of well being of some individuals – they get seasick, which is wretched. I was lucky in that I didn't even feel the least bit queasy, but then again my innards have been accustomed to regular aerobatics for a dozen or more years.There were some green looking sailors for the first few days at sea.

More important in many ways is the fact that while you're at sea you are in a sense on duty twenty-four hours per day. You may not be on watch and actively taking part in the operation, but you are there, not sitting in front of your fireplace, and a lot of things are going on around you. There is the ever-present whine of the turbines, the sound of "pipes" or PA announcements, and the ongoing activities of a combat vessel. I lay for hours in my berth one night trying to figure out the source of a particular noise, and was eventually told that it was the "ping" of the ships sonar. It was interesting having to "strap in" – to bed, but one good roll makes the reason for this quite evident.

For the first few days at sea you feel unusually tired. Eventually it becomes clear that the process of continuously compensating for ship movement by leaning this way or that is exercising your muscles just as surely as jogging and it goes on during every waking moment.

Years of experience have shown that if you make living conditions as pleasant as possible you will get the highest possible human efficiency, so the living standard is high. The meals are among the best I have had in the service, there are first run movies in the evenings, the ship has a well stocked library, and it is possible to have a beer or drink when coming off duty. The quarters quite naturally are somewhat cramped – but nothing you cannot get used to, – in fact much better than I had expected. Add to this the fact that your quarters go south to Bermuda and Puerto Rico in the winter and make frequent calls in interesting ports and the prospect of service at sea isn't frightening at all.

Finally, I couldn't close this article without mentioning the Replenishment at Sea or RAS exercises which I found just fascinating. This exercise involves two ships steaming in close formation at ten or more knots separated by one hundred feet or so of raging sea. We've all seen it in movies and TV documentaries, but watching it in person is a never to be forgotten experience. Lines are passed, then cables, and then

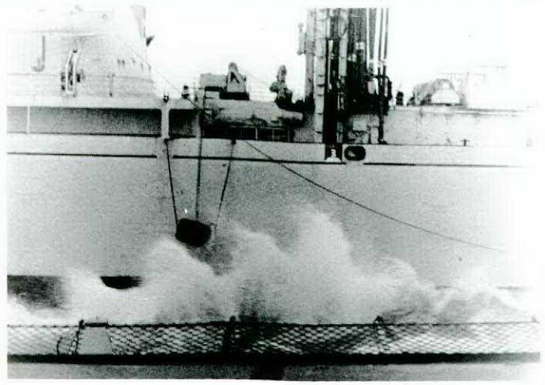


Replenishment.

finally the massive hoses which convey the fuel snake across the gap, and all the while the captain "flies formation" verbally – without a hand on either wheel or throttle. Believe me, this is a feat of cooperation. I spent half an hour one day trying to steer the ship on a heading and was unable at first to stay within twenty degrees of the desired. As the bow would lift the gyro would indicate a yaw to the left, and just as I managed to get on enough rudder to overcome the yaw we would skid down the wave to the right leaving far too much right rudder on and requiring a massive application of left rudder. The sailors had an expression to describe this sort of thing – it was "Hands to dinner – Starboard thirty". Essentially it refers to the fact that if the ship is going to roll violently it will probably do so just as you've seated yourself in front of a full bowl of soup. Several times in the two weeks I was aboard we took rolls bad enough to send all the coffee cups on the wardroom buffet skittering across the surface and onto the deck. Crockery breakage is largely prevented by use of special plastic placemats which prevent such slippage under all but the most exceptional circumstances – but every once in a while you'd hear a crash followed by the curse of the man who would have to clean up the results. No system is perfect after all.

Well, there are a lot more things which could be covered, but I hope that I have opened the eyes of a few light blue types at least to a totally different way of life. Canada has four of these brand new aircraft carriers, plus a few older but fully serviceable models. We need airmen to operate these ships and their aircraft, and these airmen will be able to take great pride in contributing to an important part of our overall defence effort. Our nation has one of the worlds longest coastlines, and with our new 200 mile limit there will be an increasing need for personnel to take part in military activity in this area. The flying is as interesting as any I have ever done, and the shipboard way of life is a broadening and fascinating experience.

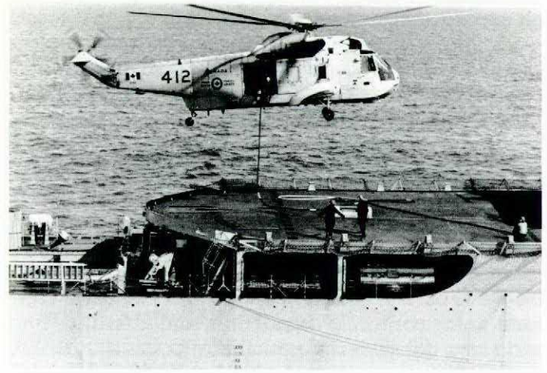
Sea King touches down on AOR during replenishment at sea.

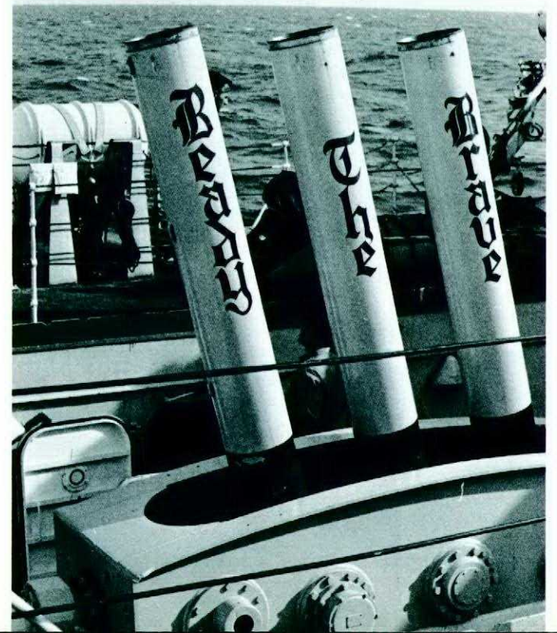


The sea rages between the ships during replenishment.

As long as men continue to fly aircraft off ships we will require a very special breed of man to operate and support those aircraft. In a situation where the slightest unserviceability can have results out of all proportion with apparent importance the required standard of professionalism will remain phenomenally high. In this sort of atmosphere it is not necessary to preach the doctrines of flight safety – since the importance is evident to every member of the ships company. If all of us were as totally committed to our operations as our naval brethren are by necessity there is little doubt in my mind that our collective flight safety record would improve immensely.

"The Fifth Canadian Destroyer Squadron will enter port". – Nobody said that – at least within earshot, but that is what sprang to mind as we steamed in line astern into Halifax. The ships didn't look as shiny-new as they had two weeks previously. They were somewhat salt-encrusted, a little rusty in patches, and covered with a thin layer of grime probably from stack gases. The watchkeepers, now enfolded in their duffelcoats gave ample evidence of feelings of anticipation. Soon they like





the remainder of the crew would be seeing wives and families after an absence of upwards of a month. Not a long time by many standards, but long enough when all but a few days are spent at sea in a destroyer.

We sail through historic waters. The approaches to Halifax harbour have seen more than their share of torpedoings since these were fertile waters for German U Boat captains in World War Two. Bedford Basin was the marshalling area for some of the biggest convoys to sail the wartime Atlantic, and sailormen just like those aboard Huron risked life and limb time and time again shepherding their charges across that cruel sea to England and parts beyond. Perhaps the fathers of our crew took part in that long past conflict – perhaps even one or two of the oldest hands.

We sail past the coastal gun emplacements which helped in those days to secure the approaches. Now they are silent and empty. Perhaps forever – though we have made the mistake of thinking that before.

The ships navigator, his binoculars cradled in the crook of his elbow in a fashion difficult to describe but distinctively nautical watches carefully as the expected landmarks appear out of the morning mists. The golden sun of dawn casts a warming light upon Citadel Hill – as it undoubtedly did in Nelsons day when the muzzle loading cannon which line its ramparts were potent in the defence of the nation and of the continent.

Slowing now we pass the tiny island gun emplacement which would have been the last line of defence in earlier days. I wonder aloud if we will dash dramatically to our destination in the naval equivalent of a fighter break or if we will be shepherded by tugs,and am answered by the arrival on the bridge of a harbour pilot who, through radio contact with his tugs and orders to the waiting helmsman will guide us to our position alongside. These ships are not the armourplated behemoths of earlier days. They dent on impact, electronics gear shatters – and it all costs too much. We come alongside Iroquois smoothly and gently. All hands not otherwise employed are there to watch this visible show of their captains' expertise – and he doesn't let them down. When he is finished with the engines we lie no more than six feet from the hull of Iroquois, but at no point have we touched, or even compressed the fenders. Shiphandling has not suffered with the passage of years.

An hour or so later I leave Huron along with many of the ships company, eager to rejoin our wives and families. The ship and the ships company have done well in this exercise. They will begin tomorrow to prepare for the next major exercise and I will fly back to Ottawa and my typewriter. I have learned more about the navy in these two weeks at sea than in a lifetime of reading and listening.

Snow begins to fall upon Her Majestys Canadian Dockyard, and upon the grey funneled ships who make their home there. They lie dormant now, diminutive in places once inhabited by others who bore their names and acquired the stature of giants. Each ship has a history, and each man on board knows it well. Long ago HMCS Huron acquired as its motto to be displayed in proud letters on the mortar tubes and beneath the ships crest "Ready the Brave". Believe it.

GOOD SHOW

CAPT R.R. CHALLONER

Capt Russ Challoner and an observer were flying a simulated weapons mission in CF5 116843 at Primrose Lake Evaluation Range. While on the final run in to the target at 100 feet AGL and 450 knots several birds struck the aircraft completely shattering and exploding the plexiglass canopy. Capt Challoner immediately increased altitude and decreased airspeed. He then ensured that both engines were running properly and that the rear seat occupant was not injured. Capt Challoner declared an emergency and using TACAN set heading for base.

By this time Capt Challoner began experiencing blurred vision, particularly in his right eye. He assumed, even though his visor was down, that some small particles of plexiglass had entered his eyes and he advised Air Traffic Control accordingly. ATC inquired as to his TACAN position but Capt Challoner was unable to receive any transmissions due to the high wind blast noise. The rear seat occupant was a cadet awaiting flight training and was not completely aware of the situation therefore was not of much assistance on the radio/telephone. ATC vectored another CF5 in on the radar point of the crippled aircraft. The intercepting CF5 assumed a loose route position on Capt Challoner's wing and informed ATC that Capt Challoner was carrying out a precautionary approach using the TACAN final approach radial to runway 12L, the runway in use at the time of take off. The approach was normal and the aircraft landed, deployed the drag chute, turned off the highspeed taxiway and shut the engines down.

The BComd, BOpsO, Flight Surgeon and BFSO were on hand to meet the aircraft and observed a very groggy pilot egress down the ladder. The Flight Surgeon escorted Capt Challoner to the hospital where glass particles were removed from both eyes.

Capt Challoner's cool, professional handling of the aircraft during this serious in-flight emergency and his personal knowledge of the CF5 systems and characteristics undoubtedly prevented the loss of an aircraft.

PTE A.A. MUNN

While carrying out flight line duties Pte Munn noticed a red flag showing at the right rear of the ejection seat of a CF-5 which was taxiing out for takeoff. He immediately informed his superior who had the aircraft recalled.

The flag was attached to the M32 lap belt initiator pin which had inadvertantly been left in during maintenance. The flag had been lying out of sight behind the seat until after the engine start-up, when cockpit airflow became strong enough to blow the flag upwards into sight. With the pin installed no automatic seat-man separation would occur after ejection.

Pte Munn's action may well have prevented a fatal accident had the pilot ejected, he is to be congratulated on his attentiveness and responsible attitude.

SGT J.N. MOXIN

Sgt Moxin, a Servicing Crew Chief at CFB Ottawa (S) was investigating a series of CC – 109 incidents that resulted in the loss of oil from the propeller due to loose oil caps. After proving that a serviceable pit pin that secures the cap could not come out by itself even during heavy vibration runs, he discovered that the pin could be inadvertently removed. During removal of the engine intake and oil cooler blanking plugs the cord that connects the two sections can travel between the engine fairings and ride against the pit pin. In this way it is possible to unlock the pit pin so that normal vibrations will shake it loose.

Sgt Moxin's discovery exposed a serious problem and allowed rectification to be completed before further incidents could occur. The fix is simple, but effective, the cord is now knotted to prevent travel between the fairings.

SGT W.A. WALSH CPL D.R. SEARS PTE M.A. DECURTINS CPL J.E. MURPHY CPL A.W. RICE

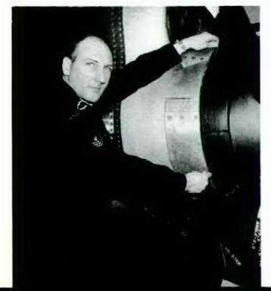
On 17 Sep 76, Buffalo aircraft 463 had returned from Akrotiri to the ramp at 116 ATU. The line crew were doing their daily inspection, and after the ramp and cargo door were closed, the APU was shut down. A fire developed in the APU compartment at this time and was quickly extinguished using aircraft and flight line C02 bottles. Because the fire was contained quickly, damage to the aircraft was limited to a blackened APU compartment and melted plastic wire coverings.

This crew's quick reaction, high degree of coordination, and thoroughness helped avert a major aircraft fire.

Sgt W.A. Walsh Pte M.A. Decurtins Cpl D.R. Sears Cpl A.W. Rice Cpl J.E. Murphy

Pte A.A. Munn

Sgt J.N. Moxin



Capt R.R. Challoner

CPL B.E. CANTIN

On the 19th of August 1976, while in charge of Tow Crew and hooking aircraft CF 101008 to be towed onto the flight line, Cpl Cantin spotted a broken rib on the port nose wheel rim. A closer view disclosed a three (3) inch crack inside the wheel rim. An Airframe Technician Supervisor was called and after investigation, the aircraft was declared unsafe to fly.

Should the crack have not been detected prior to the next flight and should the aircraft have become airborne and have landed hard on the nose wheel, the crack on the rim could have elongated and caused rapid disintegration of the wheel and rim assembly.

Due to Cpl Cantin's vigilance and alertness, serious damage to the aircraft was prevented.

CPL J.J.P. LAROUCHE

While performing an "AB" check on a five minute alert CF101, Cpl Larouche noticed what appeared to be a slight nick on the first stage stator blade on the starboard engine. He thoroughly checked all the other blades from his vantage point and could not detect any further abnormalities. Nevertheless he decided to enter the intake for a closer inspection. He then noticed that rotor and stator blades to the rear of number one stator had received extensive FOD.

The alert aircraft in the QRA are expected to be turned around quickly and efficiently by the Servicing personnel in order to be placed on "5" minute status with minimum delay.

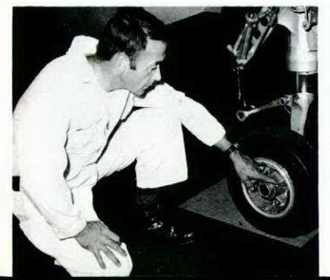
Even though Cpl Larouche was new to the QRA operation and adjusting to the accelerated routine, his thoroughness and high standard of proficiency are to be commended.

Had this engine deficiency gone unnoticed, further engine damage and possible in flight failure could have occurred. Cpl Larouche's alertness and dedication to duty clearly demonstrate the type of personnel required in the Canadian Forces today to prevent accidents/incidents from occurring.

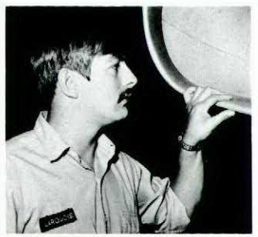
Lt C.J. Moore Pte L.C. Woods

Cpl D.K. Ramsay Lt. P.R. Hussey Cpl J.E. Arsenault

Cpl B.E. Cantin



Cpl J.J.P. Larouche



LT P.R. HUSSEY LT C.J. MOORE CPL J.E. ARSENAULT CPL D.K. RAMSAY PTE L.C. WOODS

On Thursday afternoon 21 October 1976, Goose Bay Air Traffic Control received short notice that a weather diversion was about to descend thirteen KC 135 tankers on Goose Bay with the tankers due to arrive in two cells of five aircraft each and one cell of three aircraft. The duty RATCON crew consisted of Lt Paul Hussey, Terminal Controller, Cpl Eric Arsenault, Radar Controller and Cpl Don Ramsay, Atc Assistant. The Control Tower was staffed with Lt Cheryl Moore, Aerodrome Controller and Pte Cec Woods, ATC Assistant.

Lt Hussey requested Moncton Area Control Centre to have the KC 135 aircraft space themselves 10 miles in trail for separation purposes as they were operating in a block airspace of 2,000 feet in depth. This spacing was to be accomplished prior to entry into the Goose Bay Terminal Control Area. Initial contact was made with the leader of the first cell and it was then learned that the aircraft were not in fact spaced as had been requested and it was at this point that the situation began to deteriorate badly. The landing runway was 09 which has no ILS capability; the RATCON Search Radar had been declared unreliable for the past 48 hours. The TACAN azimuth failed immediately after radio contact was established with the first aircraft and remained out of service for the next hour. The second cell of five aircraft were unable to contact Moncton Area Control Centre and as a result arrived on Lt Hussey's radio frequency prematurely which greatly added to the radio congestion already being experienced on that frequency; and to further complicate the problems the KC 135 is not equipped to employ a Non Directional Beacon.

In spite of all the obstacles thrown in his path, Lt Hussey, through improvisation, modification and ingenuity commenced a full IFR stream recovery of the KC 135 aircraft with only one radar controller at his disposal. As soon as Cpl Arsenault was able to get the aircraft to a visual condition control was transferred to Lt Moore in the Control Tower who provided the finishing touches. Interspersed with the KC 135's were a commercial transatlantic 707, and two RAF Vulcan bombers returning from low level cross country missions. The entire recovery from initial contact to last aircraft down was accomplished in 44 minutes.

SGT F.L. HILL MCPL B.J. CLARK CPL E. GOBBO CPL D. J. TURNER

Sgt Hill and his men were tasked with running up a CC130 Hercules aircraft during a midnight shift on 12 Jun 75. MCpl Clark was in the co-pilots seat, Cpl Turner was monitoring the flight engineer's panel and Cpl Gobbo was on a headset outside the aircraft as ground monitor. During the run, Cpl Gobbo noted smoke around the inboard area of the left wing and reported the possibility of a fire in number two engine. Sgt Hill immediately shut down number two engine and carried out the fire procedure, whereupon Cpl Gobbo reported that smoke was still coming from the wing root area and that probably the Air Turbine Motor (ATM) was on fire.

Cpl Turner noted no indications of an overheat on the engineer's panel but quickly shout down the ATM and Gas Turbine Compressor (GTC) in accordance with the emergency checklist. Sgt Hill instructed MCpl Clark in the right seat to shut down engines one and four and to request assistance from the tower, then proceeded out of the cockpit and extinguished the fire using one of the aircraft portable extinguishers. MCpl Clark requested assistance through the tower, shut down the remaining engine then abandoned the aircraft to assist his fellow workers.

The fire, which had been caused by the ignition of oil leaking from the ATM, was confined to the ATM compartment due to the alertness, superb co-ordination and prompt adherence to established emergency procedures by each technician. The detection of this fire during darkness was commendable enough but the professional manner in which Sgt Hill and his crew reacted under the emergency prevented the loss of a valuable transport aircraft and attests to the dedication and skill with which these men carry out their job.

MCpl A.P. Bryant

Maj J.P. Picard Capt R.A. Reid

Sgt F.L. Hill
MCpl B.J. Clark
Cpl E. Gobbo
Cpl D.J. Turner

Cpl E.W. Welsh

Cpl J. Deley Cpl M.E. Sawicki
Cpl O.J. Swintak

CPL J. DELEY CPL M.E. SAWICKI CPL O.J. SWINTAK

During a check on the NENE-X engine in T33 3423, the A/M technicians discovered a leak from a fitting on the pressurizing valve and shut-off cock (PVSC).

While the hose was correctly installed in accordance with C-14-131-00/MF-000, the technicians felt that the line was being stressed to the extent that the fitting was being distorted and leaking. Further research by the technicians revealed that CFTO C-14-131-000/MN-000, illustrated the hose installed in the reverse manner. This method of installation eliminated the need for distortion of the hose.

The unit fleet of T33's was inspected and all hoses were found to be improperly installed. Since these hoses are not normally installed at Base level it is suspected that they were fitted during engine overhaul at a civilian contractor.

As a result of the discovery a special inspection was carried out on CF T33's and the hoses properly installed. A UCR suggesting amendment of the CFTO's was also raised.

MAJ J. P. PICARD CAPT R.A. REID

While carrying out a mutual Clear Hood mission in the Moose Jaw local flying area, Major Picard and Captain Reid experienced a partial power loss while setting up for a spin entry. The aircraft was immediately turned towards base and the throttle brought back to idle with air start pressed. The RPM, however, remained at 40%, the value to which it had originally deteriorated. The throttle was then brought to cut-off and a procedure two relight attempted. This resulted in 40% RPM once again but this time there was no oil pressure. An emergency was declared and the aircraft was set up for a forced landing. Once high key was assured the engine was flamed out and a successful deadstick forced landing pattern was flown. Through the prompt and correct actions of Major Picard and Captain Reid a valuable aircraft was saved.

CPL E.W. WELSH

While servicing a visiting USAF T-33 aircraft, Cpl Welsh noticed that the canopy initiator firing link was disconnected from the M5A2 thruster. The unserviceability was rectified and a visual check of the egress system carried out to verify its integrity.

Due to Cpl Welsh's alert observation and thorough follow-up, a serious hazard was discovered and rectified. Cpl Welsh is particularly commended as the job at hand did not entail an inspection procedure as a normal servicing requirement on USAF aircraft.

MCPL A.P. BRYANT

Mcpl Bryant was assigned to do an independent

check on a Tutor aircraft following an engine installation. He discovered that the center throttle push pull rod had very little clearance between the attaching bolt and the rigid oxygen line that passes through the console. A further check using a telescoping inspection mirror and light revealed that the bold head was in fact rubbing against the oxygen line and had chaffed considerably. This chaffing was not visible from the top of the line.

A visual inspection of this area is extremely difficult. The exterior lights control box had to be removed and the area is partially obscured by wiring bundles and associated equipment.

Had this chaffing of the oxygen line been left undiscovered, a very serious accident could have occurred.

CPL B.R. MCCULLOUGH

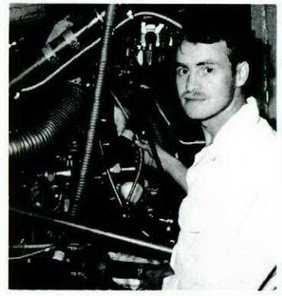
Cpl McCullough was carrying out a shop buildup of a Tracker engine. While installing a wire braided fire extinguisher line, he noticed a small bulge in the braiding and, investigating further, discovered that the flexible corrugated metal core was severed. Cpl McCullough checked several other engines and located several more faulty lines.

A Special Inspection was subsequently carried out fleet-wide confirming that Cpl McCullough had exposed a common fault with the extinguisher system, a system which is seldom used but is extremely important for Flight Safety. Cpl McCullough is commended for his alertness and initiative in eliminating a serious hazard and exemplifies the principle that Flight Safety is everyone's business.

CPL J.R. McDONALD

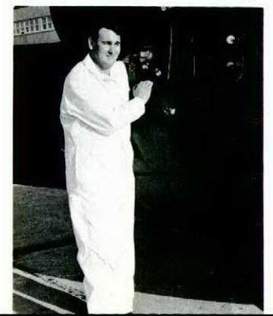
While carrying out a functional check of the flight control systems on a CF-5 aircraft, Cpl McDonald was positioned in the cockpit to move the control column. While doing so he detected a slight interference when the control column was moved fully aft. Cpl McDonald was not satisfied that the very slight interference was acceptable and proceeded to check into the cause. His investigation revealed that a control rod was rubbing on an anchor nut on the lower part of the centre instrument console. His findings resulted in a fleet wide Special Inspection. Three other aircraft were found with various degrees of chafing on the control rod.

Cpl McDonald's alertness and professionalism in carrying out his duties may well have prevented a serious in-flight hazard.



Cpl B.R. McCullough

Pte E. DeClara



Pte N.H. Roberge

Cpl J.R. McDonald

PTE N.H. ROBERGE

On start-up of a CH 135 helicopter, Pte Roberge was posted as a fire guard. When he heard unusual grinding noises, he very rapidly checked the tail rotor dirveshat inside the left fire extinguisher compartment. Finding excessive driveshaft vibration and sparks coming from the tail rotor driveshaft bearing, he ran to the front of the aircraft and signalled the pilot to shut down. The shutdown was accomplished with no further damage to the aircraft. Investigation revealed that Number One Tail Rotor Hanger Assembly Bearing was breaking up. Had it not been for Pte Roberge's rapid, incisive and effective actions in recognizing an abnormal condition, determining the cause, and signalling the pilot, it is most likely that complete tail rotor failure would have occurred either before or after the helicopter became airborne, with consequent considerable additional damage. Through his thorough checking and rapid actions, Pte Roberge succeeded in preventing what might have been a very serious accident.

PTE E. DECLARA

While visually inspecting the frontal area of an Otter R-1340 aircraft piston engine during a primary inspection, he discerned a possible crack between two cooling fins of number two cylinder, however, there was no telltale stain.

On his own initiative he elected to remove a cumbersome ring cowling and an inter-cylinder baffle, to have a better look at the crack with a magnifying glass. This revealed an apparent 4.5 inch crack running around the circumference of the cylinder head. After alerting his supervisor, it was confirmed by NDT (Eddy Current) that a definite crack was present. His perseverence in checking further than what is called for on this type of inspection probably averted a catastrophic incident on the next flight.

Pte De Clara's thoroughness and professional dedication to the job reflects his keen sense of responsibility.

AIR FORCE CROSS

A Commonwealth medal formerly awarded to Canadian Aviators was granted for two possible reasons:

(1) Exceptional valour, courage, or devotion to duty while flying other than on active operations against the enemy, or

(2) Distinguished service to aviation in actual flying.

The award was made to officers and Warrant Officers while airmen below the rank of Warrant Officers received the Air Force Medal. The suspending ribbon for the Air Force Cross is diagonally striped wine and white. The medal itself is well illustrated in the accompanying photo.

Flight Lieutenant Raymond William Cass

On the morning of 20 February 1964, Flight Lieutenant Cass was the captain of an Albatross aircraft assigned on a search and rescue mission to locate a missing seal-hunter, Albert Muise, in the Gulf of St. Lawrence. After a search in constantly deteriorating weather conditions, the hunter was found stranded on a small ice pan which was breaking up in floe ice on the edge of an open lead of water. Determining that no other means of rescue could arrive in time to save Mr. Muise's life, and that dropping of survival equipment was inadvisable, Flight Lieutenant Cass decided to land his aircraft in the narrow open water lead and effect the rescue by using a small rubber boat aboard the aircraft. Appreciating the dangers in landing in floe ice conditions, Flight Lieutenant Cass cooly and deliberately made at least twelve inspection runs to select the safest landing path. He informed his crew fully respecting his decision to land, sought their advice and, in his composed manner and genuine concern with the safety of all aboard, demonstrated leadership of a high order which engendered the unstinting, unanimous support of his whole crew. He landed the aircraft and subsequently manoeuvred it during the actual rescue with great skill and precision. After the rescue of Mr. Muise was accomplished, in shifting winds and waves as high as four feet with a heavy chop, Flight Lieutenant Cass took the aircraft off expertly and returned to base. This officer's calm, professional approach, exceptionally fine airmanship and devotion to duty in an extremely critical situation were major factors in saving a man's life.

Flying Officer L.B. Pearson

Flying Officer Pearson on 18 June 1950, proceeded to Payne Bay on the western shores of Ungava Bay to evacuate a seriously ill boy. After landing in a confined area of open water it was noticed that the swells caused by the landing were breaking off large pieces of ice from the frozen section of the river which began drifting toward the aircraft. If allowed to strike the aircraft these would have caused serious damage to the hull and wing floats. He positioned two men on the wing and directed them to run from one wing tip to the other as necessary in order to raise the wing floats whenever ice was drifting dangerously close. At the same time he had other crew members fend off floating ice with boat hooks and use sleeping bags as buffers when it was impossible to prevent ice from pushing too close in against the hull. A successful take-off was accomplished and the ill patient was flown to hospital.

Flying Lieutenant O.G. Nelson

On 5 October 1949, Flight Lieutenant Nelson volunteered to undertake mercy flights to remote settlements. On 6 October 1949, he took off from Goose Bay in a Canso for St. Mary's on the Labrador coast but was forced back due to gales and adverse and hazardous weather and water conditions when he reached destination. On 7 October under very bad conditions he reached Nutak on the northern coast and picked up a severely injured Eskimo. On 9 October he returned to St. Mary's and picked up a small boy dangerously ill with a ruptured appendix. He proceeded to St. Anthony on the northern Newfoundland coast and emplaned several seriously ill Eskimos. Exceptional skill and determination was exhibited landing and taking off on these flights as well as boarding his patients from small boats with heavy seas and cross currents threatening harm to the personnel and aircraft.

Flying Officer R.B. West

On 1 January 1948, Flying Officer West was captain of a Canso aircraft which had been ordered to attempt the evacuation of a woman who was critically ill at her home at Muttan Bay, Labrador. Although climatic conditions were extremely poor, heavy clouds, fog and driving snow being encountered, and very adverse sea conditions existed in the confined harbour at Muttan Bay, he succeeded in making a landing. Although the aircraft was heavily-laden with ice from flying spray, and water was pouring into the hold from a faulty nose-wheel door, Flying Officer West made a most successful take-off.

Squadron Leader J.F. Mitchell

On 20 September 1950, Squadron Leader Mitchell proceeded to Eureka Sound which lies 700 nautical miles north of the Arctic Circle and within 500 miles of the North Pole in a rugged unchartered area to evacuate one of the weather station staff who was suffering from severe blood poisoning. Because of distance and unusual atmospheric conditions, normal radio aids to navigation are negligible. In addition the proximity of the magnetic north pole renders the magnetic compass useless. Facilities for forced landings are non-existent and the nearest alternate for landing in event of emergency was Thule in Greenland. On arrival at Eureka a landing was made on a rough strip only 2,000 feet long. The return flight to Churchill was made via Resolute Bay through extremely trying weather conditions. During this time he had flown 3,139 nautical miles in 28½ hours and had had only 3½ hours sleep. A total of 3,857 nautical miles had been covered – the longest mercy flight in the history of the RCAF.

Squadron Leader A.G. McLeish

This officer rescued a gravely injured man on Cornwallis Island, Resolute Bay. Squadron Leader McLeish took off from Baffin Island at dawn in a blinding snowstorm, using the lights of two motor transports for guidance, as the runway flares would not stay alight in the gale. Despite heavy cold and extreme icing conditions, with 100 foot visibility at Resolute, he successfully landed, emplaned the patient and took off again safely reaching his home base. On another occasion he successfully landed a Lancaster aircraft on the ice on Clyde River on the north east coast of Baffin Island to bring out a ten year old Eskimo boy suffering from malnutrition and gangrenous frozen feet. His landing run, although violently rough was completed successfully with great skill. After a hazardous take-off, he flew with the patient to Halifax without further incident.

Flight Lieutenant A.G. Carswell

On 28 June 1956, Flight Lieutenant Carswell took off in a Canso aircraft in an attempt to rescue two fishermen from a sinking vessel near Galiano Island in the Straits of Georgia. Despite strong winds and extremely rough waters, Flight Lieutenant Carswell made a successful landing. Flight Lieutenant Carswell then manoeuvred the aircraft into a position where the two fishermen could be rescued. The takeoff in the rough seas was a particularly hazardous one demanding of the highest skill as the aircraft had been severely damaged by the heavy seas during the landing and was shipping water faster than could be handled by the pumps. He then flew with the survivors to Sea Island without further incident. On another occasion on 6 September 1956, Flight Lieutenant Carswell, under difficult conditions, successfully landed a Canso aircraft at sea some 600 miles off the west coast of Vancouver Island in an attempt to remove a critically ill member of the weather ship, St. Catherines. With considerable difficulty the seaman was transferred to the aircraft and with jet assisted takeoff the aircraft became airborne and returned to Victoria where the seaman was transferred to hospital. It was the belief of authoritative medical personnel that had not the patient been evacuated by air, he would not have survived the long sea voyage to Victoria. Flight Lieutenant Carswell's courage, devotion to duty, and skill have served as an inspiration and fine example to fellow aircrew.

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, CFB Winnipeg, Westwin, Man. Attn: ICPS.

Departure Criteria ???

From a pilot's point of view we are referring to obstacle clearance after take off. Since the last article on obstacle clearance the Instrument Check Pilot School has had three ICP courses look into the problem of "Departure Criteria". The aim was to come up with a method of providing the pilot with sufficient information to be able to:

1. take off and climb to a minimum IFR manoeuvreing altitude.

2. from this minimum altitude let the pilot decide in what direction it would be safe to turn; and

3. the minimum rate of climb required for the various directions.

Each project agreed that a hard and fast SID was not desireable unless the surrounding terrain demanded it. Each method presented, was different from the others, and all required a large amount of work to cover all situations. It was agreed that it would be next to impossible to provide the pilot with sufficient information to cover all situations.

It all boils down to the original statement "on departure, it is the pilot's responsibility to watch out for his own AS-". How do we do that?

If there is a published SID, you are all set. If not -?

It is obvious that there is a minimum altitude and airspeed which must be obtained before it is safe to commence a turn IFR after take off. Some Groups and Squadrons have orders that state "no turns until 1,000 feet AGL unless safety (obstacles?) dictate otherwise. After that, it is entirely up to the pilot as to when he is safe to turn out. We are all familiar with our aircraft performance, so if you are familiar with the surrounding terrain (and towers) you have it best. If you are not familiar then you must get into the Topo Maps and have a look at the highest terrain and obstacles in the area. At all DND aerodromes there will be a Topo Map in the flight planning center depicting the significant obstacles for that aerodrome. If you make an unscheduled stop at a Civil Aerodrome and do not have any maps, you can always use your tongue and ask the locals for information.

Now that you have the required obstacle information, it is up to you, the pilot, to decide if it is safe to turn towards that mountain that is 10 miles away and 5,000 feet above you. Only you know what the performance of your aircraft is today.

The aim has been to make you aware that "The Pilot is Responsible" so, let's all be responsible pilots.

HELICOPTER MOUNTAIN FLYING

Imagine yourself a helicopter pilot. If you are enjoying good flying weather, it is unlikely that you have concerned yourself with the prevailing conditions at any altitude above the 1500 foot level. Suddenly, you receive a message requesting a helicopter capable of operating in a mountainous area. Since you are the pilot of that helicopter and you possess a certain amount of expertise, you are sent off immediately with only minimal instructions. Before going any further, however, stop a think a moment.

For all of its excellent qualities, the helicopter is a relatively fragile machine in certain determinate situations. Operating in high mountainous areas is one example: landing on irregular surfaces is another. Many pilots who are accustomed to flying at sea level say that the helicopter is a completely different machine at higher altitudes.

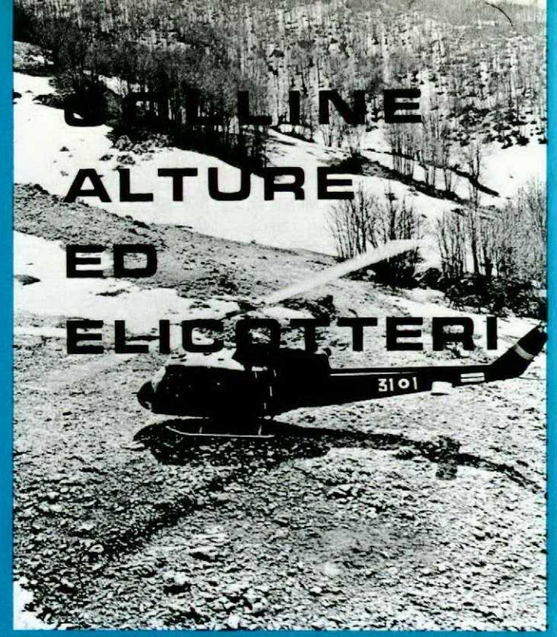
The first thing you must determine is whether your helicopter is capable of completing the mission. Consider the cargo: what does it consist of, and how much does it weigh? Next, formulate some idea of your destination by taking more into consideration than merely direction and distance. Often a direct course is not the most suitable one for high altitude flights. It is better to opt for the most comfortable route, one that follows the valleys. By taking advantage of these mountain passes, you immediately overcome the inherent problems of flights over mountain ranges. Study the map of the area carefully, but make sure you do it before you set out.

Once more, estimate the altitude of the area you are about to enter. Wind and temperature are important factors for good planning, but consider yourself truly fortunate if the readings at your disposal are updated. If they aren't, assume zero wind conditions and the standard temperature of your intended destination's altitude in your calculations. Be sure to make the proper adjustments for seasonal variations in temperature and then allow yourself a safety margin by adding a few degrees to the expected figure.

The landing terrain must also be kept in mind. Is it to be a smooth, soft meadow or a tight, irregular ridge?

The purpose of this careful planning will be self-evident if it reveals a somewhat difficult operation. Many people immediately think of a helicopter when there is a special task ahead. Indeed, the flexibility of the machine permits it to perform certain missions in a less costly, time-consuming and cumbersome manner than would be possible by employing any other means. Consequently there is a tendency to believe the helicopter can accomplish almost everything. To a certain extent this is true: the helicopter can do everything, providing it falls within the range of its operating standards. Therefore, if you are a helicopter pilot, it is your responsibility to dampen this enthusiasm, to think in terms of acceptable cargo loads and necessary fuel.

You should also be wary of the landing site proposed by



others. You are the one who must determine its suitability, but only after having seen it with your own eyes. The enthusiasm or excessive trust of the uninitiated can later prove to be a source of grief. Even a perfectly level area may not be suitable for landing if it doesn't allow an escape route or enough room to maneuver.

It is true that a helicopter, already in flight towards a mission at low altitude can, without advance notice, sometimes be called upon to operate in a mountainous area. In such a case it is unlikely that you will have time to consult the Flight Manual and you must therefore be cautious and undertake at least a minimum of planning with the few factors you have at your disposal.

Even though planning is important it is not everything and, by itself, does not guarantee the success of the operation. When entering the area from which the request for assistance originated, one must use one's head. From statistics regarding accidents it is possible to conclude that often the pilot is not flying at the altitude dictated by the particular abnormal situation, said situation not having been anticipated in the planning process. Variations of air density at high altitudes, vertical air currents, turbulence and uneven landing surfaces are all unforeseen factors which come into play with a certain regularity.

As an example, I refer to a case in which the planning was supposed to have been accompanied by a generous amount of insight on the part of the man at the controls. The pilot in question, had a total of 1200 flying hours of which 1,000 were in a helicopter. He was supposed to unload passengers and material at 3,000 feet altitude. The air density correspondent to that at 5,000 feet and the pilot assumed he could hover within "ground effect". The cargo, however, was such that the helicopter could only hover within ground effect, and therefore the helicopter's predicament was similar to that of a normal aircraft. In other words, to hover, it was necessary to maintain a minimum translational velocity. The pilot, however, was well acquainted with the proposed landing area and upon entering it saw that clouds had covered the surrounding elevations. He was about to turn back, as per instructions, when the cloud cover broke, leaving a corridor-

like opening. The pilot hurried to execute a long straight approach pattern. The slight break in the cloud cover however, closed again. The pilot, in the meantime, was slowly reducing his horizontal velocity in the hope that the clouds would shift and allow visual access to the clearing chosen for the landing.

When the pilot finally decided to terminate the approach it was already too late. The translational velocity had been reduced to the point where the helicopter began to fall through. Even full power was not enough to keep the helicopter aloft and it more or less set itself down gently among the trees.

The Investigation Commission which looked into the accident established that the helicopter could not remain in flight without the lift resulting from either the translational movement or from the ground effect. When the horizontal speed had been excessively reduced, the fall through was inevitable. Lacking a sufficient ground clearance an escape maneuver had proved impossible. In boxing terms, the pilot, quite simply, found himself on the ropes. The Chairman of the Investigation Commission stated in the official report: "It is a question of a typical situation in which the experienced pilot is not capable of acting in proper fashion in an unforeseen flight situation, which nonetheless occurs quite frequently in mountainous areas. Wind, a sparse and shifting cloud cover, variations in temperature and humidity are all too rarely covered adequately by meteorological reports before the flight. These are the unknowns which most often endanger the normal execution of a helicopter mission. Only ability and flight technique enable a good helicopter pilot to safely take advantage of his machine within the full range of its flexibility and its operating standards."

These are not idle words. Heed them and try to understand their value, because in light of what has been said, it is possible to glimpse yet another aspect of flights in mountainous areas. It is normal for every pilot to want to take full advantage of his helicopter's flexibility. It is also human for a pilot who is accustomed to flying at sea level, to feel a sense of challenge upon reading the instructions regarding mountain flights in his Flight Manual.

Do you recall the story of David and Goliath? There was a challenge: David was a young lad, brave and pure of heart (like you and me, naturally), whereas Goliath was as tall as a skyscraper and wicked. What did Dvaid do? Did he throw himself at Goliath, flinging stones and shouting threats? Most certainly not! He took his time, calmly and carefully choosing five small polished stones from a nearby brook before facing Goliath. David knew that technical preparation was just as important as purity of heart. Advancing the clock of time a few centuries, let us return to our helicopter pilot, who challenged the mountain but was unable to conquer it.

The reason for this failure was simply the pilot's lack of preparation and his sketchy knowledge of the helicopter's

Heavy Landing.

operating capability at high altitudes.

On a sultry July afternoon, not long ago, an Air Force radio station located near the sea received a request for immediate assistance from a helicopter on a search mission. The request was calmly forwarded to various more or less important officials but when it finally reached the pilot of the rescue craft it had assumed an air of extreme urgency. The particular helicopter had already been cleared for take-off and it was in flight only sixteen minutes after the order had been received. On board with the pilot were four other persons.

The pilot had a total of 2,000 flying hours, of which 150 were in a helicopter and this was his first mission in a mountainous area as pilot-in-command. He had previously participated in a mission at 3,000 feet above sea level in the capacity of co-pilot.

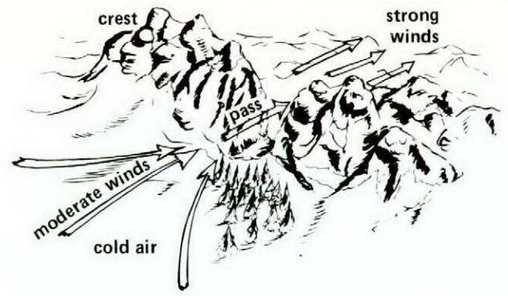
The task was to locate certain supplies which had fallen into an inaccessible area. The pilot spotted the material and requested further instructions from his base superiors. He was asked to land, if possible, and send two men to recover the cargo. The closest accessible landing site seemed to be a clearing near an Alpine Shelter at 6,000 feet altitude. The pilot radioed headquarters that he was initiating landing procedures. Here is an excellent opportunity to review a helicopter pilot's so called ten commandments for flights in high mountain areas and landings on irregular surfaces:

- maintain constant awareness of the direction and estimated speed of the wind;
- take into account the temperature, keeping in mind the fact that it may increase as you approach ground level;
- plan the approach in such a way that you retain the option of discontinuing it at your convenience. The approach should be along a slope and preferably into the wind, so as not to gain altitude;
- if there is little wind, choose, again if possible, a summit or an elevation as your landing site in order to be able to anticipate and counteract every possible wind activity;
- to obtain a clear idea of the landing site, if you are not familiar with it and providing you are not on a war mission, it is wise to execute a minimum of two passes over the area;
- verify any obstacles near the landing site, possible shadow areas (usually below the heights, where the effect of the wind is minimal) and the direction in which it may be possible to take-off again;
- the landing site should not be chosen solely as a function of the convenience of unloading cargo but by considering many other factors as well;
- check your power rating to determine how much will be necessary to maintain hover out of ground effect;
- when possible, the approach to a mountainous summit should be made along the summit and not from a perpendicular;
- on the final approach use a soft touch on the controls as over controlling can lead to a loss of rotor RPM.

Let us now see what finally happened near that Alpine Shelter. The pilot made two ample passes over the chosen area, verifying the wind speed and the nature of the terrain. He then opted for a flat approach pattern toward a point where he could have hovered with sufficient power. The velocity decreased to 30 knots, 50-100 feet above ground just before the landing site.

As soon as the helicopter transitioned almost the hover,

1. Lull area on the leeward side of the crest.
2. Occurs in heavy wind conditions or in the case where the slopes are very steep. There will be turbulence in the clear air on the leeward side.
3. Rising currents and turbulence, directly proportional to wind velocity.



the pilot increased power and the machine began to settle with the Rotor RMP beginning to decay. The pilot informed his passengers of the imminent landing and raised the collective pitch to its maximum.

The helicopter touched down rather violently almost 200 feet before the chosen site and came to rest at a 15 degree incline. The Alpine Shelter proved to be abandoned.

At first glance it may seem that the pilot did not commit any glaring blunder. Something, however, was not executed as it should have been. This becomes apparent if the technique adopted by our pilot is compared to the ten commandments for mountainous landings. Circling above the area, the pilot estimated calm wind conditions but did not take the temperature into consideration, noting merely that it was rather warm. Subsequent calculations revealed that the density altitude was in fact 8,000 feet. Nor did the pilot check the power. Had he done so he would have realized that the conditions during the approach pattern dictated a power rating which was very close to the maximum available. The approach flight path was too flat to permit a resumption if any unexpected difficulties arose. These are all small but important, details. They are details which, if disregarded turn an executable landing with an adequate safety margin into a maneuver which taxes the capability of the machine to its fullest. All of this is consonant with Flight Manual instructions.

The pilot involved in the accident confirms my statements in his own description of the incident. He says, "After the accident two helicopters arrived in the area. A southerly 10 knot wind had come up and one of the helicopters flew over the area various times and then executed an approach pattern from the north. I set off a smoke charge to give the pilot further indications of the wind intensity. The helicopter came to a hover above us and lowered a recovery harness. My passengers expressed anxiety about being pulled up by a helicopter similar to mine. To set an example I consigned the flare to the care of one of the men and hurried to slip into the harness. Just as I entered the cabin the craft began to fall through gently and then crashed rather heavily. For my troubles I acquired a nasty lump on the head courtesy of the cabin roof. I then told the pilot to pick us up during the evening, when the temperature would be lower. I disembarked and the pilot took off again. Shortly thereafter another helicopter arrived and also attempted to land. We all signalled him to go away. Later the first helicopter returned, carrying a lighter load, and took up, first one man and then, in successive trips, the other two by two. In my opinion the accident could have been avoided had I refused to land. Once the material had been spotted and localized, the urgency of the operation was reduced. Unfortunately this was not communicated to me by headquarters. I thought I had carried out all the necessary operations, without knowing that I was in effect operating at the limits of the helicopters' operating capacities. Had I effected a simulated approach at a higher altitude I would have realized how much power I really lacked for an eventual approach and landing."

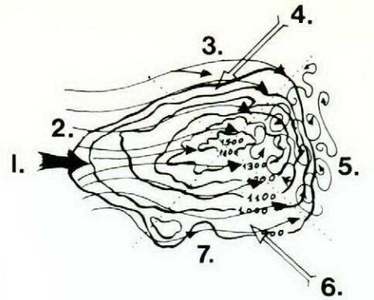
As a helicopter pilot you can learn something from this accident, especially if you have never contributed to a Flight Manual's chapter on missions in mountainous areas.

First, if you look closely through the Manual you will find a note informing you that the figures quoted in the Appendix regarding helicopter performance are neither indicative nor 100% reliable. Furthermore, of the many variables which limit the stated performance standards, the only one the pilot can directly influence is weight.

The weight of the aircraft must be such as to leave a healthy margin of error. If your cargo only allows a modest safety margin during a landing procedure as a seasoned mountain pilot you should split the cargo in half and make two trips. Then, decide if it is absolutely necessary to include a flight engineer or some other passenger on your mission. Even question the usefulness of a tool box, especially if it is heavy and cumbersome. Mountain flights are for trained and experienced personnel only. Remember that you aren't doing anyone a favour by taking him along on the flight, to later subject him to a landing which takes place rather violently and earlier that expected.

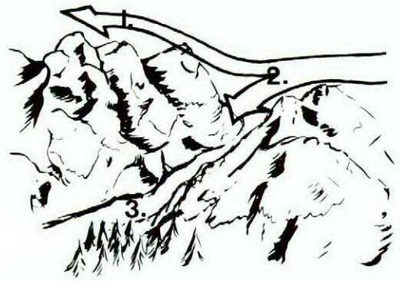
Many charts for flights at high altitudes deal with wind conditions. Constantly verify the direction and intensity of the wind. Obviously, this is not advice applicable exclusively to this type of flight, but is valid for flights at sea level as well. The only difference is that the problem becomes more pronounced for flights at mountain altitudes because the wind often changes direction without warning. Generally however, even the wind obeys certain physical laws.

If, in a valley, the wind is not blowing parallel to the valley itself, nor quite from a perpendicular, then at ground level the wind will follow the valley. Winds of weak intensities generally become very strong when forced through mountain passes. There are other anomalies if the wind is blowing in a gorge or along a hill-top. Local winds also have their own peculiarities. During the day, the air covering mountain heights is warmer than air at the same altitude, but over valleys. When this air moves upward it creates a rising current over the heights. At night, the opposite holds true and cold air descends from the heights into the valleys. Then, during the day, the air in the valleys gradually warms up, rises and is replaced by air from the plains. During the night, the reverse process occurs once more and the air stream moves from the valleys into the plains. This wind activity, created by variations in temperature, gradually subsides as you climb, to disappear altogether at the top of the mountain ranges which circumscribe the valleys.



1. Wind
2. Strong rising currents
3. & 7. Rising currents of medium intensity
4. & 6. Good approach angle
5. Leeward turbulence

The approach to the summit should be made from the side if there is leeward turbulence.



1. Rising wind
2. Valley wind
3. Valley

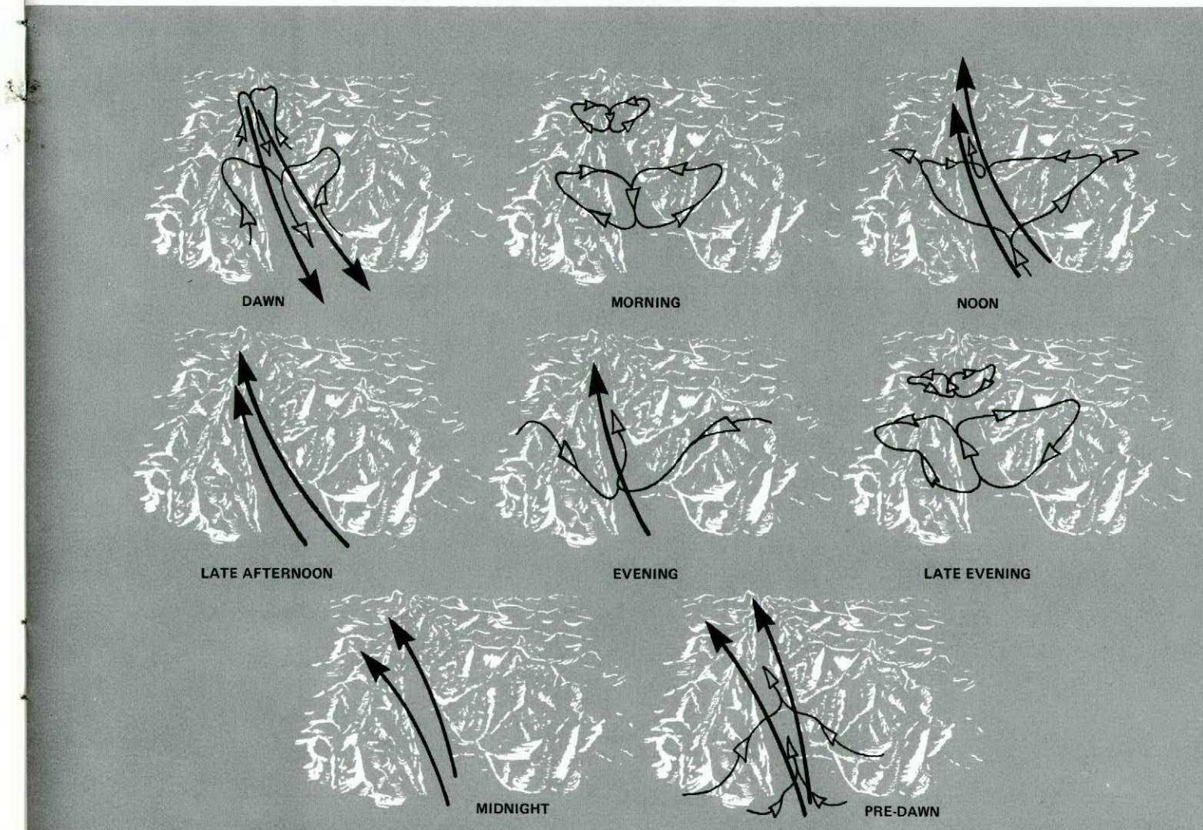
Another exceptional case occurs when only one side of a valley is heated by the sun, while the other remains in the shadows. Movement of air will occur in a rotative manner: warm air will rise from the exposed side while cold air descends on the unexposed wall.

Unfortunately however, the above mentioned patterns do not always hold true, and one must always be prepared to deal with the seemingly illogical. A helicopter pilot attempted a landing on uneven ground inside a gully, and as he was closing in on the chosen site the aircraft touched down unexpectedly. Later it was possible to determine that, as the helicopter was descending into the gully under light wind conditions, there was a rapid increase in temperature. The resulting temperature around the helicopter was as much as seven or eight degrees higher than outside its immediate proximity.

Then there is the story of the helicopter pilot that tried to land near a flaming wreckage, after having made a previous attempt. The landing failed because of one small detail. The heat given off by the fire had precipitated an increase in the temperature of the surrounding air to a point beyond the operating capacity of the machine.

Therefore, if we take mountains, hills, helicopters, wind, temperature and charts, mix them all up, what results cannot fall under the definition of "normal".

Courtesy of Aeronautica Militare Italiana "Sicurezza del Volo"



Commendable Teamwork

MCPL N.F. DOWSLEY;
MCPL R.E. MOREASH
CPL C.B. BIRCH;
CPL C.I. DASILVA;
MR. H.A. LUMLEY

While de-fuelling a Boeing CC137 aircraft a small explosion was heard from the area of the external power unit. MCpl Moreash went immediately to the unit and turned the electrical power switch off, at which time a louder explosion occurred from within. MCpl Dowsley, Cpl Birch and Cpl Dasilva converged on the power unit and pushed it away from the aircraft by hand. During this time, flames were shooting from the generator compartment and MCpl Moreash used a CO2 extinguisher from the power unit to keep the fire under control, finally extinguishing it with a dry chemical unit from the fuel truck.

Concurrently, MCpl Dowsley ran back to the aircraft and assisted Mr. Lumley in disconnecting the fuel hoses from the aircraft and removing the drain hoses from on top of the fuel tender. The fuel truck was then driven a safe distance from the aircraft. Cpl Dasilva, in the meanwhile, had hailed a passing MSE vehicle and proceeded to 10 hangar to notify the fire department.

The power unit contains a 60 KVA engine driven generator fuelled by JP4 turbo-fuel from a 60 gallon tank located adjacent to the malfunctioning generator. With complete disregard for their own personal safety, the quick, professional action of this crew in moving the burning power unit to a safe distance while containing the fire prevented the loss of a valuable transport aircraft. Their dedication to duty merits service-wide recognition.

MCpl R.E. Moreash Cpl C.I. Dasilva MCpl N.F. Dowsley Cpl C.B. Birch

CIA in Canada

by Maj Carl Crymble, DCIEM

Letters seem to be taking over from other parts of our language, such as words, and sentences, in our daily efforts at communication. Military organizations are particularly guilty of this. Civilians attending military briefings have in common, a glazed look, as initial letters meaning organizations, orders, and instructions roll over them.

We have NATO, SHAPE, AFCENT and ICAG and hospitals called CFEMC, AIR COM, MAG and 10 TAG and tongue twisters like CCUNEFME. Why its almost poetic! Civilian organizations have also picked up the alphabet bug, such as ICAO, UNESCO and FBI. It's strange the way initial letters can develop for places. Everyone has heard of LA for Los Angeles, occasionally TO for Toronto but Las Vegas is called "Vegas" not LV. Letters have the capacity to absorb something from the organization they represent, SS for example leaves one with a creepy sensation. How about KGB. However if you feel the same way about the letter RCMP or OPP then you probably drive too fast.

Actually letters or abbreviations do have a place in our language. They can capsulize a phrase or sentence into one small word, and because the word is more easily remembered than the phrase, it has more impact. FOD is such a word. Foreign Object Damage is a mouthful. FOD has a ring to it, and it will stick in your mind. It's a word that maintenance supervisors can use in place of four letter words. FOD has the advantage as a word in that you don't have to spell out exactly what FOD is. If an aircraft engine is damaged, by ingested FOD the supervisor's screams of anguish to clean up the (alliterative) FOD on the flight line should have everyone down on hands and knees cleaning dust out of the cracks in the tarmac, and redirecting stray ants into the grass. FOD is expensive, in 1975 for example in the CAF at least 55 engines were removed, because of FOD damage, resulting in repair and overhaul costs, to compressors alone, of more than one million dollars. This figure does not take into consideration the effect on operational capability and the significant increase in maintenance man hours involved. FOD is expensive, but how about CIA? Did you know that the CIA causes untold millions of dollars of damage to aircraft each year and that the Canadian Forces loses many aircraft to the CIA each year! No it's not some nefarious plot by the Central Intelligence Agency to weaken Canada's military might, and take over our country. It's my attempt to coin a catchy Lettergram for something which causes accidents, but which has had little publicity, I mean CHANGE, and CIA stands for CHANGE INDUCED ACCIDENTS. You don't know what I mean? Well look at a couple of simple examples and you will start getting the message. The technician working alone at an oxygen replenishment operation because the other guy on this two man operation was sick or absent for some reason, forgot to disconnect the hose from the aircraft before driving off. Absent minded perhaps, but his work pattern had CHANGED and he was falling behind in his work!

How about the pilot, who, while doing a walk around before departing on a RON flight wondered where he would put his travel kit. It had been raining, the ground was wet and he didn't want to lay his kit on the ground. Say, he thought, that looks like a nice dry little place,–the engine intake. Half way through start up of the engine he remembered the KIT– and shutdown, fortunately with no damage to the engine. He fully intended to retrieve his kit before engine start up but CHANGE affected him, it had been raining, he was leaving on a RON. His walk around procedure was upset. CHANGE in a simple procedure nearly produced an expensive CIA due to FOD.

Those two examples are the result of CHANGE in procedures. How about CHANGE in life style or change in home life. For example a senior pilot on a squadron with lots of time on the aircraft did two wheels up landing in 6 weeks. What had happened to make a well respected check pilot with bags of flying time, and experience in the aircraft, do two similar accidents in a short period after an umblemished flying career? Lots had happened. His wife was pregnant, the kids were sick and prior to the second wheels up landing the baby died in utero. He blamed his first accident in upsetting his wife and causing the baby's death. He professed however, that this wouldn't affect his flying ability. NOT MUCH IT WOULDN'T! On the day of the second wheels up landing his wife was visiting the doctor prior to admittance to hospital for a caesarian operation. Change in family situation can certainly induce flying accidents. I could continue quoting accidents ad nauseam, but the fact is that a lot of accidents attributed to personnel inattention, or carelessness is really the CIA at work (Change Induced Accidents). Just think of accidents you know and look for the CHANGE which preceded the accident; it's nearly always there.

Because humans are such a complex organism, pinning down the myriad ways that they can fail has always been difficult. Some of the changes which may have occurred should indicate to supervisors and individuals that their potential for having an accident has gone up a few points.

Just looking at page 43 of the DFS Annual Accident Analysis (1975). It shows three such accidents which could have been predicted because of change in weather.

–A heavy snow storm dumped 12-15 inches of wet snow on the horizontal tail plane of an Argus causing it to tip up onto its tail.

–A strong wind blew the door of a mule against a CF 104.

–A strong gust of wind forced the tail of a Twin Huey down while under tow.

The first thoughts of a maintenance supervisor when he starts his shift should be what changes have occurred which may induce an accident. This could run the gamut from Cpl Blokes' wife having a baby, a visiting aircraft in the hangar, imminent holidays, or change in the weather. With this approach he just might imagine what could go wrong and take preventive measure to conteract it.

Flight Surgeons and Squadron Commanders should be tuned into CHANGE also. Perhaps life changes are most important here, for any concentration of a pilot's attention away from his job of flying safely means an increased accident potential. But Flight Surgeons and Flight Commanders should also start each day with an analysis of the day for CHANGE in weather, task, equipment, season, etc., etc.

Individuals too can save themselves a lot of grief if they look at change as an indicator for increased accident potential. For example, look at the changes which preceded this accident:

CHANGE 1. The servicing technician took a ladder of different pattern than normal to climb on while deicing an aircraft's wings.
CHANGE 2. The tarmac was covered by compacted snow and ice, he didn't know how the ladder feet locks worked.
ACCIDENT. The ladder slipped and he fell heavily.

Don't let CIA (Change Induced Accidents) spoil your day, use the RCMP method. (Recognized Change Makes accidents Predictable).

You and Your Blood Pressure

by Capt J. E. Bardsley, M.D., Ph.D.
Flight Surgeon
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Introduction

Blood pressure – what is it? It is simply the pressure of the blood within the arteries, and is usually expressed as a double number, for example, 120/70. The first of these two numbers reflects the intra-arterial pressure in millimeters of mercury (mm Hg) when the heart contracts – the systolic component (120 in the example); the second represents the pressure when the heart is between beats (temporarily at rest) – the diastolic component (70). Blood pressure is usually conveniently measured on the upper arm with a pressure cuff, or sphygmomanometer, and a stethoscope. Using these two instruments the taker raises the pressure in the cuff to occlude the blood supply to the arm, gradually deflates the cuff while listening with the stethoscope over the brachial artery and determines when the sound of the blood in the occluded artery appears – systolic pressure – and when it disappears – diastolic pressure (always the lowest value). There are several more esoteric means of, and innumerable sites for measurement, but for ease and convenience this is the preferred technique.

Characteristics

Now that you have an idea of what blood pressure is, let's discuss some of its interesting characteristics, stressing high blood pressure, or hypertension. Blood pressure varies throughout the day (i.e. it displays a circadian rhythm) with the lowest values usually occurring during sleep, and peak values in the hours just after arising. It also varies with certain stimuli, for example eating, smoking, full bladder, temperature, exertion and pain. These variations can be exaggerated in people with high blood pressure. However, stressful stimuli have the most dramatic effect – a visit to the doctor's office can raise blood pressure by as much as two mm Hg in the average patient, to fifteen in the person with high blood pressure (i.e. the hypertensive). Blood pressure also tends to increase with age, and with certain medications, for example one to five per cent of women on the birth control pill become hypertensive.

With specific reference to high blood pressure, several additional interesting points can be made. Only about ten per cent of hypertension has a detectable physical cause (e.g. kidney disease), the other 90 per cent, called essential hypertension, has no readily identifiable cause. The essential type of hypertension seems to be inherited polygenically – that is, more than one gene determines the tendency – with the appearance being largely determined by environmental factors. In other words, one inherits it in much the same way one inherits personality. Certain such environmental factors implicated in the genesis of high blood pressure, are: excessive salt intake, pregnancy, certain medications and stressful lifestyles. Moreover, although commonly construed as an adult's disease, very few new cases of hypertension arise after 30 years of age, which really says that this is very much a young person's disease, and indicates that younger people, even children, should be screened for this disorder, especially those with a strong family history. Bearing these characteristics in mind, let's have a look at blood pressure from a health point of view.

Hypertension and Health

Why do we want to know what your blood pressure is? And why do we make such a fess when it's high? Well, high blood pressure, or hypertension, can, and does, kill. It kills by causing disease in blood vessels, the patient subsequently dying mainly of stroke (cerebrovascular accident), kidney failure, heart failure, heart attack (myocardial infarction) or a ruptured blood vessel. And the process is usually silent.

But, what constitutes hypertension? Put simply, hypertension is an elevation in blood pressure, the lower limit arbitrarily selected as 165/95. However, things in biology are rarely as simple as they seem, and blood pressure, especially what is healthful and what is unhealthful, is no exception. For example, actuarial data compiled by insurance companies have shown that people with blood pressures greater than 140/90 are at greater risk of specific illnesses than those with lower pressures. In other words, just because one has a blood pressure which is not hypertensive by arbitrary definition, does not mean that one is not at real risk. Let me illustrate what I mean.

Let us look at Table I for a moment. This Table tells us that the chances of dying at a younger age increases as blood pressure rises. This effect decreases with age, which really says that the younger one is, the more serious this problem is, in part because it has a longer period over which to have its inimical effects. So, the longer one has high blood pressure, the worse for one's health – and life expectancy. Also, high blood pressure is more deleterious in males, although women are very much affected. As an example, if one is male, aged 35 years with only a moderately elevated blood pressure of 150/100, on the average he will lose 16½ years of his life. And this situation is aggravated if he happens to be black, because hypertension is more common in this racial group. Shocking, isn't it. And terrifying! But what is even worse is that half of the people so afflicted do not know they have the disorder. Studies have shown that between 10 and 20 per cent of the North American population are hypertensive (i.e. BP<160/95) – at least two million Canadians! – of which only 50 per cent know it. Furthermore, of this 50 per cent, only one-quarter to one-half are receiving adequate treatment. And if the level of 140/90 is used, there are at least 3.6 million Canadians who are at risk of illness and early mortality resulting from high blood pressure. When one considers that proper therapy can control hypertension in 80 to 90 per cent of patients, one realizes the needless and reversible toll taken by this disease.

What Can Be Done

Well, now that I have scared you half to death, let's look at what we can do about hypertension. Firstly, have your blood pressure taken – it takes very little time and is easy and painless to have done. If your blood pressure reading is high, then consult a medical officer. However, there are several things that you can do for yourself that may both *prevent* and rectify high blood pressure.

TABLE I
BLOOD PRESSURE LIFE EXPECTANCY TABLE

	Male	Females
At Age 35		
Blood Pressure		
Normal	– 41½ years to live	
130/90	– 37½ years to live	
140/95	– 32½ years to live	
150/100	– 25 years to live	
At Age 45		
Blood Pressure		
Normal	– 32 years to live	37 years to live
130/90	– 29 years to live	35½ years to live
140/95	– 26 years to live	32 years to live
150/100	– 20½ years to live	28½ years to live
At Age 55		
Blood Pressure		
Normal	– 23½ years to live	27½ years to live
130/90	– 22½ years to live	27 years to live
140/95	– 19½ years to live	24½ years to live
150/100	– 17½ years to live	23½ years to live

Taken from actuarial data collected by 26 insurance companies in the United States covering nearly 4,000,000 insured people.

a. reduce your salt intake – do not add salt to your food, before or after cooking (or use a salt substitute) and avoid highly salted foods, such as pickles, snack foods, 'junk' foods, etc;

b. reduce your weight – consult a dietician for a well-balanced, nutritious diet low in refined carbohydrates, salt and fats;

c. get regular (and appropriate for your age and health) exercise;

d. reduce your alcohol consumption;

e. reduce the stresses in your life, and modify your lifestyle to cope with the remaining ones more effectively;

f. reduce your cigarette consumption; and

g. if you happen to be on birth control medication, have your blood pressure checked at least twice a year.

These simple steps can reduce a significant number of high blood pressures to the low risk levels, (and, if adhered to before the fact, will probably prevent the development of hypertension in a significant number of cases). If serious attention to these lifestyle changes does not bring down the blood pressure to desired "safe" levels (i.e. as low as possible within reason), all is certainly not lost. The mainstay of therapy now becomes a medicinal supplement to the above. The primary medication of choice are the diuretics, substances that induce the kidney to excrete salt and water, and, with other effects, results in a lowering of blood pressure. The regimen of therapy indicated up until now boasts a high degree of success, has very few deleterious side effects (in fact, many advantageous ones), and, what is extremely important from a flying point of view, enables continued cockpit occupation. The diuretics used are one group of a very few, which are approved by most agencies, including our military, for flying. In the small percentage of cases where the above therapies do not work, more esoteric medications are added, a discussion of which is beyond the scope of this essay. However, the goal of therapy remains the same – to attain the lowest blood pressure possible and thereby proportionately reduce the risk.

Let's close on a positive note. Although high blood pressure is a serious illness, it can be detected easily and, in the majority of cases, treated easily and effectively. And, if treated effectively, the health risk of the treated hypertensive is no different from that of the person with "normal" blood pressure. And remember, hypertension is like so many diseases – it belongs to individuals who themselves can go a long way in preventing its deleterious effects, if not its very presence.

Frustration-a potent adversary

Reading large numbers of accident/incident reports leads inevitably to the conclusion that where "personnel" are a factor, a root cause is the very human failing of frustration.

Frustration can stem from two areas:

(1) Not being capable of carrying out an assigned task

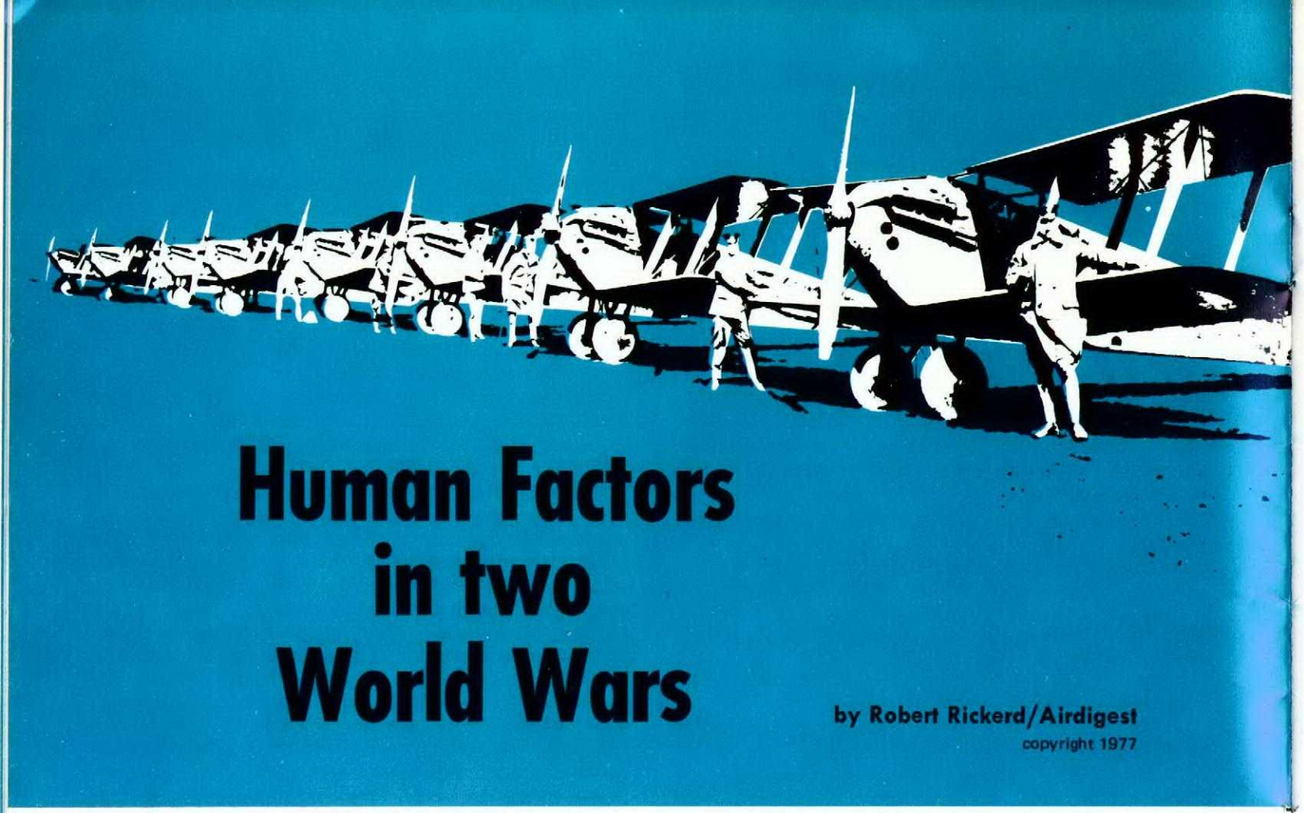
(2) Not being assigned a task which one is capable of carrying out.

The difference, while not particularly subtle, is often missed by leaders.

Personnel must *only* be assigned tasks which they are qualified to handle, but, and this is *most* important, when they are qualified, they must be assigned the task and allowed to carry it out without undue or unnecessary interference.

Give a man a job of which he can be proud, and he will do a job of which both you and he can be proud.

Fail to, and he will fail too.



Human Factors in two World Wars

by Robert Rickerd/Airdigest

Aviation buffs who cut their teeth on First World War history such as George Drew's "Canada's Fighting Airmen" will no doubt remember the shock at reading of the deaths of nearly half the "aces" mentioned due to "natural" causes shortly after hostilities ended.

It seemed incredible that men like Barker, McLeod, Quigley, Carter and McKeever who had faced death hundreds of times over the Western Front and won, should be struck down in their prime during peacetime, but it served to remind us that these heroes who had elevated themselves to the pantheon of flyers, were after all, flesh and blood human beings, subject to all the vagaries of fate that we were.

They had done their duty after all, and the outcome of the struggle to which they had contributed so much had already been decided when they died.

Others on both sides of the lines who had been lost while the fighting was still in progress, especially those who were killed through misadventures often having little to do with enemy action, undoubtedly did have an effect on the conduct of the air war. Their experience was impossible to replace, their leadership lost forever, and the effect on morale was often serious.

The Second World War was no different. The Allies lost several good men to accidents during that conflict, but it was the Luftwaffe, which could ill-afford the loss that had the greater number of its best fighter pilots killed in preventable incidents. The fledgling Luftwaffe fighter arm as part of the Condor Legion in Spain shot down 277 Republican planes at a cost of only 96 of their own. But of this 96, 56 were lost due to accident!

Much later in World War II the ratio improved through better organization and training, but accidents still represented a high percentage of attrition rates. It is true that the Messerschmitt 109's spindly undercarriage and the quality of battlefield servicing were built-in liabilities but regardless of other circumstances there were few accidents which did not contain the "human factor" component.

And as has been observed before, accidents do not limit themselves to the inexperienced: a survey of the Fighting Arms Knights Cross holders shows that even at this very high level of competence, many irreplaceable pilots were lost in this way.

Leutnant Heinz Grimm with a total of 27 victories and Hauptmann Rudolph Sigmund with 28 victories were only two of the many victims of the confusion during night raids on Germany in October 1943. They were shot down and killed by their own anti-aircraft fire – a not uncommon occurrence on either side.

There was less excuse for the death of Hauptmann "Bomber Willi" Hachfeld who had completed a total of 650 missions when he collided fatally with a landing aircraft during take-off in North Africa. Similar accidents took the lives of Oberleutnant Hermann Lücke, 81 victories, and Leutnant Johann Meier with 77 victories.

Many German aircraft were rammed by tough Russian pilots on the Eastern front, but Leutnant Anton Dobele with 94 victories never expected to be rammed and killed by one of his own comrades. Leutnant Eduard Meyer suffered the same fate after 22 victories as did Leutnant Otto Würfel after 79. Würfel survived the collision but died in Poland after another collision.

Perhaps the worst fate of all was suffered by Hauptmann Heinz Schmidt who had scored 173 victories in 700 missions, when he was shot down by a supposed ally, a Hungarian fighter pilot, and Oberleutnant Wilhelm Hofmann with 44 victories in 260 missions who fell to a German fighter. Leutnant Hermann Newhoff with 40 victories in 452 missions was a bit luckier when he was shot down by another German aircraft over Malta and taken prisoner.

There were, of course, accidents which may have been attributed to equipment break down. Major Jürgen Harder with 64 victories and Oberfeldwebel Helmut Missner with 82 victories were both killed under circumstances which seemed to point to oxygen supply failure.

But many pilots lost their lives in situations which suggested errors in judgement. Leutnant Johann Bunzek with 75 victories and Hans Heyer with 53 victories both collided with Russian fighters with fatal results. Oberleutnant Anton Hafner with 204 victories in 795 missions flew into a tree in combat, as did Major Franz Beyer with 81 victories. Leutnant Herbert Friebel, 58 victories, and Major Egmont Prinz zur Lippe-Weissenfeld, 51 victories, flew into the ground while Major Johann Schmid with 41 victories touched the water while circling a Spitfire he had shot down.

There were also a number of fine pilots who lost their lives in collisions with their wingmen; Leutnant Heinz Werniche, 117 victories; Major Josef Wurmheller, 102 victories; Major Horst Hasse, 56 victories, and Oberleutnant Kurt Lasse, 39 victories.

Weather, strangely enough did not apparently figure in the loss of large numbers of this group of Luftwaffe pilots – Oberleutnant Hans Waldmann with 134 victories collided with another Me262 jet in dense fog, and Oberleutnant Willy Keintsch with 52 victories struck the ground under low cloud, but weather was a factor in the loss of one of Germany's greatest pilots and leaders – Werner Mölders.

ME 109 captured in North Africa.

It was not Mölders 115 victories, (14 in Spain, 68 on the Western Front and 33 in Russia) which made him so important to the Luftwaffe but his educational and organizational talents which led to his appointment as the first General of the Fighters and took him out of active service. He died while hastening to the funeral of Ernst Udet the First World War ace who, strangely enough (and unknown to Mölders) had committed suicide when he realized he could not cope with his responsibilities as Director of the Office of Air Armament.

One other fighter ace was sorely missed by Germany when he died needlessly, but in this case the Propaganda Ministry also suffered. Hauptmann Joachim Marseille had been built into a fascinating personality – "the unequalled virtuoso of the fighter pilots" and "the star of Africa" before he died. In the West he had shot down seven Spitfires and was himself shot down four times in the process. But in North Africa he suddenly began having huge success – shooting down six Allied planes in eleven minutes, then six in seven minutes, then 17 in one day until his score stood at 158! On returning from an mission over the British lines his aircraft developed engine trouble, and not wishing to be captured, he stayed with his smoking BF 109 for nine minutes. Marseille became disoriented, struck the tail unit when he bailed out, and fell to the ground – his parachute unopened.

These figher pilots (with a total of over 2,000 claimed victories) as holders of the Knight's Cross of the Iron Cross, were considered the cream of the Luftwaffe and the pride of Germany. There were probably hundreds of non-fatal accidents to Luftwaffe personnel which resulted in injury and untold destruction of equipment but the loss of such men must have been crippling.

Unlike equipment, they would have taken years to replace and one thing Germany did not have was time!

When the Royal Air Force's first stragegic bombers were dripping their one-ton bomb loads on German military targets in 1918, Walther Wever was still an Army officer on the staff of General Ludendorff.

At 18 he had left his middle class home in Posen to become an officer candidate and by the end of the war had advanced to Captain. Wever did not suffer the fate of his General, Ludendorff, who was forced to resign before the Armistice, but continued in German Army Service, rising to Colonel in charge of the training branch by 1932.

He was a born organizer and leader and as such was a prime candidate for inclusion in Hitler's grandiose plans for a resurgence of German militarism, so it was not surprising when he was recommended to become the Luftwaffe's first Chief of Air Staff.

To Hitler, as suggested in "Mein Kampf", Communists ranked with Jews on top of the list of Germany's enemies, and therefore it was not surprising that Wever, an ardent national socialist, gave thought to means of coping with Russia should a war eventually develop.

With such a large population, Wever knew the Bolsheviks would wage a virtually endless war of attrition which Germany could not win. So he reasoned the best way to defeat them would be to destroy their ability to supply military weapons and food to their army and air force.

The catch in this idea was that Russia, with such a huge land mass, could quite practically secrete her aircraft and tank factories as far east as the Ural Mountains, safely out of range

of Germany's medium bomber types then coming into service.

Accordingly Wever put his weight behind development of what he called the "Ural" long range strategic bomber to complement the tactical equipment being developed for the young Luftwaffe. Because he was conciliatory and willing to remain in the background where necessary, Wever, now a Lieutenant General, was able to keep on good terms with both the difficult Goering and his immediate superior, State Secretary Milch, thereby assuring sympathetic ears for his proposals. His Technical Office Chief Wimmer was also a good friend and shared his theories.

The two companies selected to construct "Ural" bomber prototypes were Dornier and Junkers. The Junkers company was well suited to such an ambitious effort, as they had produced a number of large transport aircraft including the huge G38 with 144-foot-span wings. However, their contender the JU89, with four engines and a span of 114 feet, which outperformed the parallel Dornier prototype by 15 miles per hour was, like the Dornier, hopelessly underpowered. This fact is insignificant when one realizes that Wever, with these two flying prototypes ready in 1936, was three years ahead of the competition which by now, in the wake of political developments, included Britain and France.

Britain's first modern four-engine long-range bomber prototype, the "Stirling" and Russia's Petlyakov PE-8 did not appear until 1939, France's Bloch 162 until 1940.

The German engine situation, which had necessitated the use of power-plants of less than 700 horsepower for the JU89 in 1935 was improving rapidly. The prototype JU88 light bomber which was manufactured by the same company, first flew in December 1936 with Daimler Benz engines rated at 1,000 horsepower each for take-off, and by September 1937 a later prototype of the same aircraft was flying with Junker's own "Jumo" engines also rated at 1,000 horsepower.

But something had happened in mid-1936 which perhaps, fortunately for the Allies in World War II, put an end to Germany's strategic bomber program.

Walther Wever, on his transfer from the Army to the Luftwaffe post, had decided at the age of 48 to gain a first hand knowledge of flying in the most obvious way. He had presented himself at a flying school in 1935 to begin training as a pilot and upon graduation had taken the responsibility of flying his own plane to various parts of Germany on Luftwaffe business, although his General's rank entitled him to have a taxi aircraft put at his disposal.

Wever chose as his mount the two-place Heinkel 70 "Blitz", a 220-mile-per-hour single engine type which had set numerous records and was considered a "hot" aircraft for its day.

On June 3, Wever flew with his engineer from Berlin to Dresden to give a lecture at the Air Academy after which he was to return immediately to Berlin to attend the funeral of a former Army comrade.

Whether Wever forgot to disengage the aileron locks prior to take-off, or whether he expected his engineer or ground crew to look after this part of the pre-flight check is not known. Perhaps, in haste, he was absorbed in completing the hundred-mile flight to Berlin before darkness fell. Whatever the circumstances, Wever took off with the locks still on and crashed to his death with his engineer.

Although Goering reportedly "broke down and wept like a child" when informed of Wever's death, he apparently did not have equal affection for his ideas. Less than a year later, the Ural bomber program which had languished in the shadow of Luftwaffe palns in the wake of its sponsors' death, was cancelled. Goering, after being told that two medium bombers could be produced by the industry for every JU89 or DO19, explained his decision by remarking "The Fuhrer does not ask me what kind of bombers I have, only how many!"

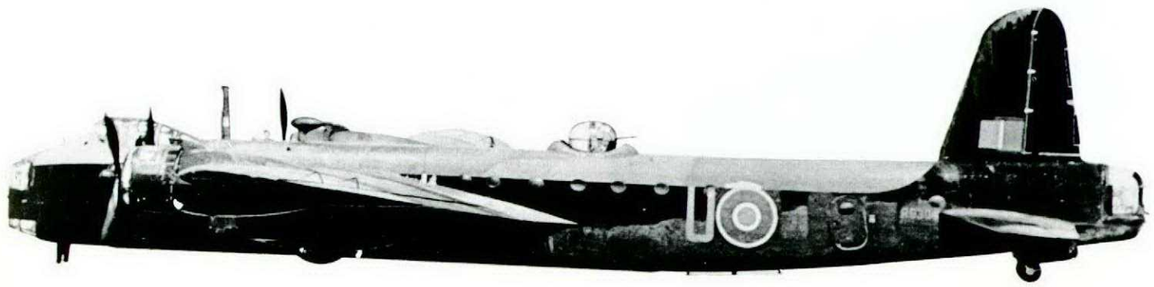
The real reasons for cancelling the program were perhaps more understandable. Changes in the Luftwaffe Command began immediately after the strategist Wever's death. Kesselring, an administrator, became the new Chief of Staff and Wimmer, Chief of the Technical Office and architect of the Luftwaffe's amazing technical advances to that time, was replaced by Ernst Udet another WWI ace like Goering who had neither the taste nor aptitude for the job.

This left only General Deichman, one of Wever's former deputies to defend the Ural Bomber program, and he had neither the persuasiveness nor the rank to sway Goering and Milch.

By mid-1938, it was decided that Germany did in fact require a heavy bomber which emerged in November 1939 as the Heinkel 177, but Udet had tacked a proviso on the specification that the aircraft must be able to bomb from a thirty-degree dive, and thus so hobbled the designers and the aircraft that the plane became the greatest fiasco of the war, killing many of its crews.

The only other four-engine aircraft to go into large-scale production for the Luftwaffe arsenal was the Focke-Wulf "Condor" which was developed from a 26-passenger air liner. It made a reputation for itself as a maritime raider, but due to its light structural commercial design it proved too fragile for front line employment.

A German bomber squadron was named after Walther Wever, but the man who could have changed the whole complexion of the war had he lived was all but forgotten, until the German factories were blown to bits by Allied strategic bombing and the German armies and air forces were crushed by tanks and planes produced far beyond the reach of the Luftwaffe.



Military Ranges are Dangerous-Really!

by Capt W. G. Walton
Directorate of Air Operations and Training, NDHQ

Lush meadows, rolling hills covered with evergreens, and rivers and streams spotted with beaver dams and excellent swimming holes! Sounds like an ad for a retirement property, doesn't it?

Well, things aren't always what they appear to be. This description also suits certain Department of National Defence properties used, or formerly used, for tactics and weapons training. Odds are that these properties contain unexploded shells and bombs that, if disturbed, may go off and kill you. The chances of such areas becoming someone's eternal resting place are much greater than of becoming a retirement home.

And therein lies the problem!

How can our civilian friends, living or holidaying in the area of DND establishments, be convinced that military ranges are really dangerous, particularly when their forefathers once hunted and fished these areas, or when they themselves didn't see anything dangerous on previous visits? How can they be convinced that the Department is not maliciously acting the part of Scrooge, but that its motives in denying public access to such areas are honorable and that it really and truly is concerned for their safety?

Actually, there is no simple answer acceptable to all. A dilemma exists. On one hand, pressure is increasing from community leaders and organized groups for the Department to either give up all or part of these range areas, or, as a minimum, to allow public access for economical and recreational purposes.

On the other hand, DND has a responsibility to protect the public from explosive hazards placed there by the Department. Besides being needed by the Department to train in support of its assigned role, it is significant to note that range closure by the military would not provide an automatic solution to this matter of public access, since the danger from unexploded devices, on and in the range property, would remain.

Just HOW dangerous are these military training areas?

First, permit me to display some cold, heartless, range-related incident statistics. Then, to emphasize that these statistics represent real people who have been killed or maimed, I will describe a specific but typical, incident. Finally, I will review what is being done to prevent or lessen the probability of recurrence of such incidents.

In 1971, a survey (not necessarily an exhaustive research) of range-related incidents in Canada for the period 1947-71 provided the following information. In that 24-year period 69 casualties occurred in 38 separate incidents. Eighteen adults were killed and another 20 injured. The score for children reads 14 killed and 17 injured.

Unfortunately, statistical data have little impact on today's fast-living, accident-prone world, and even less, it would seem, on those who choose to trespass and take their children (or mother-in-law) fishing or hiking, or some other such activity on military ranges, but here are just a few more examples of range-related incidents which have occurred in Ontario.

Date	Persons Involved	Killed or Injured	Cause
1947/48	3 Cadets	2 Killed 1 injured	Grenade: as a souvenir
1950	5 persons	injured	Smoke grenades
1951	2 boys	injured	Flares
1952	1 adult	killed	Illegally gathering scrap
1953	1 child	injured	Grenade
1958	1 child	injured	Grenade
1959	1 child	injured	Smoke bomb
1961	1 child	injured	Smoke grenade
1965	1 child	injured	Smoke grenade
1966	2 children	killed	3.5-inch rocket dismantled

In case those statistics didn't hit home, here is one actual incident worth remembering. In April, 1973, two boys (ages nine and seven) found an old shell on DND property near Vernon, B.C. The area was fenced and posted with warning signs. They took the shell home and attempted to "open" it with a hammer. It exploded, killing the two boys and injuring one other boy (age eight) and one girl (age four). A subsequent "sweep" of the range by military engineers recovered 64 individual pieces of live ordnance, plus approximately one ton of casings and fragments of ordnance.

Even the most meticulous sweep, no guarantee of safety can be provided as with the passage of time, munitions previously below the depth cleared, are shifted to the surface through frost action and soil erosion.

Just in case some doubt still remains as to the real danger which exists in these areas, here is an actual situation-report of a specific range: Tracadie Air Weapons Range near CFB Chatham, N.B. During and shortly after the Second World War this range was used by the Canadian Army for live ordnance training. Since the early 1950s, it has been used on and off for air weapons exercises. Because of a great deal of civilian pressure to gain public access to the area for commercial and recreational activity, such as: fishing, hunting, snowmobiling, hiking, and touring, a surface-sweep only of one small area was carried out in 1973 to establish a realistic and supportable range-hazard factor. Twenty-six unexploded shells or bombs containing high explosives were found. On another occasion, a canvass of local communities surrounding the Range turned up no less than 920 dangerous items that had been found and taken home by inhabitants as souvenirs, many being used as flower pots and laneway markers. They were, of course, collected and destroyed.

It's of little comfort, but we're not alone with this problem. In France, for example 591 bomb disposal (sic) experts have been killed and 850 persons injured since 1945 in a wide variety of range and former battlefield-related incidents.

The foregoing, if left to stand by itself, would make one wonder what, if anything, is being done to put an end to these unfortunate incidents. Well, without wishing to appear to be

too defensive, here is what the Department currently does to meet its obligation to protect members of the public from the hazards associated with training areas:

a. Ranges are declared as permanent danger areas through the media of newspapers, radio and/or T.V.
b. Range boundary identification "slash" lines are cut and maintained.
c. Range boundary fencing, barriers and/or gates are installed and maintained at all likely points of access, i.e., range roads, logging trails, etc.
d. Red warning flags are flown at critical observation points.
e. Danger and "no-trespass" signs are posted around the range boundary. Warning signs describing the range perimeter are placed in public gathering places, such as post offices.
f. Ammunition safety programs are conducted to provide the public with an awareness of the danger of unexploded ordnance, and also to publicize the correct reporting procedure in the event such an item is found.
g. Unexploded munitions are kept to an absolute minimum through a method of licencing which severely limits the number and size of training areas available for weapons practice. (Unfortunately, this preventive action has few benefits for those areas already containing explosives).
h. Clearance of misfired ammunition is carried out after all practice periods and careful records are currently kept of all known or suspected duds which occur.

The lessons to be learned from this article are simple, but important. I would summarize them as follows:

a. Military ranges are dangerous. Keep out!
b. Don't permit your children to enter ranges or training areas; in fact, don't even allow them to play in the near vicinity of such areas, (but make sure your children understand WHY!)
c. Military ranges are very definitely not recreational areas.
d. If you have permission to enter a military range, i.e., timber lease-holder, report your presence and intended destination to the range caretaker (or appropriate military forces personnel), use only established routes and do not wander from the area you are authorized to be in. Report your departure.
e. If you find something you think may be explosive, stay clear, don't touch it. Mark its location, then report it to the local police or an Armed Forces establishment.

YES! IT'S TRUE! Military ranges are DANGEROUS—REALLY!!

LIFE SUPPORT-DISCIPLINE

If any of you fighter jocks (fightergators accepted) can remember your escapades during the SEA conflict, I would like for you to think back a minute. How many of you can remember leaving your G-suit in your locker when you went to fly that leisure mission to route PAC Six? How many of you pilots neglected to brief your GIB on ejection signals and procedures to follow if you had to get out of your aircraft in a hurry? I really don't think that any of you were guilty of these, or any such prior planning infractions, during the conflict, but what about now, when no one is shooting at us?

In 1975 we had our best ejection success rate yet, but a review of last year's ejection episodes indicates that many aircrews were very fortunate to survive their emergencies so successfully, since many of them were extremely ill prepared for their flight into the blue. Let's briefly take a look at a few of the predicaments some of our crews found themselves in.

- Pilot and WSO ejected into 50° water . . . no anti-exposure suits.
- Pilot lost electrical power on night mission . . . no flashlight.
- Pilot and WSO ejected successfully, but neither crew's survival radio carried in vest would function . . . malfunction would have been discovered if radio preflight had been accomplished.
- Pilot forced to eject over water . . . no life preserver worn.
- Aircrews on three separate occasions delayed inflating their life preservers until they were in the water . . . a violation of all training and good common sense.
- Three aircrews received damage to their anti-G suits . . . cause was unauthorized items carried in pockets.
- Two pilots unnecessarily extended their rescue and recovery time . . . locator beacons left on, thus blocking voice transmissions with rescue forces.

While it is true the aircrews involved in the above mishaps survived their episodes, they were extremely fortunate that all other factors were favorable. Change any of the ejection scenario and the results could have been drastically different.

Why don't aircrews take more interest in their life support equipment and training? The answer can have many facets. Some feel that such training is like "practice bleeding." Others feel that because they had it before there is no need to go through it again. But, most feel that accidents happen only to the other guy. Last year, 79 of those "other guys" were forced to eject; seven of them didn't make it. When one of the surviving crews was asked to explain the reason for his mistakes, he put it this way: "The aircrew will not seek this training or wear equipment that is forced upon him, and commanders are very reluctant to make these items mandatory."

Life support equipment and associated training is not "forced" on anyone. It is provided for only one purpose—to equip the aircrew for whatever unfortunate situation with which he may find himself confronted. Sometimes it is necessary for certain training and equipment to be a mandatory requirement, but this is done only when our "lessons learned" have pointed out the need for this action.

Most of the aircrews in favor of life support training and equipment are those who have found themselves in unfortunate situations and have put these items to good use. Now, who better to take out lead from than the guys who have been there?

Let's each of us life support types, officers and enlisted alike, look hard at what it takes to protect our aircrews and do all in our power to ensure their safe recovery from unpredictable situations. As aircrews, let's stand back and look realistically at what is provided for us. Life support equipment and training are our "insurance" and should not be taken lightly. We all pay into some sort of insurance programs, be it life, automobile, homeowners, or whatever. All are designed to provide one thing to the beneficiary—protection. Life support training does equally the same, and you can't beat the coverage or the premiums. ★

Courtesy Aerospace Safety

Comments

None of us know as much as all of us — so pass the word.

WRITE

In previous editions we have published pleas for material for publication from field units, and in this issue we are going to have to repeat the request. This magazine exists for two basic purposes — to make available to field units information which originates from this and other headquarters, and to allow an interchange of information between field units.

If you as a pilot, mechanic, or administrator encounter a flight safety problem, it will probably eventually be encountered by someone else. Your solution, or at least your warning, may prevent loss of life or valuable equipment — but only if you spread the word around. That is what we produce the magazine for — but you're not using it as much as you could.

We want this magazine to present the thoughts of everyone in any way associated with air operations. It exists as much for the loadmasters and supply techs as for the pilots, and as much for the armourers and tow crews as for the navigators. We want to see this magazine in crew-rooms sure, but we also want to find it in the control tower, in transient servicing, and in the base transportation office. Too often five or six copies sit around unread in the aircrew briefing room while the groundcrew go without or have only months out of date editions to read.

If you have something to say about how the operation is being run or could be improved — please drop us a note. We want to hear from you — we'll even write your article for you — but first of all we want to talk about it.

Incidentally, this request does not stop at the military community. There are thousands of Canadians interested in the operation of aircraft (safely) and we are eager to hear from our civilian friends also. If we could, through our efforts, save just one life this year — or ever — it would be worth an awful lot of effort.

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PHOTOS

Flight Comment has a continuing requirement for interesting photographs related to aircraft operations. If you have any colour or black and white pictures that you would like to share with our readers — send them along. Even if your contribution doesn't make the front cover we still need lots of current photos for our articles. If you don't have any photos we're sure you have an interesting story or anecdote to tell. If you like — just send us an article and we'll supply the photos to go with it.

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Que fais-je ici?

En ma qualité d'officier de la sécurité des vols de la base, j'ai perdu pas mal de temps et de salive à essayer de convaincre certaines gens de donner à diverses sections l'aide aérienne et au sol que je juge nécessaire à la bonne marche de notre programme de sécurité des vols. La plupart du temps, je me suis heurté à un mur d'indifférence que je ne pouvais percer. Me voici donc à me demander dans cet éditorial si j'avais raison, ou tort, d'aller à contre-courant.

Ce préambule me rappelle (processus lent et laborieux quand je suis en forme) les propos qu'un général a tenu récemment à l'occasion de ses adieux. Il nous conseillait de ne jamais lâcher notre objectif, même au risque de perdre bien des batailles. Malgré ces défaites, nous pouvons encore gagner la guerre. Il a en outre ajouté qu'épancher son fiel à l'occasion d'un dîner d'adieu ne suffisait pas à faire justice; c'est au cours de sa carrière qu'il faut combattre les moulins à vent et non pas lorsque le moment de la retraite est arrivé. En avant! Autant renverser ces moulins pendant que je ne suis pas encore tout à fait au bout du rouleau. Mieux vaut tard que jamais!

Avec de moins en moins d'hommes, de dollars et de matériel, on demande encore aux Forces d'aujourd'hui de fonctionner comme si rien n'avait changé, ou ne changeait. Nous nous adaptons et nous allons de l'avant avec bien peu de remerciements, de collaboration et de reconnaissance de l'intérieur et, encore moins, de l'extérieur de l'organisation. Je crois que c'est une mission qu'il nous faut, que nous devons désespérément nous engager sur une voie qui nous mènera à un but précis et réalisable. Il me semble que nous travaillons pour des tableaux, des graphiques et des règlements qui, pour la plupart, n'ont que peu de contact avec la réalité. On se croirait au centre d'une discussion de mess, n'est-ce pas!

Le seul lien concret que j'ai avec la réalité est la sécurité des vols. Vivre, c'est important et c'est sûrement un objectif de choix! Comment alors puis-je prendre quoi que ce soit d'autre au sérieux lorsque, dans la recherche de mon objectif, je m'aperçois que la plupart des gens que je côtoie chaque jour se préoccupent plus de la paperasse que des gens auxquels ils doivent venir en aide! Voilà sans doute une opinion paternaliste de la part d'un "opérationnel", par opposition au "rond de cuir", mais j'y crois fermement. Nous passons plus de temps à nous quereller qu'à accomplir un travail productif, car il est toujours plus facile d'oublier quelque chose, de le mettre de côté, ou de l'envoyer ailleurs que de prendre le taureau par les cornes, de travailler de façon positive et de terminer le travail. Je suis convaincu que cette attitude, mis à part le manque évident de matériel et de personnel (difficultés qu'on ne peut résoudre à mon niveau de toute façon), est la source principale de frustration au sein des Forces. Il semble y avoir un manque de communication entre les divers services.

Combien de fois, en proie au plus total découragement, avez-vous laissé tomber un projet parce que personne ne voulait prendre une décision, ou pire, parce qu'on vous disait qu'on vous "rappellerait" (dans la semaine des quatre jeudis) dès qu'on aurait le temps? Prendre les diverses publications au pied de la lettre peut être une grave erreur et se transformer en désavantage. Il m'est impossible de convaincre les gens que j'ai une raison valable d'agir d'une certaine façon si je ne peux citer textuellement une ordonnance. Je ne connais pas tous les manuels qui ont été écrits et, parfois, je dois m'en remettre à la logique seule qui, je m'en rends compte avec fureur, va habituellement à l'encontre d'une OAFC ou d'une autre publication. Trop souvent de nos jours adopte-t-on une attitude qui est loin d'être positive. Le froncement de sourcils remplace le sourire. Je ne puis être un expert dans tous les domaines, je dois donc placer ma confiance en d'autres personnes. Le cynisme s'est implanté et il devient donc très difficile de se fier à quelqu'un car, d'une manière générale, on abuse de la confiance des gens.

Il semble exister ce qu'on appelle dans le jargon moderne un "écart de crédibilité", Nous le reconnaissons, mais pourquoi s'y résigner? Le monde est aujourd'hui ainsi fait que c'est toujours "nous" contre "eux" et "ils" ont toujours tort. Pourquoi cela? Je crois que c'est parce que nous n'avons plus d'objectif commun. Dans le monde de la sécurité des vols par exemple, la plupart des navigants croient que nous ne produisons que des masses de statistiques et de graphiques. Nous devons d'une certaine façon être porté sur la religion car nous parlons toujours en termes de catastrophe, et nos prédictions se réalisent toujours. Eh bien non! Ce n'est cependant que tout récemment que les navigants ont senti un élément positif dans le mécanisme de sensibilisation de la sécurité de vols. L'époque où l'on se servait de ce mécanisme pour punir les gens est maintenant, je l'espère, révolue. Ne vous réjouissez pas trop, elle a la vie dure. Peut-être qu'un jour prochain nous serrerons-nous les coudes, quel que soit notre travail, et tendrons-nous vers un objectif commun: la sécurité. Au sein du Groupe Défense aérienne, cela signifie tout sacrifier à ces quelques emplacements radar et à cette poignée de CF101, car sans eux, peu importe le genre de papier que nous remuons, nous nous retrouverons chômeurs. Chacun de nous doit adopter une attitude positive et faire preuve d'un esprit de collaboration dans la poursuite d'un objectif commun. La sécurité est un art qui ne doit jamais aller à l'encontre des règlements.

P.A. Growen
Officier de la sécurité des vols de la base de North Bay.

What am I doing here?

As a Base Flight Safety Officer, I have squandered a great deal of time arguing and pleading with people trying to get them to provide various sections with air and ground assistance that I consider necessary to enhance our Flight safety program. In most cases, I collided with a brick wall of indifference which I could not pierce. The only result of these collisions was that now I am putting pen to paper in order to see whether I was right or wrong in attempting to try and swim upstream.

This preamble started me thinking (a slow and ponderous process at the best of times) of the words a General spoke recently at his retirement dinner. He advised all of us never to stop trying to do what we thought was best, even though we might lose most of the battles. Often one can lose many battles, and still win the war. He also stated that venting ones spleen at a retirement dinner was no way to right any wrongs; the time to tilt at windmills was during ones career, not at the very end of it. So be it! While I'm not quite at the end of the line, I'll start tilting. Better late than never!

With shrinking manpower, dollars and equipment, we in today's forces are still required to conduct our daily business as though nothing has changed, or is changing around us. We adapt and continue with precious little thanks, co-operation, or recognition from within our organization, and practically none from without. I believe that we require a mission; that we desperately need some direction towards a specific, believable goal. It appears to me, that today we are working for charts, graphs, and regulations, most of which have little contact with reality. Sounds like a TGIF subject – right?

The one concrete link with reality that I have, is Flight Safety. Living is real, and surely, that's a worthwhile goal! How then, can I take anything else seriously, when in the pursuance of my goal, I find that most of the people with whom I am in daily contact are more interested in satisfying a paper requirement (CYA forever!), than in attending to those people whom they are supposed to be aiding? This seems like a motherhood statement of an "operations type" versus a "support type", however, I firmly believe it. We spend more time squabbling amongst ourselves than we do in productive work, for it is always much easier to forget something, put it away, or send it somewhere else than it is to buckle down, work positively, and get the task accomplished. I am convinced that this, apart from the obvious lack of equipment and manpower, (things we really can't control at my level anyway) is the major source of frustration in the forces. There seems to be a communication gap between people from different sections.

How many times have you given up something in complete helplessness because no one would make a decision, or even worse, because they advised that they would "get back to you" as soon as they had time to spare, and never did? Strict reliance upon various publications can also be a stumbling block, not an aid. I can't seem to convince people that I have a valid reason for doing something a certain way unless I can quote, verbatim, a covering order. I am not familiar with every book in existence, and sometimes must operate on logic alone, which I find, infuriatingly, is usually against some CFAO or other. A positive helpful attitude is missing all too often these days. The smile has been replaced by a frown. I cannot be an expert in every field, therefore, I must depend on others whom I have to trust. Today, cynicism has crept in and it is becoming increasingly hard to trust anyone, because trust has been abused or lost.

In today's vernacular, it appears that a "credibility gap" exists. We all acknowledge it, but why do we put up with it? No matter how we look at the world today, it's always "us" against "them" and "they" are always wrong. Why? I believe it is because we don't have a common aim anymore. In the Flight Safety world, for example, most aircrew believe that all we produce is a mass of statistics and graphs. We must somehow be smitten with a religious fervor, for we are always talking in doomsday terms, and we always are correct. Not so! However, it is just recently that an attitude of getting positive mileage out of the Flight Safety reporting system is being felt. The negative approach of using they system to punish people is – I hope – dying. Don't scoff – it is dying hard. Perhaps sometime soon, we will all get together, no matter what job we do, and pull towards a common goal – getting the job done safely. In ADG, this means everyone supporting those few radar sites and that handful of CF101's; for without them, we are all out of a job no matter what sort of paper we push. A positive, co-operative attitude by all of us must contribute towards a common goal. The art of getting things done safely must never be against the rules.

P.A. Growen
BFSO CFB NORTH BAY