

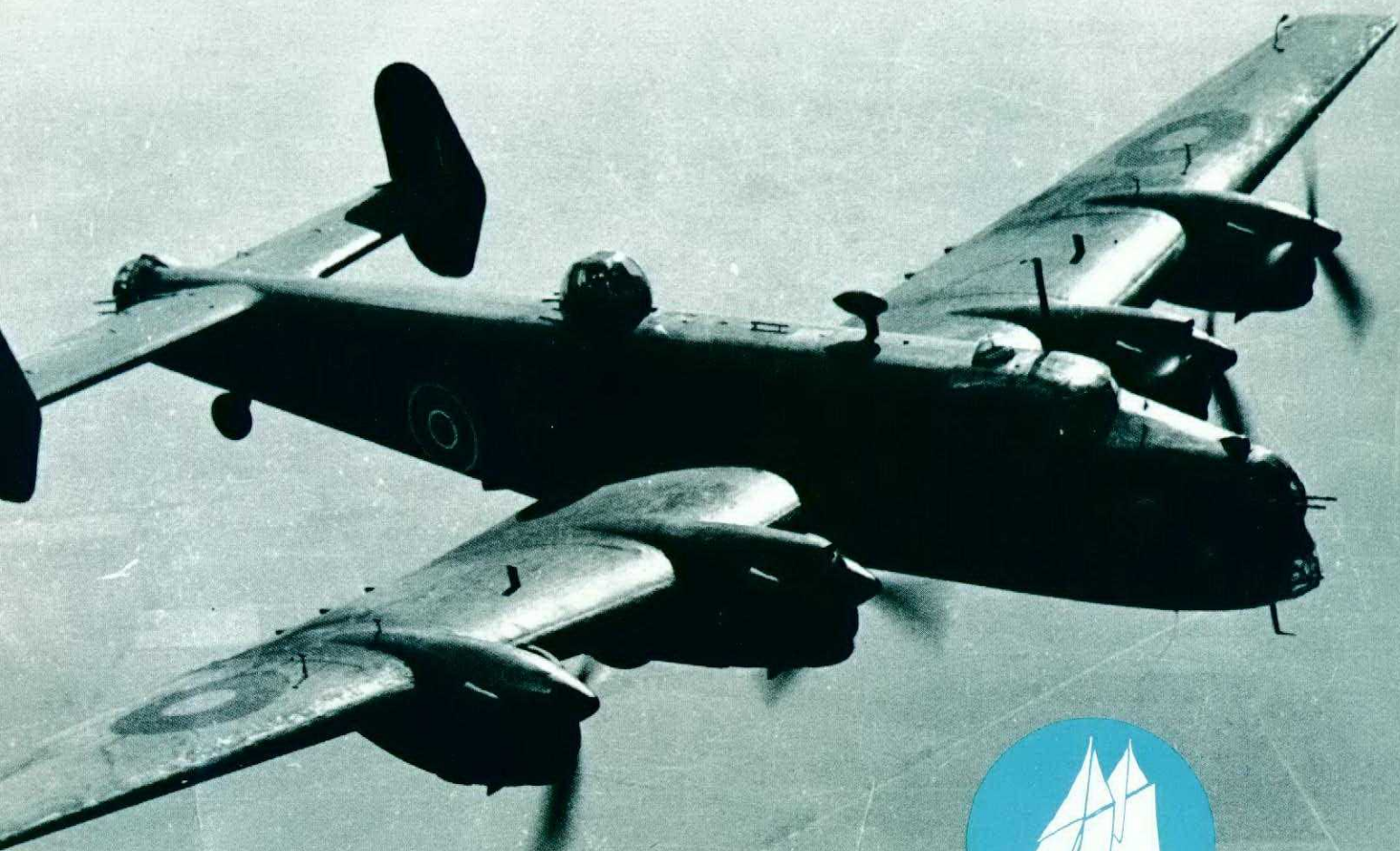


FLIGHT COMMENT

NOVEMBER DECEMBER

1975





434 Squadron

— its history



434 Squadron came into existence amid the mud and bustle of Tholthorpe, Yorkshire, England on June 13, 1943. They were the thirteenth of the bomber squadrons to be formed as a part of 6 (RCAF) Bomber Command. As was common at the time, a proportion of RAF personnel manned the new squadron, but a majority of the air and ground crew were RCAF personnel.

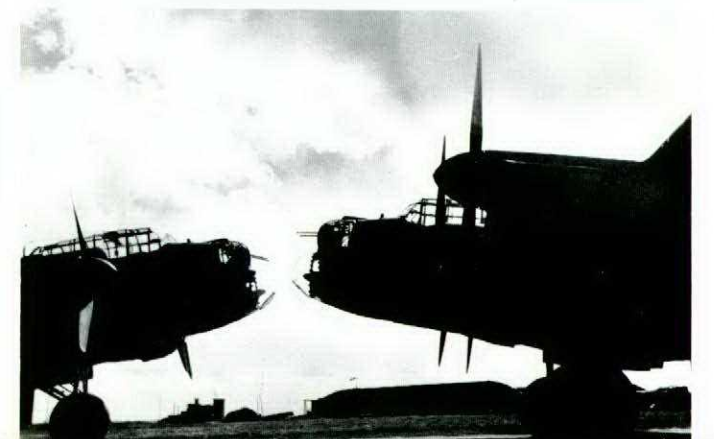
Six Group was primarily equipped with the Handley Page Halifax four-engine heavy bomber and 434 Squadron also received this type. The first two months of the squadron's life was spent training the crews and carrying out needed modifications to the aircraft as the Halifax had a reputation for being underpowered when heavily loaded.

In August 1943, the squadron became operational when ten aircraft were launched to raid Milan. 434's second operation was the hazardous and famous full moon raid on the German experimental missile station at Peenemunde. The raid was successful but the bomber stream into and out of the target was swarming with Luftwaffe night-fighters. The raid was a disaster for 434 Squadron, for three of the ten aircraft dispatched failed to return. Coupled with the fact that 434 was the RCAF's thirteenth heavy bomber squadron to form, it had come into existence on the thirteenth, and its first member reported for duty on a thirteen; the Peenemunde losses started stories of the squadron being a "hard luck outfit".

Despite their many losses, the squadron maintained a very high morale. W/C Harris, "Tubby" to his friends and most of the squadron personnel, was from Annapolis Royal and was blessed with a Maritimer's colourful and warm-hearted personality. This combined with the large number of Maritimers in 434's original complement resulted in a buoyant air of confidence. From the Maritimers came the suggestion "Bluenose" when the squadron was asked to pick a name for itself, and 434 became known as "The Bluenose Squadron" after the traditional

nickname for Nova Scotians. The choice for a squadron badge was obvious and so the famous Lunenburg schooner "Bluenose" was chosen as the badge motif.

In December 1943, 434 moved from Tholthorpe to Croft on the northern border of Yorkshire. By this time word was filtering back to the squadron through the International Red Cross and European underground groups that many of the personnel that had failed to return from operations were alive and in prison camps or safe and in hiding. A few had already worked their way through the various escape routes into Sweden or Spain and back to England. Fourteen shot-down Bluenosers successfully evaded capture and returned to England, two others escaped after being captured, while many caused no end of trouble to the Germans with their continual attempts to escape.





By the end of 1943 the Bluenoser's operations book read like a "Bomber's Baedeker" of Europe. Although the squadron had come into existence too late for the battle of Hamburg, it has included Leverkusen, Nuremberg, Muchen-Gladback, Hanover, Kassel, and Leipzig in its ports of call. All beautiful cities but each one loaded with flak.

May 1944 brought a drop in the operational effort with the Bluenosers converting to the improved long winged, Hercules engined, Halifax III's. Some of the new aircraft featured H2S blindbombing radar while others, although fitted with the ventral radome, had a free swivelling 50 calibre machine gun installed in it for belly defence and carried an extra gunner in the crew. As D-Day and "Operation Overload" drew near, 434 attacked enemy coastal defences with attacks on gun batteries at Calais, Boulogne, Trouville and Le Clipon. At midnight of the 5th of June, 1944, the squadron pounded the coastal gun batteries at Merville-Franceville at the mouth of the River Orne on the eastern end of the invasion beaches and then returned to disrupting railroads, road junctions, airfields and shipping ports.

The ending of the battle of Normandy and the capture of the flying bomb sites in the Pas de Calais region released Bomber Command from its army support commitments and the strategic campaign against Germany's "Thousand Year Reich" was resumed. The squadron encountered its first jet fighters on the night of November 1st, 1944 during a raid on Oberhausen, when Messerschmitt Me 262's were used with more conventional night-fighters to get at the bomber stream. Winter fog and bad weather cut down the number of operations and in December 1944 the Bluenosers further reduced their sortie rate by converting to the Victory Aircraft of Canada built Lancaster X. The Lanc could carry a normal bomb load of twelve thousand pounds, which usually included a four thousand pound "cookie".

On March 11, 1945 the largest and heaviest daylight assault by Bomber Command took place and virtually wrote finis to the Rhur Valley industrial sites. On the morning of the last day of March, the squadron flew a daylight operation to bomb-battered Hamburg again. It turned out to be a memorable day and the only RCAF daylight raid to encounter strong fighter opposition. Number 6 Group's "gaggle" of bombers was some minutes late and well behind the main bomber stream with its escorting fighters when thirty to forty ME 262 jets rocketed up from the cloud banks and into the formations of Lancasters and Halifaxes. Bluenose crews fought at least ten combats with these speeding opponents, claiming one probable and two damaged.

During its tour of operations with 6 Bomber Group, the Bluenose squadron had flown 2597 sorties on 199 operations and had dropped 2,070,000 pounds of bombs and had laid 450,000 pounds of mines. Seventy-four aircraft and sixty-eight crews had been lost on operations and training. In air combat, the squadron had claimed ten enemy aircraft as destroyed, two probably destroyed and thirteen damaged. On the Squadron's role of honours and awards, there were 128 names, including six bars to the DFC, six DFM's one BEM and seven Mentions in Dispatches.

Following V-E Day on the 5th of May, 1945, the Bluenosers settled into an intensive training programme, as part of "Tiger Force" in the second phase of World War II against Japan. The squadron was returned to Canada to train and re-equip before going to the Pacific. The dropping of the atomic bomb and Japan's surrender in August cancelled all further training and ended the Second World War. On the fifth of September 1945, 434 Bluenose Squadron was disbanded at Dartmouth, Nova Scotia, and its remaining personnel scattered to the four winds.



THE SABRE ERA

With the advent of the Cold War, after less than three years of peace; the Canadian Forces embarked on an expansion scheme, the scale of which Canada had never seen without a "hot-war" in progress. The RCAF had ended World War II as the world's fourth ranking air force, but when expansion began, the service was down to half a dozen flying units and schools. Canada undertook to supply an air division of twelve F-86 Sabre equipped fighter squadrons as part of NATO's European air defence. As aircraft and personnel became available under the expansion scheme, the numbers and badges of disbanded wartime squadrons were allotted to the new units in the process of formation. In this manner, 434 Bluenose Squadron was re-born amid many of its wartime sisters. The new Bluenosers came to life at RCAF Station Uplands on Dominion Day, 1952, a little less than seven years after disbandment. This time the Bluenosers were a day-fighter squadron equipped with Canadair built F-86 Sabre Mk 2 aircraft.

For the first eight months following their rebirth, 434 Bluenosers underwent the traditional fighter pilot training of bouncing anything that moved above the ground. Combined with air interception exercises, gunnery training on the Trenton ranges, formation tactics and the thousand and one little technicalities of air fighting, the wartime re-treads and the sprog pilots soon became proficient in their craft.

Eight months from the day of reformation, 434 Bluenosers were ready to "leap-frog" overseas to join Number 1 Air Division in Europe. On 5 March 1953, 434, 427, and 413 Squadrons gathered at St. Hubert for an official farewell ceremony. Two days later sixteen "Bluenose" Sabres, departed Uplands enroute to Goose Bay for the first leg of Leap-frog 3. The route from there was by way of Greenland; Iceland; Scotland; and finally on April 7, 1953, after a month of delays caused by bad weather, 434 Squadron landed at Zweibrucken, Germany, adding to their record the unique achievement of being the only squadron in No. 1 Air Division which had flown the Atlantic both ways - east to west in Lancasters in 1945 and west to east in Sabres in 1953.

As one of the newest, most inexperienced fighter squadrons in Europe, the Bluenosers took a real kicking at the hands of the more experienced squadrons from 2 Wing at Grostenquin France. They soon learned the cardinal rule of air fighting in the Air div; "Look out for the Sabre on your tail". The squadron spent many hours in the air honing their air fighting skills and soon found that they weren't getting waxed quite as quickly and occasionally did a little waxing themselves.

In 1956, the squadron re-equipped with Sabre 6's. A white Bluenose on a blue and white horizontal band soon appeared on 434's aircraft. With the introduction of the Sabre 6, the whole of Europe had to change their cardinal rule of air fighting to "Check your six for the Mk 6". By the late 1950's, the Sabre was obsolete, and the fighter role of 1 Air Division was no longer required. As the Air Division prepared to replace the Sabre with the CF-104 Starfighter aircraft the squadrons began to stand down for short periods of time. In June 1962, the Bluenosers moved to Grostenquin, France, the home of Number 2 Fighter Wing. It gave up its Sabre aircraft in December 1962 and stood down on 15 January 1963.

THE STARFIGHTER ERA

The first course of pilots to complete training on the CF-104 Starfighter at 6 Strike/Recce Operational Training Unit, Canadian Forces Base Cold Lake, was split to form the initial complement of the reconstituted 434 and 427 squadrons. 434 Strike/Attack Squadron was officially reactivated at Zeibrucken, Germany, on 8 April, 1963, flying the Canadair built CF-104 in the low level bombing role.

Again the Bluenosers went about their new business with the same esprit that had characterized them from day one in 1943. Low level practice missions became the order of the day as Bluenose aircraft passed over many of the same points of interest in Germany, France and Holland as the Halifaxes and Lancasters had visited some twenty odd years ago.

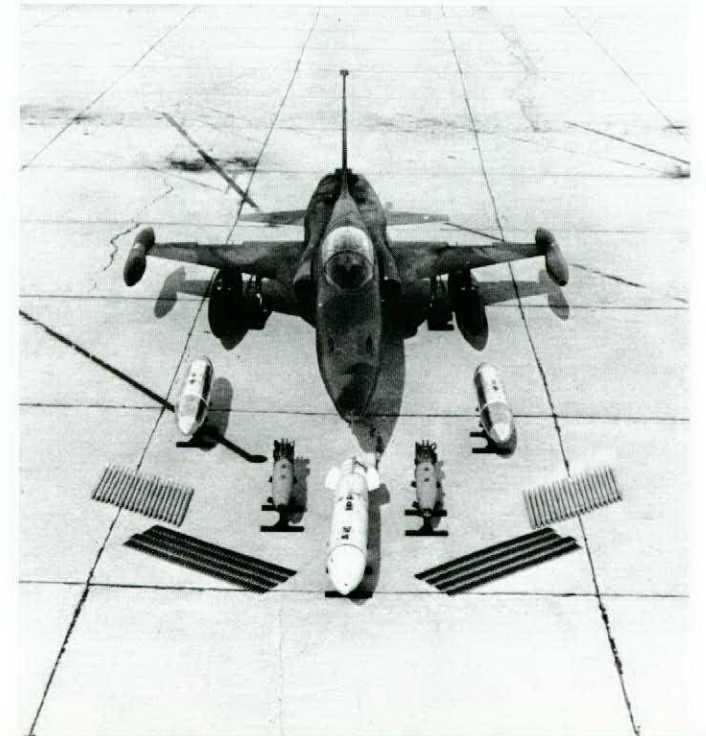
Once the squadron became combat ready, the job of holding Quick Reaction Alert began in earnest. At all times the Bluenosers had pilots available to launch within fifteen minutes carrying a 2,000 pound "Cookie" slung beneath the belly of the sleek CF-104. Pilots, servicing crews, and aircraft were regularly dispatched to Decimomanu, Sardinia, for additional bombing practice.

On 28 February, 1967, the Bluenose Squadron was once again officially disbanded and the Bluenosers scattered to the four winds.

THE FREEDOM FIGHTER ERA

434 Tactical Fighter Squadron was reactivated on 15 February 1968 at Canadian Forces Base Cold Lake, Alberta. During the first year of operation the Bluenosers spent every flying hour available to check their own pilots out on the CF-5 and to train the pilots destined for 433 squadron. The squadron flies the Canadair-built CF-5 aircraft as a multi-purpose fighter capable of carrying out close air support, interdiction, armed and photo reconnaissance, and air superiority missions in support of other elements of the Canadian Forces. In addition to its operational role, the squadron is tasked with training pilots selected for Canadian CF-5 squadrons and specialized training for pilots proceeding to CF-104 flying training. Also to date, the squadron has trained a number of Dutch and Venezuelan Air Force pilots on the CF5D.

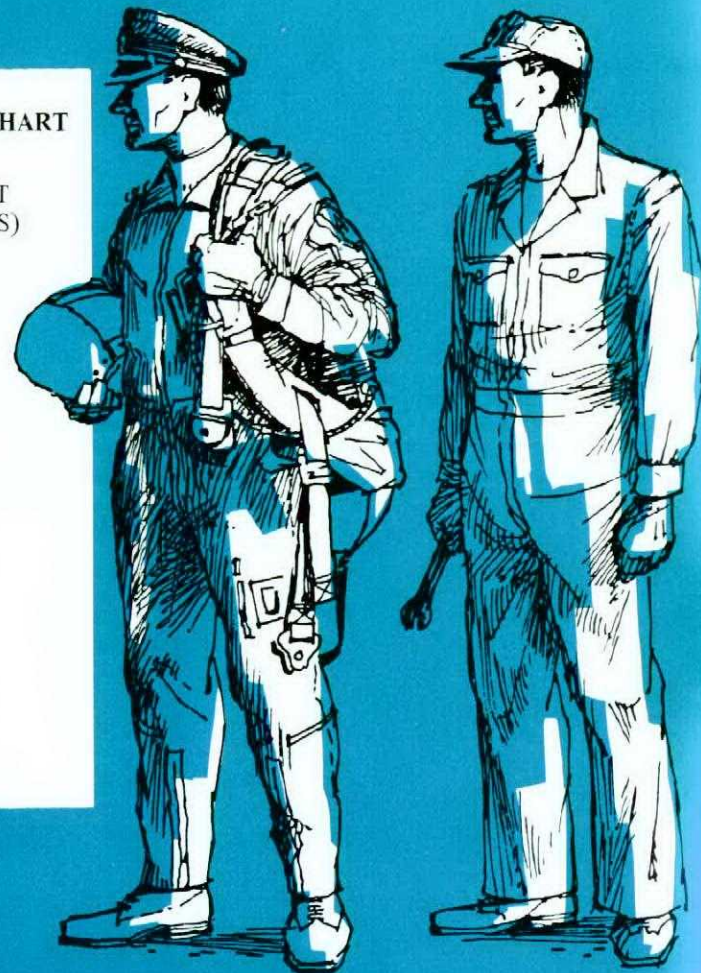
The year 1976 holds great expectations for the squadron as they will become a straight operational squadron with the training role being taken up by the newly reformed 419 Squadron. This is also the year that the Bluenosers are eligible for the Squadron Standard and in conjunction with this presentation, a squadron reunion is being planned for the week-end of 25, 26, 27 June for all ranks who have ever been Bluenosers. The squadron would like all former members, who have not already done so, to forward their addresses to 434 Tactical Fighter Squadron, CFB Cold Lake, Alberta, TOA 2MO, so that individual invitations to the Standard Presentation/Reunion can be forwarded. ■





OPTIMUM HEIGHT/WEIGHT CHART

HEIGHT (INCHES)	WEIGHT (POUNDS)
78	190
77	187
76	184
75	182
74	179
73	177
72	174
71	172
70	169
69	167
68	164
67	160
66	156
65	152
64	148
63	145
62	143
61	140
60	138
59	136
58	132



YOU BET YOUR LIFE

by Dr. M. D. (Don) Williams
Capt J. D. Williams

Historically it has been required that soldiers possess a high standard of physical fitness. In earlier times of course, the very circumstances of military life helped to create and maintain such a standard. March like the Roman Legions did from Rome to Central France (Gaul) and you'll arrive in good shape regardless of how you started. If you arrive at all that is. Couple the route marches with nightly entrenching drill and throw in the occasional battle and your soldiers will be fit.

Well, things have changed, and soldiering has kept pace with the changes. Infantrymen still march but sailors no longer row and airmen stopped flapping their wings after the famous wax and feathers prang. The need for exercise hasn't changed but the environment with its cars, subways, airplanes etc. makes it difficult to come by. In fact, in most cases it must be artificially created. So be it! We cannot change the "progress" of the centuries, but we can circumvent the ill effects. All of us, if we wish to lead long and productive lives, require a good level of fitness. In the armed forces it is particularly apparent that this is so.

A pilot needs to be fit to sustain extended high "G" loadings. A technician needs to be fit to maintain alertness over long working hours. Any soldier needs to be fit because he may at any time be exposed to the various and sundry high physical demands of military service. Actually, any human being is better off in a fit than in an unfit state. Hopefully this article will illustrate this truth.

When I initially began the research for this article I intended to study the interrelationships between smoking, exercise and fitness, and though it is quite unscientific to admit this I began with a preconceived idea - namely that smoking is detrimental to health and exercise beneficial. So what else is new? You can't even get up a poor argument over that in this day and age.

Anyway, I procured a mass of information from various sources which related to the question of health, and eventually became diverted from my initial goal into the side issue of "health prediction". The term implies that by studying a minimal cross section of any given persons life history one can

predict both the general state of his health and the number of years which he can reasonably be expected to live.

The results are contained herein in a little game I have chosen to call "You Bet Your Life", simply because - you do, each and every day whether you realize or accept it or not. This is a game which you can play at a party or in isolation. It is guaranteed to stimulate either thought or conversation or both. Furthermore, and this is most important, it is a game from which you can emerge a massive winner. In that respect its bigger than Vegas and Monte Carlo put together.

HOW TO PLAY

Sit down with a pen and paper and the question table. Read the definitions and accompanying material carefully and then begin. There is no time limit. Players are cautioned that cheating on this portion of the game causes disqualification without hope of winning.

The vertical column on the left side of the page lists several factors which must be evaluated. For each factor read across the chart until the description which best fits your situation is found. When you have found the proper description write on your paper the number found in brackets above the description. Feel free to interpolate if this is appropriate. When you have assessed all eleven factors, total the points which you have earned.

Unless you are a most unusual person indeed you will now have before you a number ranging from five to 70. By consulting the enclosed table you can now obtain an objective assessment of your health based upon actuarial figures used by most of this nations major life insurance companies. Naturally there are no guarantees, but on the average your description follows;

Points Accumulated	Description
5 to 14	Your chances of surviving to a ripe old age are extremely good.
15 to 21	You are in above average condition.
22 to 33	Your figures approach the national average.
34 to 45	You face a moderate risk of health problems.
46 to 52	Your health is cause for concern.
53 Upward	See your doctor as soon as possible (walk carefully on the way)

Now that you've seen your assessment, would you like to know how long you're likely to live? Well, the best available figures would indicate that if you subtract your total score from one hundred the number remaining is your life expectancy. Surprising? Upsetting?

cont'd on next page

AGE (YEARS)	(2) 10 to 20	(3) 21 to 30	(4) 31 to 40	(5) 41 to 50	(7) 51 to 60	(9) 61 to -
WEIGHT (POUNDS)	(-1) Optimum -10 or more lb	(0) Optimum ± 10 lb	(2) Optimum + 20 lb	(3) Optimum + 3 lb	(5) Optimum + 40 lb	(7) Optimum + 50 or more lb
CARDIAC HISTORY	(1) No known heart disease in family	(2) 1 relative with heart disease over 60	(3) 2 relative with heart disease over 60	(4) 1 relative with heart disease under 60	(6) 2 relative with heart disease under 60	(7) 3 relative with heart disease under 60
EXERCISE	(1) Intensive Occupational & Recreational	(2) Moderate, Occupational & Recreational	(3) Nil, Occupational & Intense Recreational	(5) Nil, Occupational & Moderate Recreational	(6) Nil, Occupational & Light Recreational	(8) Completely Lacking
SMOKING	(0) None *or 1/2 of computed points if "off" for less than 3 yrs	(2) Cigar or Pipe not inhaling	(3) 10 Cigarettes or less Per Day (+1 for every 15 yrs)	(5) 20 Cigarettes Per Day (+1 for every 10 years)	(8) 30 Cigarettes Per Day (+2 for every 10 yrs)	(12) 40 Cigarettes Per Day (+2 for every 5 yrs)
DRINKING (Alcoholic Beverage)	(0) 0 Drinks Per Day	(1) 2 Drinks Per Day	(3) 4 Drinks Per Day	(5) 3 Drinks Per Day & 5 on 1 Weekend Day	(8) 3 Drinks Per Day & 5 on 2 Weekend Days	(10) 30 Drinks (or Bottles of Beer) & Per Week
BLOOD PRESSURE	(1) 110 Upper Reading	(2) 120 Upper Reading	(3) 140 Upper or 90 Lower	(4) 160 Upper or 100 Lower	(6) 180 Upper	(8) 200 or over Upper
SEX	(1) Female Under 40	(2) Female 46-50	(3) Female 60+	(5) Male	(6) Male + 25 lb over Opt.	(7) Bald Male + 40 lb over Opt.
RESTING PULSE	(0) 55 or Below	(1) 60	(2) 70	(4) 80	(6) 90	(10) 100+
EARLY MORTALITY PENALTY	(0) No Family Deaths Under 60	(1) 1 Family Death Under 60	(2) 2 Family Deaths Under 60	(3) 2 Family Deaths Under 50	(5) 2 Family Deaths Under 50	(7) 2 Family Deaths Under 45
LONGEVITY BONUS	(0) 1 Grandparent over 85	(-1) 2 Grandparents over 85	(-2) 3 Grandparents over 85	(-3) 4 Grandparents over 85	(-4) 2 Grandparents over 95	(-5) 4 Grandparents over 95

IMPORTANT DEFINITIONS:

- Optimum Weight - Consult Attached Chart
- Intensive Exercise - Raise pulse to 190 minus your age and maintain for 30+ minutes seven days per week (or) run 1.5 miles in 9.5 minutes seven days per week
- Moderate Exercise - Same as above but only four days each week
- Light Exercise - Raise pulse to 120 or above and maintain 30 minutes three days per week - Run 1.5 miles in 12 minutes three days per week
- Occupational Exercise (a) Intense - Lumberjack, infantryman (b) Moderate - manual work e.g. carpenter (c) Light - e.g. postman or door to door salesman (d) Nil - administrative or sedentary position
- Family - include mother, father, sisters & brothers, Grandparents.
- Blood Pressure - if unknown take three points.

What about the winnings?

That's the interesting part. You see, the score which you have obtained is based upon various factors, and some of them are variable. That's how you stand to win. Let me explain by going down the list of factors.

AGE

Your age is something you are born with and cannot affect, so naturally each year older gives one year reduced expectancy, or would if everything else were constant. In point of fact, very little is at all constant.

WEIGHT

For each of us there is an optimum weight, and to exceed that weight is to place undue strain on your body system. Furthermore there is an interaction with other factors, since those who are overweight tend to exercise less, have a higher blood pressure and pulse, and often come from long lines of those who share the same problem. This of course, is part of the "chicken or the egg" problem best left with philosophers. In this area the "game" is inflexible. Weigh less, live longer.

CARDIAC HISTORY

It has often been said that we cannot choose our family and it couldn't be truer than here. Just because your family gives you some bad points do not despair. You can more than counteract their input by working on the other categories.

EXERCISE

Figures show that exercise can increase your chances of surviving a heart attack although no indication exists of preventative value directly. However, exercise does help in reducing blood pressure and reducing resting pulse which means less wear and tear on the old ticker. Furthermore, it is almost assured that as you exercise more you will smoke less since the gasping becomes an irritation. With luck you might even lose weight although most studies show merely a firming up change from flab to muscle. Cheer up! Fat puts far more strain on the heart than muscle, and it's not your absolute weight that matters but the fat content thereof.

SMOKING

Stop! That's about all one can say after consulting the figures. If lung cancer doesn't frighten you (it should, it's a nasty way to go), try emphysema, heart disease or what have you. Experts say that the cumulative effects of heavy smoking are evident to a striking degree in autopsies, but most of us never get to watch, just participate from the supine position. Smoking increases blood pressure and pulse and reduces the tendency to exercise (you don't run well while gripped with a hacking cough). All in all, you can make a lot of points (years) by quitting.

DRINKING

It is said that moderate drinking (2 or 3 drinks per day) is probably not dangerous and may in fact help one to relax. On the other hand without a liver relaxing is at best temporary so keep it moderate. Naturally you face a higher risk of accidents both motor vehicle and otherwise if you aren't moderate, and you may gain weight or exercise less. At least you won't worry.

BLOOD PRESSURE

Some experts say that high blood pressure or hypertension is the most common illness of our time. High blood pressure increases the workload on the heart and the speed of the arterial and venous ageing process. Put simply you may have a

heart attack or a stroke — take your choice. Blood pressure may be controlled in various ways. Regular exercise will often drop it ten points or more, and so will stopping smoking. Your doctor can also aid in the process by prescribing medicines and diets in some cases. Here there is a lot that you can do, with your doctor monitoring your progress. Consider each lap around that track another day of active life being added to the far end. Worth it?

SEX

When I first tried this test out with some colleagues there were a lot of frivolous comments but I don't know how to say it more clearly. The ladies just are born with better chances since they are less subject to coronary difficulties and cerebral vascular accidents (strokes). Too bad, but then again *somebody* has to collect that lovely insurance. Wouldn't you know it doesn't even seem to matter if *they* are overweight or not, but for us males it's deadly. Incidentally, we have no prejudice against baldness, it's just that bald stocky men have more problems than hairy stocky men — and way more than hairy skinny men.

RESTING PULSE

If an Olympic Decathlon winner sat down for five minutes (not incidentally after exercising) and then took his pulse it would probably run at 50 or so per minute. Many "Normal" Canadians would average nearer to 90. Effectively then the athlete's heart would be "saving" some 57,000 beats per day. Whose heart is likely to wear out fastest? Sure that's an oversimplification, but basically the slower it goes the longer it goes. Exercising your heart, or training it increases efficiency so that one stroke moves more blood. Naturally if this is so, then eventually fewer pulses are necessary. If you undertake a serious exercise program you can drop your resting pulse by 20 or more. Not a huge change, but consider it in terms of years. Maybe 2 or 3 to be gained.

EARLY MORTALITY PENALTY AND LONGEVITY BONUS

Once again the problem of ancestry. Long life (or short) tends to be habit forming in families. Whether it's a matter of physical superiority, living habits, temperament, or what is unknown. What is known is that you will *tend* to follow in the footsteps of your forebears, however, you can improve on their performance by doing all the good stuff which follows.

Now, you've played the game, calculated your score, worked out your life expectancy, and talked this foolishness over with your friends. What are you going to do about it.

The best thing you can do is talk the matter over with your physician. Chances are he's been waiting for years to you to take an interest in that body of yours. Maybe he has even mentioned it to you. He understands the needs of your body mechanism and your own personal eccentricities. Furthermore, he is aware of your own capacity for training. There is little to be gained by buying a sweatsuit and runners and running yourself into the intensive care unit through over-stress. Similarly there is no value in a crash diet, or quitting drinking "cold Turkey" because you are unlikely to stick with it for the long term. What is important is developing a belief in the necessity for better body maintenance, and the conviction that beneficial changes can be wrought. Then and only then will fitness become a habit with you.

Consider it in terms of the game. If you've been smoking 2 packs per day for ten years you stand to make 14 points if you quit for over three years and don't restart. Within a year

or so you can credit yourself with half that many!

You can make three points by getting into an intensive physical program, and if you drop your blood pressure and pulse by ten points apiece you're up to five. Cut down a few drinks and a few pounds (often they go together) and you're up to seven.

If you did all these things for one year you would stand to gain a potential lifespan of fourteen years. Sure you say, but I'd have to keep on forever. Right on! And your life would be better because of it. What's more, those extra years would be healthy and active ones. Better than you can expect right now. "You Bet Your Life" makes you the proverbial "offer you cannot refuse". First we tell you where you stand — and if you don't want to believe us, just check with your insurance company. Then we tell you what you can do to improve your situation. The rest (isn't it always the way) is up to you.

If I found one overwhelming fact in my research it is that exercise is a vital necessity for continuing good health. In this age of automobiles and subways, supermarkets and television our bodies simply do not receive the required workout. Oddly we are aware of this problem with our mechanical possessions — none of us would put a car up on blocks for ten years and then expect it to run, but many of us have had our bodies "on blocks" since we quit playing high school football. We equate watching sports on TV with actually participating, and call ourselves "sports fans". Let's face it, we cannot exercise by proxy.

Another problem we have is that of rationalization. We say to ourselves "But I walk a lot" or "I go swimming every day in the summer". Fair enough, as long as you walk briskly for an hour or thereabouts daily, or swim a mile. Swimming has acquired the reputation of the world's greatest exercise, but most of us could get as much value out of a vigorous bath. Swim hard!! Or forget it.

In the simplest of terms, you have to elevate your pulse and maintain it in its elevated state. It's easy to check this. Secondly you almost always will find it necessary to take more breaths per minute and to breathe more deeply, and thirdly you will

How many people will it take?

It is rumored that much like Monsieur Guillotine, the man who invented retractable landing gear was one of the first to land without putting them down. Human engineers have been working on this problem ever since the first modification which was to move the lever out from behind seats and throttles and put it right on the dash as a constant reminder. This did not work. Next they put a light in the handle. This did not work either, so they made the light red. Alas, this didn't work so they added buzzers and bells and noisy things but aviators just kept right on landing without gear. They even tried making the handle "feel" like a wheel, but with little result.

When the human engineers threw in the towel, the supervisors took over. They took a junior officer, gave him a flare

almost invariably perspire heavily while exercising. Those are the signs to you that your body is aware of the fact that it is being exercised. In time your body will increase its capacity for exercise. You will pant and perspire less and your pulse will be lower while you are working out. At that point you can either choose to maintain that level of fitness or raise the level by increasing the workload. The thing to remember is simply this, you must tire yourself slightly or you are achieving nothing, but on the other hand you must not wear yourself out because this defeats the purpose. You must expect some initial stiffness and soreness from reactivating your disused muscles, just as you would expect the reactivated car to squeak a little after years on blocks. All this will pass in time.

Within weeks of undertaking an exercise program you will feel more alert and energetic than you have in years, and in time you will appear so to others. Exercise is no fountain of youth but it's the closest thing we've found thus far.

Thank you for taking the time to play our game. We cordially invite you to try it again in six months and see if you're winning or losing. What are the stakes? *You Bet Your Life*.

Dr. M.D. (Don) Williams graduated from the University of Western Ontario School of Medicine in 1935, and carried out his internship at Chicago Memorial Hospital.

On the outbreak of war in 1939, Dr. Williams, who had gained his commission as a member of The Western C.O.T.C. reported for duty with the Royal Canadian Army Medical Corps. Because of his active interest in aviation he was selected as a student in the first class ever graduated by the School of Aviation Medicine.

Prior to the summer of 1940 medical services were provided to the RCAF by the army medical corps. As the first doctor to wear the "Light Blue" Dr. Williams may well be considered the first "Flight Surgeon", in Canada. In this capacity he served at various stations in Canada and with six Bomber groups in England.

Although he returned to civilian practice in November 1945 Dr. Williams has maintained close contact with aviation in general, and flies frequently at the controls of a de Havilland Tiger Moth.

gun and a box lunch, and dropped him off at the end of the runway. If an aircraft tried to land without gear, he would shoot off a flare. This didn't work so they sent out a less junior officer to watch the junior officer but that didn't work either and they gave them radios, control of the traffic, a spotter and a recorder. (They cut out the box lunch). They even invented things like RSU TOs and RSU checks. This hasn't worked satisfactorily either.

I am in the process of submitting a Form 1000 suggesting that we invent a fixed gear airplane, but in the meantime, I wonder how many people it would take to prevent unintentional landings sans gear? The logical answer is one. If the man who raises it puts it back down, we won't need all the rest.

USAF Study Kit

Our Groundcrew - a tribute

THIS TRIBUTE TO AIR FORCE MECHANICS FIRST APPEARED IN SPRING IN APRIL 1931. THE AUTHOR WAS CAPT IRA C. EAKER, LATER LT GEN IRA C. EAKER, CHIEF OF AIR STAFF, USAF, WHO RETIRED IN 1947. THE MAINTENANCE MAN'S RESPONSIBILITIES HAVEN'T CHANGED FROM THAT OF THE AIRMAN MECHANIC OF 44 YEARS AGO. THERE'S NOTHING IN THIS NEAR HALF-CENTURY OLD TRIBUTE THAT CAN'T AND SHOULDN'T BE SAID FOR TODAY'S MAINTENANCE PEOPLE.

Every generation of every nationality requires a hero. It finds one or makes one.

In earliest times, he was mythical. A little later, he was some great warrior or explorer. But some man has always been set apart from his fellows and accorded the adulation of the multitude. . . then along came the spectacular flights. At this juncture, America was searching its collective soul for a hero, and it seized upon these unsuspecting fliers. So the toga was handed about, falling in turn upon each succeeding ocean spanner or record breaker.

Strangely enough, with all the shouting that has been done, all the medals which have been struck, the right man in this flying business has yet to be picked.

Human flight was a comparatively new art. For thousands of years, man had longed to soar among the clouds. It was not unnatural then that some member of the flying fraternity should fill the national need for a hero.

For some reason the pilot was selected. He it was whose will directed these new machines to flight, whose courage permitted performance of such feats of daring high above the earth.

So, selected he was. And each small boy decided not to be a policeman, fireman, or railroad engineer, but envisioned himself a flier when he grew to man's estate.

So we pulled a parade, waved flags, made medals, played the band and greeted like a Viking arriving at Valhalla each new pilot who flew a little higher, or a little longer, or a little faster.

Why not? Your airman wore proudly the symbols of his profession. He was the striking figure in this new industry. Small wonder that the little lads forswore old models and changed their boyhood dreams.

But we made a great mistake, as multitudes often do. The fellows who make airplanes fly, and make records fall, and who drive 10,000 airplanes 50 million miles a year were not the pilots. They were the mechanics.

Let me tell you about this fellow as I have come to know him. . . and see if you don't agree with me.

Most men work for reward. There are various forms of reward — the cheers and commendations of onlookers, money, pleasure, self-expression, self-satisfaction. The pilots get all of these in some degree.

What does the mechanic get. . . his hands are cut and black from contact with greasy engines. He can't keep that "skin you love to touch" and maintain an intimacy with an airplane powerplant. Don't ask me why or what kind of a man would elect such a role, such a life. Rather, tell me why there is a hermit, wizard, nurse, nun, or saint. I don't know! There is no accounting for occupational tastes, but every time I fly I thank fate for a good mechanic.

He's no dunce, either. To learn all he knows would give

many a college professor an awful headache. He gets his invaluable training over a long period of years. The school of hard knocks is his. Truly, he learns to do by doing.

This modern airplane engine is no simple mechanism. It has more parts than has the human body, and more ailments. A divine providence has fashioned your own mechanism more smoothly, co-ordinated your organs better than man has built this engine. But the good engine mechanic knows every part, every symptom, every malfunction as well as any doctor knows the causes of and remedies for your aches and pains.

Some years ago, I was assigned a plane for flight. I started to climb in and the mechanic said, "Lieutenant, I wouldn't take that ship up. The engine doesn't sound right to me."

I ran it up and it delivered full power. It hit on both switches, accelerating promptly, and I couldn't detect any indication of trouble. I called for the engineering officer. He ran it up and marked it OK, but the mechanic still shook his head.

I took off and joined a practice formation and soon forgot the warning of my mechanic as we flew over San Diego Bay, past Point Loma.

Twenty minutes later, the engine quit cold without warning. I set her down in the sea. Being a land plane, she soon sank.

While swimming around, waiting for a rescue boat, I made one resolve that has remained with me through the years. When a good mechanic says an engine's bad, I don't fly that plane. He's the doctor.

These mechanics are versatile, too. Mine was on that rescue boat. He has never to this day said, "I told you so," but couldn't rest until we had fished that plane off the ocean floor.

Then he displayed one of his rare 'human weaknesses' by spending his Sunday holiday taking it apart to see what had failed. His expression never changed as he showed me the cause.

So, you see, the airplane mechanic is human. In fact, he has the instincts, training, and mental ability of a surgeon.

One of the characteristics that we always like to associate with heroes is courage. Here your mechanic is not found wanting. He'll fly with any pilot, any time and that's something I won't do. It takes more courage to ride than to pilot the plane yourself. You always know what you are going to do. He never does. . . I have known some pilots to get cold feet. Yet, I have never known a mechanic to decline to fly.

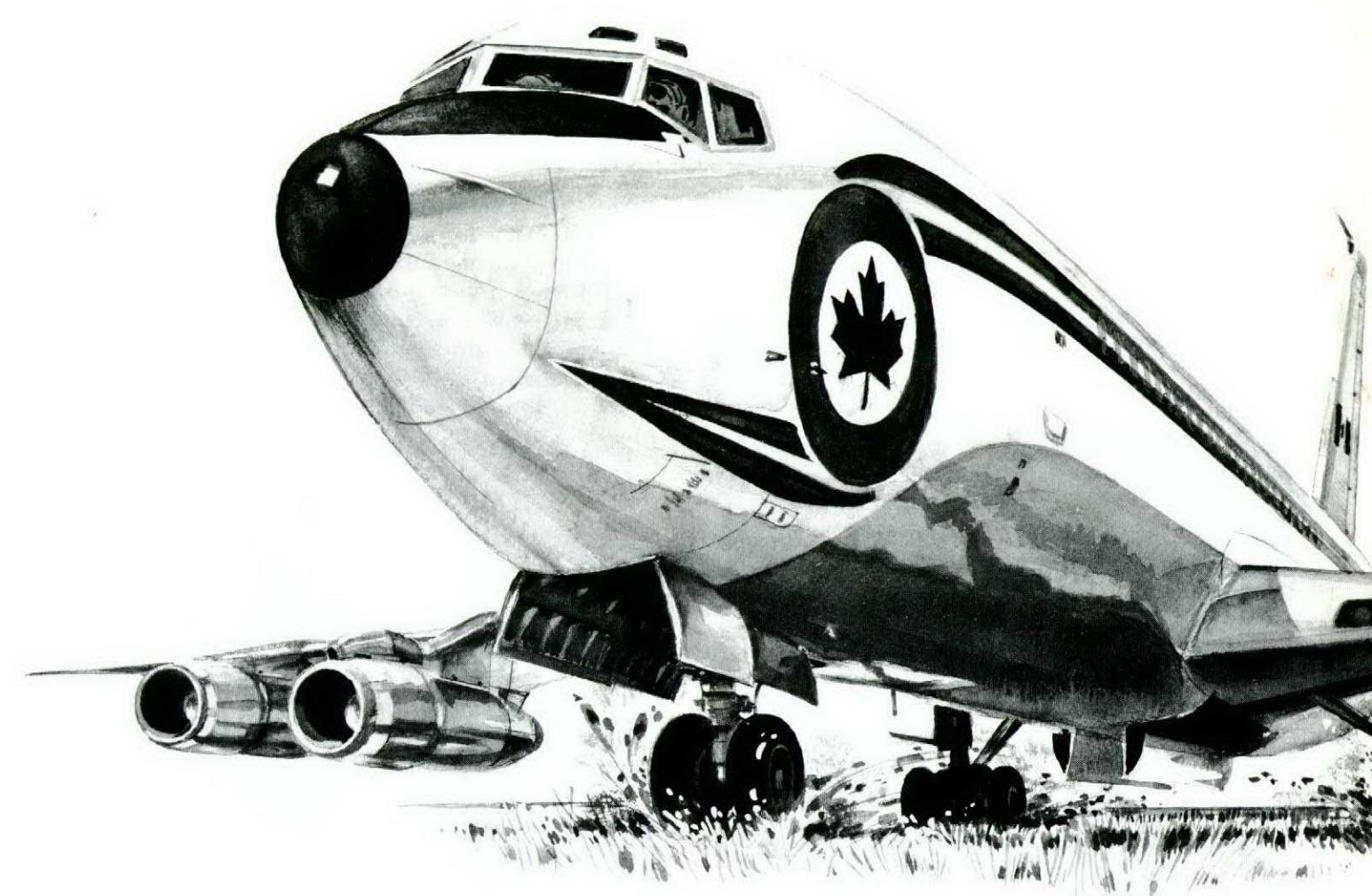
The mechanic is reliable; he is trustworthy. He takes his work seriously; he knows that human life is at his mercy. He worries, too.

One of my best men, who had cared for the special planes of high officials in Washington for some years, once came to me and asked to be relieved from those duties and assigned to routine work. He said that the tremendous responsibility he carried was undermining his health.

I know another mechanic who spent his last dollar to buy a flashlight so that he could better see to make his inspections in closed hangars on dark winter days.

Examine the rolls of the airmen dead and you'll find mechanics as well as pilots. Yet, their names are forgotten. Others got the adulation, the praise, the medals, and the commendations. . . but I say, "My hat's off to you mechanics. You may be ragged grease monkeys to some, but to me you're the guardian angels of this flying business."

Courtesy GE Service News



SAFE TO TAKE OFF?

Recently, a CC137 used significantly more runway for takeoff than the precomputed requirement. In-flight cruise performance was degraded as if the aircraft weighed approximately 10,000 lbs more than the calculated weight.

In an attempt to resolve this apparent overweight problem all baggage was re-weighed, the fuel logs verified and the aircraft weighed; no significant discrepancies were found. Ultimately the cause was attributed to incorrect passenger weight data used by the AMU and the loadmaster. The passengers were all combat troops not the usual men, women and children. If the correct weight figures had been used an extra 6520 lbs would have been manifested; also, if each soldier had carried an additional 20 lbs of hand baggage, a total of 9780 lbs would have resulted.

The crew had used what they considered to be correct data

when they calculated the fuel load for the runway available. However, during take-off, due to the slow acceleration caused by the additional weight, any power loss shortly before V_1 or later would have resulted in the aircraft being in the weeds off the end of the runway. Fortunately, this did not happen and the aircraft became safely airborne after using all the available runway.

When operating under circumstances where balanced field equals runway length available, any degradation in aircraft performance can create results varying from a few gray hairs to disaster. Use of an acceleration check will give an early go-no go reading and indicate whether the computed aircraft performance is correct and that you will have the required runway remaining at V_1 . If not you should immediately abort the take-off.

Maj A. C. Hincke

MCPL R.L. HOUSTON

"MCpl Houston is an Airframe technician employed on 413 Squadron. While carrying out a DI on a CH113 Labrador aircraft, MCpl Houston, because of his expert technical knowledge and his determination, discovered a broken synchronization drive shaft mount.

"This inspection is a PI item and is not required on a DI. Because of MCpl Houston's professional approach toward his job, he prevented what could have been a serious accident involving the loss of both men and equipment".

CAPT K.I. STRUTHERS

Passing 14000 ft in an afterburner climbout, Capt Struthers experienced a compressor stall. The stall was cleared, an emergency declared, and the aircraft was immediately turned toward base. Three additional compressor stalls were experienced, and although each was successfully cleared a progressively lower engine R.P.M. was evident. Capt Struthers decided to jettison his four external fuel tanks due to the lack of thrust available but could not reach the designated jettison area. Capt Struthers decided to delay his jettison until he was clear of built up areas adjacent to the Rhine. After jettisoning external stores, there still was not enough thrust available to carry out a normal precautionary approach so he modified the pattern to the extent that a landing could be attempted. On short final, another stall was experienced without enough altitude or airspeed available to attempt any stall clearing action. Because of the critical position of the aircraft at the time the throttle was not retarded until a safe landing was assured.

Considering the ever decreasing thrust problem after each stall clearing and his unfavorable position, Capt Struthers would have been justified in ejecting. His decision to attempt a landing which was successfully concluded is testimony to his professionalism and saved an expensive aircraft.

CPL C.A. ROE

Cpl Roe was carrying out a daily inspection of a CH 113A helicopter at 1 AFMS after the completion of a periodic inspection test flight. During the daily inspection he decided to overinspect and check the drive shaft mounts. He discovered a broken mount on #3 synchronizing shaft that had been replaced on periodic inspection. The mount appears to have been improperly manufactured.

The daily inspection detailed in Ref B does not list drive shaft mounts as an inspection item, as a result

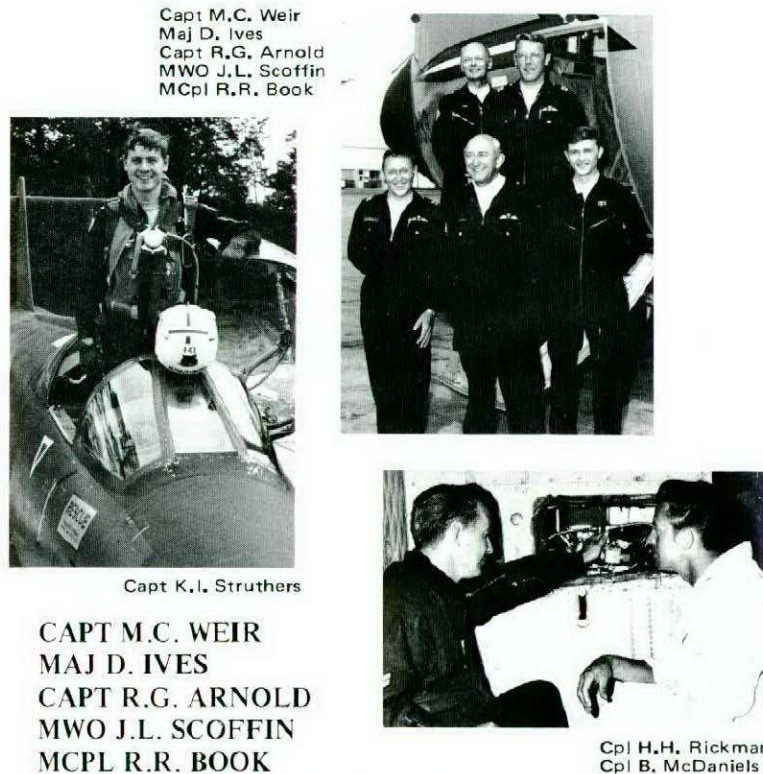
of Cpl Roes' action a UCR has been submitted to have shaft mounts inspected daily.

The synchronizing shaft mounts maintain the drive shaft in a horizontal plane and if the helicopter had been allowed to fly with a broken mount, the synchronizing drive shaft could have failed with catastrophic results.

CPL RICKMAN H.H. CPL MCDANIELS B.

While conducting a run-up check for an oil leak, the crewman and airframe technician noticed what appeared to be a faint scratch in the paint of the transmission housing at the lift link bolt attachment position. They requested that the pilot apply collective pitch and subsequently their further investigation revealed that the scratch was in fact a crack.

Cpl Rickman's and Cpl McDaniels' vigilance undoubtedly prevented a catastrophic inflight failure.



Capt M.C. Weir
Maj D. Ives
Capt R.G. Arnold
MWO J.L. Scoffin
MCpl R.R. Book



Capt K.I. Struthers

CAPT M.C. WEIR MAJ D. IVES CAPT R.G. ARNOLD MWO J.L. SCOFFIN MCPL R.R. BOOK

Just after level off at FL180 No. 1 engine failed abruptly and without warning. The engine was shut down and a clean up check commenced; shortly thereafter complete failure of the utility hydraulic system occurred. The Flight Engineer, MWO J.L. Scoffin, immediately went to the rear of the aircraft to determine the status of the system. No fluid was visible in the sight gauge and attempts to replenish the system were unsuccessful. MWO Scoffin cross-checked the booster system (no checklist or procedure required him to do so) and upon doing so, determined that the fluid level of that system was almost at the bottom of the sight gauge and decreasing. The Loadmaster, MCpl R.R. Book, organized the non-aircrew passengers into a "bucket brigade" to keep

fluid supplied to the booster system. The failure of this system would have meant imminent failure of all aircraft hydraulic flight controls. The Aircraft Commander, Capt. M.C. Weir, after being briefed of the situation by MWO Scoffin, decided upon an emergency landing at a nearby USAF base. The navigator, Capt. R.G. Arnold, had plotted the aircraft's position and investigated all the airfields in the area. When Capt Weir decided to make the emergency landing, Capt Arnold immediately gave him a heading to steer, airfield information and arranged the pilots publications for him. MWO Scoffin, with the aid of MCpl Book, lowered the landing gear by the emergency system. MWO Scoffin then returned to the flight deck to complete his prelanding and landing checklist duties. Capt Weir then completed a successful emergency night flapless landing.

MWO Scoffin's quick and accurate diagnosis of the situation, MCpl Book's immediate response and organization of the passengers, Capt Arnold's accurate flight following along with Capt Weir's overall control of the situation prevented a potentially disastrous incident.



Cpl C.A. Roe

Capt W.W. Poulson

CAPT W.W. POULSON

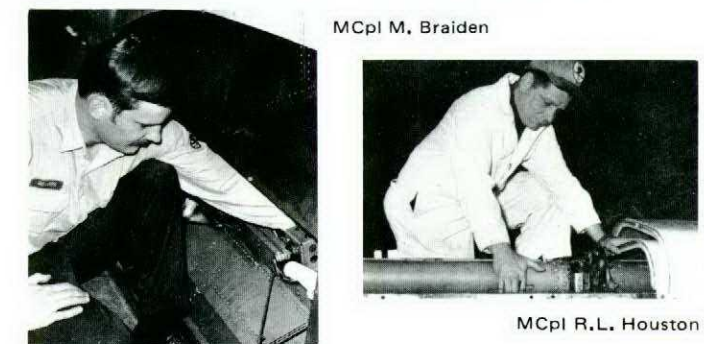
Capt W.W. Poulson, a student on the basic CF-104 Course, had just completed a Mach 2.0 run and on deceleration the engine rpm hung up at 95%. The aircraft was returned to the landing pattern. After manoeuvring the aircraft to reduce airspeed, Capt Poulson lowered landing gear and land flaps and carried out an approach. The aircraft touchdown speed was higher than normal because of the high thrust setting and the problem was further compounded by failure of the drag chute on initial deployment. Several more attempts finally resulted in a successful drag chute deployment and the arrestor hook was lowered. Capt Poulson realized a barrier engagement was imminent and just prior to the barrier flamed out the aircraft and a successful engagement was carried out.

Capt W.W. Poulson although possessing extremely limited experience on the CF-104 displayed sound judgement and by his skillful handling of this serious emergency possibly prevented damage to or loss of a CF-104 aircraft.

MCPL M. BRAIDEN

MCpl Braiden was a technical member of the crew ferrying Sea King 12416 from Shearwater to Cold Lake. While conducting a daily inspection at CFB Ottawa (Uplands) he discovered that a clamp on the main oil return line to the bottom of the main transmission was missing. This led him to conduct a more thorough inspection of the entire transmission and accessory area. This subsequent inspection revealed that the split pin on the bolt connecting the fore and aft primary servo and the fore and aft main control rod was missing and that the retaining nut had backed almost completely off.

A new split pin was installed and the ferry flight completed. MCpl Braiden's professionalism and timely action averted what could have been a disaster.



MCpl M. Braiden

MCpl R.L. Houston



Mr. Ken Hill

MR. KEN HILL

Mr. Hill is a DND Civilian Inspector who maintains surveillance on the quality and workmanship of a contractor facility engaged in the repainting of CH135 Helicopters. After one of the helicopters was repainted and ready for delivery, the ferry crew started the aircraft and ran it for a few minutes prior to flight. Just before take-off Ken noticed what appeared to be steam venting from a drain line at the belly of the aircraft. The pilot was alerted and shut down the engines. An investigation revealed a considerable quantity of water had entered the accessory drive gear box. It is suspected the source of this water was through a loosely fitting oil filler cap and was introduced during the removal of paint stripper by water flushing. Mr. Hill's keen observation and prompt action may have prevented a serious in-flight failure. He then ensured Company Procedures were revised to include masking and security of the oil filler cap and a check of the oil level before and after stripping to prevent this incident from happening again.

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Every student and every manoeuver presents a new challenge . . . when meeting this challenge, you can't afford complacency

COMPLACENCY and the instructor pilot

by Richard K. Bell
Education and Prevention Department
USABAAR



Courtesy U.S. Army Aviation Digest

WHAT IS THE one most important ingredient in an efficient pilot training program? My answer, based on 28 years of aviation experience, of which 15 were spent in flight training programs, is adequately trained and conscientious instructor pilots. It would be nice to have a large reserve of professional flight instructors to draw on when needed. This is not possible. It's also been proven unnecessary.

During World War II, if an individual had any kind of pilot's rating, he was subject to becoming an instructor pilot. My primary instructor was a civilian glider pilot. He was given a short training period in a prop-driven trainer and made an instructor. He did an outstanding job. This type of instructor procurement was repeated during the Air Force buildup for the Korean conflict. It's the only way to get the job done in an emergency.

Pilots with relatively low experience levels can be put through an instructors course, usually with good results. The Army aviation training program proves this. Selected students are put through instructor training immediately after graduation. Within 60 days, some are instructors. It's surprising how well a new instructor performs when he first starts instructing. The danger period comes later. My personal experience will make the point.

When the Korean Police Action started, I was working for the Navy, engaged in aircraft overhaul and repair. The Air Force opened a primary training base 30 miles from my home. They were begging for instructors. Deciding I would rather fly airplanes than repair them, I submitted my application.

When I arrived at the base, an Air Force captain told me to get into a T-6. This surprised me as I had never flown a T-6 before. He put me in the front seat, showed me how to start the engine and crawled into the rear cockpit. We took off and did a few basic maneuvers. Then he told me to enter the traffic pattern and shoot some landings. After two landings, we

exchanged seats. When I crawled down into that rear cockpit it was as if someone had lowered a window shade in front of me. I began to have doubts about instructing from the rear seat of a T-6. We took off and made two more landings. I told the captain I couldn't see the runway very well. He said, "Good. It proves you're lined up O.K." Finally, he told me to taxi in and park. When we got out he told me I was hired and cleared for team rides with another trainee instructor. Not only did I have doubts about my ability, I then had serious doubts about his.

I was sent to a pilot instructor school where, during a highly concentrated course, I was given 60 hours of dual and solo flight time. I was now trained as an instructor. All I lacked was actual instructing experience, something an instructor must get for himself. The trick is to stay out of trouble while you're getting it.

I'll never forget graduation day for my first class of students. They all passed their check rides and were in the top third in class standings. My chest swelled with pride as they went up for their certificates. I honestly believe that first class was my best. Could it be that I just worked harder?

My next two classes were O.K. Not as good as the first, but still no real problems and no accidents. My students passed the course, but their grades dropped. I was becoming complacent and didn't know it. I rationalized by saying the students just weren't so good as they used to be. It couldn't be me — I was an experience instructor now and getting better every day.

It didn't take long for some dangerous sings to appear. During a simulated practice forced landing, I let a student go below the minimum altitude of 300 feet. The engine loaded up. When I applied throttle, it wouldn't take. I retarded the throttle and gently applied it again. Just as I was getting ready to flare for a wheels-up landing, the engine came to life. The treetops kissed us as we climbed out of the clearing.

A few days later, I was giving one of my students a review flight in preparation for his phase check ride. He was doing a fine job, or so I thought. We were at 6,500 feet and I was comfortable in the rear office with my feet propped up on the bar that supports the rudder pedals. I was leisurely smoking a cigarette. I told him to give me a three turn spin to the right. Out SOP called for us to be recovered from spins at 5,000 feet. When you consider that a T-6 loses about 1,000 feet every 15 seconds in a spin, I wasn't leaving much margin for error.

The student entered the spin smoothly. During the recovery, he was slow to release opposite rudder pressure, then he applied abrupt back pressure on the stick. We snapped into a secondary spin in the opposite direction. The T-6 is a reliable old bird but it's really vicious in a secondary spin. It was going around so fast the sky was a flur. I managed to get my feet down and get on the controls. After telling the student I had it, I started the recovery. We were below 2,000 feet when I recovered back to straight and level flight. For a long time there was a lot of silence in the airplane. Then I asked the student how he felt and he said he thought he was going to be sick. I told him I felt kind of sick myself.

After flying around for a while to calm our nerves, we went back to the field and landed. Another one of our rules was to bail out if you were still spinning at 3,500 feet. When you consider this, you can see why we didn't feel like flying any more that day.

This incident served to get me back on the ball again for awhile. But it wasn't long before complacency began to get me again. This time, I wasn't so lucky. While I was out with one of my students, a weather front moved over the field. As we entered traffic, the tower operator announced the wind was variable, gusting up to 40 knots. Good judgment told me to land. Complacency told me to let the student land. Good judgment lost. The approach wasn't bad, but the roundout

was started a little late and we touched slightly main gear first. We bounced, then everything went to pot. The first thing to make contact with the runway was the left wing tip. I tried to recover, but was unable to get the wing up. We went from the left wing tip to the nose, then to the right wing tip. During this process, the right landing gear broke off and we slid down the runway backwards. When we came to rest, the engine was broken from the mounts and drooping. That T-6 looked as though it was hanging its head in shame for what I had let happen to it.

Why did this happen? Why did I put that student in a situation that was beyond his capability? I had been instructing for two years in this type aircraft. If it had happened during my first class of students I could have understood it a little better.

The accident report came back with the primary cause listed as supervisory error. The board said we shouldn't have been flying during the time the weather front was passing. They indicated that I was a victim of circumstances. They were right. I was a victim of circumstances — circumstances I had created. There was a supervisory failure. The most important supervision of all had failed — self-supervision.

The designation of instructor pilot carries with it a tremendous responsibility. How far should an IP let his student go before he takes action to correct his student's error or errors? This question is as old as aviation itself and has often been the subject of heated debates between instructor pilots. Some say you must let the student go until he can see his own mistake. This kind of logic can lead to deadly traps, particularly while practicing simulated emergencies, such as autorotations or single engine operations in light twins. The student is depending on the IP to keep him out of trouble. He may think he's doing O.K. because the IP hasn't said anything or taken any action, when actually the situation could be deteriorating to a point where the IP's capability is taxed to the limit to return to a safe flight condition.

Basically, what it all adds up to is that only the instructor can make the decision about how far he should let the student go. He must make this decision based on individual situations. Altitude, air speed, rotor rpm and aircraft characteristics must be considered. In short, how much time does he have to effect recovery and still allow a margin for error in his own judgment or response time?

As the new instructor pilot gains experience, his proficiency in anticipating and recovering from students' mistakes increases. Unfortunately, this is about the same time that complacency has a tendency to rear its ugly head. When complacency overrides good judgment, the situation can deteriorate to a point where the limitations of the machine and instructor are exceeded.

When a new instructor allows a situation to deteriorate to a point where an accident occurs, it is usually because he failed to recognize or properly analyze the accident producing situation. The answer to this is improved initial instructor pilot training and higher standards. However, as experience increases, the real problem is complacency. This is where the instructor pilot must enforce self-discipline and not be lulled into a false sense of security that can cause him to exceed his own capability — not because he didn't recognize the situation, but because he waited too long to take corrective action.

Be proud of your title of instructor pilot. It's the mark of a professional. Be confident of your ability. But remember that every student and every maneuver presents a new challenge. When meeting this challenge, you can't afford complacency. ■

CAPT W.A. PURDY

Capt W.A. "Bill" Purdy, Air Reserve pilot and FSO on 411 Squadron had commenced take off from Downsview airport in the left seat of CSR 123 Otter 3691 on an IRT to Trenton, Ontario. At approximately six minutes after take off and at about 2000 feet AGL the engine started to malfunction, RPM dropped to 1600 with no resultant power from throttle movements. The aircraft Captain was in the right seat but the A/C was not equipped with dual brakes.

Although flying over a relatively built up area under an IFR clearance and VMC Capt Purdy selected an appropriate landing area, briefed his crew and passenger, carried out the emergency shutdown and had ATC advised of his intentions.

Capt Purdy then guided the A/C on a perfect approach and touchdown in a ploughed field within 70 seconds after the initial indication of power failure.

His quick actions and demonstrated skill in the circumstances are to be commended in averting further complication, injury or damage.

CPL G.E.J. LEGERE

On the morning of 23 Jun 75, Cpl Legere had just completed installation of the port flap on Voodoo CF101037 which was on periodic inspection. Suddenly an explosion and fire occurred in the fuselage wing area at the #2 fuel cell position. Shortly after the explosion, Cpl Legere observed Cpl O'Neil attempting to drag an extinguisher hose toward the burning aircraft. He immediately went to his assistance and lifted the hose onto his shoulder and followed Cpl O'Neil to the aircraft. Cpl O'Neil then climbed onto the wing and directed the contents of the CO2 extinguisher at the flames until the CO2 was expended. Cpl Legere continued to drag on the hose, at considerable personal risk to permit Cpl O'Neil to reach as close as possible to the fire. When the CO2 was expended, Cpl Legere called for Cpl O'Neil to vacate the area. The firefighters arrived shortly thereafter and extinguished the fire.

Cpl Legere's quick action in assisting Cpl O'Neil to get the extinguisher into operation contributed greatly to the successful containment and diminishing of a fire which would surely have destroyed the aircraft and possibly the hangar and other aircraft located therein.

CPL B.C. O'NEIL

On the morning of 23 Jun 75, Cpl O'Neil was working in the stabilator area of Voodoo CF101037

which was on periodic inspection. Suddenly an explosion and fire occurred in the fuselage wing area of the #2 fuel cell position of the aircraft. Cpl O'Neil ran directly to the CO2 fire hose and with the help of Cpl Legere dragged it to the aircraft. He then climbed onto the port wing by means of a maintenance stand and directed the contents of the CO2 bottles at the fire from a position as close to the flames as the hose length would permit. He continued this action until the CO2 was expended, diminishing the fire and containing it to be #2 fuel cell area. He then vacated the area. The firefighters arrived shortly thereafter and extinguished the fire.

For his outstanding action at great personal risk in preventing the total loss of the aircraft and possible loss of the hangar and other aircraft located therein, Cpl O'Neil is presented a "Good Show" award.

MCPL G.G. CHAPMAN

On the morning of 23 Jun 75, MCpl Chapman was working in the stabilator area of Voodoo CF101037 which was on a periodic inspection. Suddenly, an explosion and fire occurred in the fuselage wing area at the #2 fuel cell position of the aircraft. MCpl Chapman proceeded directly to the CO2 fire extinguisher hose. As Cpl O'Neil and Cpl Legere carried the hose to the aircraft, he continued to play out the hose. As soon as Cpl O'Neil was in place, MCpl Chapman broke the seals on the CO2 bottles. He remained at this position until the CO2 extinguishers were expended. He then proceeded to man a wheel mounted extinguisher and was approaching the aircraft from the starboard side when the firefighters arrived and extinguished the fire.

MCpl Chapman's rapid response to this serious emergency and his efforts to assist the fire fighting operation doubtless prevented the destruction of the aircraft and possible loss of the hangar and other aircraft located therein.



Capt W.A. Purdy

Cpl G.E.J. Legere
Cpl B.C. O'Neil
MCpl G.G. Chapman



The Professional

by Maj D. A. Hogden, USMC

OLD Established Airline soliciting applications membership into the Professional Aviators Fraternity. Only mature, dedicated, sincere and responsible persons need apply.

THIS word, perhaps more than any other, is used in naval aviation to describe what we should strive to obtain. Professionalism.

Aviation is our stated profession and as aviators we are the members which collectively constitute this fraternity.

Let us now state exactly what a professional is and then we'll take a look to see if we, as aviators, are in fact worthy to wear this most coveted accolade.

The dictionary defines a professional as:

"One who is engaged in one of the learned professions or in an occupation requiring a high level of training and proficiency."

As to that part of our definition which relates to the requirement for a "high level of training and proficiency," I feel that we can all agree that we as Naval Aviators qualify for membership in the Fraternity of Professionals.

For the most part, every man wearing the "Navy Wings of Gold" above his left breast pocket has acquired considerable academic training, has successfully undergone an intensive physical, mental and psychological screening process and has further successfully completed an intensive program designed to ensure receipt of the required specialized training.

So now, we have at least partially equipped ourselves to seek admission into the Fraternal Order of Professionals. But, perhaps another part of the definition of "Professional" should read, "One who accepts the trust of others and the responsibility for that trust."

When you "bare" yourself to the surgeon's knife, you have every right — legal, moral and otherwise — to believe that the man on the other end of that knife is a professional in every sense of the word. You are in fact placing a trust, a confidence, a faith in that surgeon. A trust in his specialized training, his intensive academic preparation and a trust in the surgeon's responsibilities to his profession.

The responsibilities of the surgeon require him to ensure that he is abreast of the latest surgical techniques, has the required equipment in readiness, has researched, studied and understands procedures for each particular operation, has briefed his surgical team on their duties and any emergencies that could possibly be encountered, blood types have been cross-matched, etc., etc. . . .

As in medicine, so it is in aviation. If we want to consider ours as a Fraternity of Professionals, then we must meet the criteria of definition. A Professional — a man willing to accept the trust of others — a man willing to accept the responsibilities of that profession.

To me, this means that every person who boards our

aircraft or any person who requires the support of our aircraft, has every right — legal, moral or otherwise — to expect that a professional is "up front".

Now, then, let's get down to the nitty-gritty. What are the responsibilities of our profession?

Our single major responsibility to the profession requires that we hold ourselves in a state of *physical and mental readiness to perform any mission* which our type aircraft is capable of performing.

More specifically, our responsibility requires us:

- To keep our bodies in good health and physical condition at all times.

- To keep ourselves abreast of, and proficient in, all aspects of aviation; instruments, ATC procedures, state-of-the-art changes, etc.

- To know our aircraft, its capabilities, limitations, crew missions, emergency procedures and survival techniques.

- To be willing to accept nothing less than perfection from ourselves, crewmembers, aviation associated personnel and to be able to provide instruction and guidance where indicated and to do so!

- To be aware of and to execute all orders and instructions relating to our profession.

There they are, all laid out coldly for all to see — the requirements for admission into the Fraternal Order of Professional Aviators.

Tough entrance requirements? You bet your sweet bippy they are! They require dedication, sound judgment, good attitude, midnight oil and *practice*.

I recall reading a story concerning practice. It involved a golf professional and a spectator. After a particularly excellent sand shot, this particular golf pro overheard a spectator saying, "Boy, is he ever a lucky sand player." The golfer, thinking back over the countless hours he had spent practicing sand shots, was heard to retort, "Yeah, I'm lucky — and the more I practice, the luckier I get."

Sequels to this little story abound in aviation. You will discover that the more you practice, the "luckier" you will become in flying a perfect GCA or tacan approach, the "luckier" you will become in flying mission profiles "right on the money," and so on and on. . . .

Actually, luck plays no part in making a professional aviator. Dedication, hard work, good attitude and practice are the real ingredients necessary.

Well, how about it? Are you ready to accept the *trust and responsibilities* required? Are you ready to expend the time and effort required? Are you ready to pick up the tab for the price of becoming a true professional?

Nowhere in today's naval establishment, with out ever-increasing world responsibilities, or in today's crowded skies is there room for anything less than *professional aviators*.

Courtesy APPROACH

Would U Believe?

ON THE BRIGHTER SIDE

But I thought...

A B-52 was descending to enter a low level navigation leg. In the cockpit were three pilots: an aircraft commander on student status in the left seat, a co-pilot in the right seat, and an instructor pilot. Descending through 14,500 feet with the autopilot off, the aircraft commander began what should have been a slight turn, but instead the aircraft entered a bank of approximately 100 to 105 degrees and started a rapid descent. Noticing the excessive bank, the instructor pilot called on interphone for the pilots to "roll it out". The co-pilot looked up from the fuel panel, took the wheel, and rolled the wings level. As the pilots were pulling the nose up at an altitude of 8,500 feet, the navigator decided they were out of control and ejected. When he left, the noise and rapid decompression convinced the pilots they had a structural failure on their hands. The aircraft commander promptly ordered the crew to bail out. The IP attempted to stop them by shouting "Don't bail out", but apparently no one heard him or if they did, they ignored his advice. After the pilots left, the IP went down to the lower deck where he found the radar operator still at his station. The IP told him to go ahead and eject, which he did, and then the IP bailed out himself. When the IP, the last man to leave, bailed out, the aircraft was in a wings-level climb passing 14,000 feet. The lonely bomber flew for more than an hour before crashing.



Touch and Go

A B-47 was inbound to an overseas base after a combination courier and cross-country training flight. There were three crewmembers aboard. In the front seat was a high-ranking staff officer who was qualified in the aircraft. In the back seat, there was a highly experienced instructor pilot who was also a flight examiner. The navigator, up in the nose, was also qualified as an instructor and flight examiner.

It was night as they neared their destination, with a high overcast and good surface visibility. Cleared for a VOR penetration, with a GCA pickup at low station, the crew started down. The approach was normal, but the aircraft was never levelled off at low station altitude inbound! It touched down in the middle of a large open field almost 11 miles from the end of the runway! The startled crew added power and climbed the big jet back up to 1,600 feet where they intercepted the GCA glide slope and completed the landing. The crew never said a word to approach control or GCA about their touchdown in the tules. In fact, no one knew they had hit short until after landing when the aft main landing gear was found cocked 30 degrees to the left! Fortunately, the runway was slightly wet which permitted the crooked gear to slide and the crew was able to keep the bent bomber on the pavement.



Although the story which follows deals with the F-4 which is not in our inventory, it is relevant to our fighter operations. Our thanks to USAF Aerospace Safety, and our compliments to SSGT MacDonald for this excellent article.

Sgt Joe Kincad walked leisurely to his airplane. It was the fourth day of the ORI and Joe was starting to feel the strain of max flying and twelve hour shifts. As he rounded the corner of the bunker that housed his F-4E, he saw armament hanging from the pylons ready for the day's first flight. For the last three days Joe's phantom had flown 12 OR flights in a row. There's a lot of my sweat in that airplane, Joe thought quietly to himself. He was proud to be a crew chief and the aircraft displayed his devotion.

During his morning preflight inspection the flightline expediter drove to Joe's bunker and asked if he was having any problems. "No," Joe replied, wiping his hands with a rag, "but I could use some PD680. The belly's dirty from all those cart starts and I want to wipe it down. You know pilots are touchy during an evaluation. Sometimes they think a dirty airplane means problems." The expediter, a TSgt, had a lot of things to do beside worrying about dirty airplanes, but he also knew what type of crew chief Joe was. "O.K. Joe," he said, "As soon as I get a chance I'll bring you some. In the meantime finish your preflight, take your forms to the flight shack and grab some coffee. Today is the last flying day and there's no telling what will happen, so you might as well relax while you can."

He waited Too long

by SSGT Thomas D. MacDonald
32TFS APO NY

He drove away and Joe walked back into the bunker, closed his tool box, picked up the aircraft forms and walked to the flight shack. Once inside he picked up a tech order on starter carts, the -2-8. Yesterday his airplane had two hang fires and he wanted to read up on starting precautions. Fires scared Joe, especially with a fully loaded airplane.

Fifteen minutes later the expediter came into the crew chief lounge and said all the aircrews were on the way out. Joe hurried to the bunker because he didn't like the aircrew arriving without him being there, and he didn't want to start the day with a bad impression.

Once back at his bunker Joe was the bucket of cleaning fluid, so hurriedly he scrubbed the belly. As he was pulling the downlocks off, the aircrew arrived. "How's the bird, Chief," the pilot asked as he was climbing the aircraft ladder. "No writeups in twelve flights, sir," Joe said proudly.

With the downlocks off and the pins pulled, the aircrew walked around the airplane then climbed in the cockpits for a hot preflight. After all the flight control checks were completed, the pilot told Joe to button it up before engine shut-down in case they got the word to scramble.

Joe was putting up the last panel when he saw a fuel leak along the center fuselage. Man, I can't break this thing now, Joe was thinking, when the pilot said, "We're shutting her down, chief, and going on alert." Joe acknowledged and once again the bunker was quiet.

Joe walked over to the two white cans that contained carts and proceeded to remove the lids. Once opened, he carried them under the airplane and pulled out the breeches. Step by step, according to the TO, Joe installed the carts then looked at the fuel leak again.

"Damn," he said quietly to himself, and closed the panels, hoping it wouldn't get any worse.

The flightline was very still for over an hour. Joe sat talking to his aircrew about anything and everything. They were all trying to remain calm but it wasn't easy when you might scramble at any time. The pilot mentioned something to the navigator about yesterday's bombing scores but Joe wasn't listening. His eyes were fixed on the ground beneath the airplane where a puddle of fuel had formed. Joe knew someone had to be told. He walked over to the pilot and said, "Captain, I'd like you to take a look at"... but he was cut off by the scramble horn and flashing green "Go" light.

The aircrew ran up the ladder and jumped in the back seater, then the pilot. He climbed down the ladder and pulled it away from the aircraft while giving the AC the signal to start number two.

A loud noise of air gushing, then black smoke filled the bunker. Joe took a few steps back, caught his breath, then bent down to get a clear view of his aircraft. When number two engine was up to rpm, number one was started.

Again there was a strong air gushing noise that Joe could hear over his headset and one engine running. But this time a long orange and red flame accompanied the smoke. Number one engine had torched. Joe knew that this was no problem—it happens. Then the bunker floor lit up like a grass fire that

spread to the belly of the F-4. Joe could not believe what he was seeing. The fire quickly moved to both wheel wells. That fuel leak Joe hesitated to mention was a ruptured fuel cell, a time bomb waiting to ignite.

The pilot looked down at his crew chief whose eyes were fixed on the airplane. Then Joe looked up and gave the aircrew a signal to cut engines and get out. The aircrew members could not understand what was happening. Then both fire lights came on and the trained minds of the pilots went into action. The engines were killed and the proper egress initiated. Joe grabbed the fire bottle as the crew ran for help. But nothing could be done as the aircraft became engulfed in flames. The crew chief knew his battle was lost and turned to escape. But Joe had waited too long. As he turned, the right drop tank exploded. All that could be seen was a big fire ball in the bunker.

The fire department arrived in very short time but the armament started to go off and nothing could be done except contain the fire until it burned itself out.

Many theories were given as to the cause of a fire that killed one man and destroyed an aircraft. But the truth lies with a man who can never tell it.

He waited too long.

Courtesy AEROSPACE SAFETY



STRESS and Flying Safety

by Maj C. Crymble DCIEM

The pilot was posted to CFB Chatham from a desk job in NDHQ. He received the news with a certain amount of elation as a return to flying after five years in Ottawa was something he welcomed. His elation, however, was tempered by a certain amount of foreboding. As he stared at his posting instruction he thought to himself, "How will my wife and kids take the news, and what will my oldest daughter do now as she has started at Carleton University?" Well the news was received as a bit of a shock by a family which had settled into a pleasant suburban life in Ottawa. The pilot's wife had a nice little job with the Nepean Public Library which she enjoyed, her circle of civilian and military friends and the amenities of a very pleasant little city. The eldest daughter, ready to commence her second year at Carleton University, would have to look for accommodation, and in the opinion of the pilot's wife, was too young to be living on her own in a city. The youngest children, too young almost to remember much of any other place but Ottawa, were upset at the news that they would be moving away from their friends and the security of a life and a home they had grown up in.

Of course, the pilot and his wife had talked about the imminent posting, and realized the necessity of his return to a flying position. Still, it was a shock to the pilot's family, one for which they were not ready.

The pilot eventually headed off for the OTU in Bagotville leaving his wife with the task of packing their furniture and

effects for the move. He promised that he would try to return home from Bagotville on as many weekends as he could manage during the course.

During the OTU course he went on a diet because of too much soft living while flying the desk in Ottawa. The conversion flying went pretty well for him, although there were one or two areas of the training which he had a below-average ability for mastering. However, he felt confident that with more time under his belt in the CF101 he could turn out to be a pretty good interceptor pilot.

He couldn't get down to Ottawa until the course was completed as he had spent the couple of spare weekends during the course to house hunt in the Chatham area. At least he had the good news on his return to Ottawa that he had managed to buy a nice house about 12 miles from Chatham.

The move was finally made after a tearful farewell to the eldest daughter and the family friends. It was a pretty cheerless group which arrived at the new house near Chatham two days before their furniture, with the wife complaining about the remoteness of the house, and the lack of good shopping, and the kids moping around because there didn't seem to be any other children to play with.

Things improved somewhat after the arrival of the family's furniture and effects, making the new house almost like home. A squadron bash at the mess gave the pilot and his wife a

chance to meet old friends again.

However, the pilot remained concerned about several things, including the daughter in Ottawa, the extra cost of paying for her accommodation, his wife's depression, etc. He assured himself that with time the family would settle down into the new routine. Two weeks after arriving in Chatham, the pilot started flying duties on the squadron and after his third training flight...

Well, before we continue this typical story of many of our older military pilots, let's discuss the stress that this poor guy was suffering. Yes stress, or perhaps we should say distress. An article in the Toronto Globe and Mail on November 23, 1974 gave the following statistics about stress due to life change, such as this fictitious pilot had undergone.

In 1971, 2,600 Canadians committed suicide; 2,000 died of cirrhosis of the liver; 49,000 died of coronary disease and 44,000 were treated for peptic ulcers. The paper was of the opinion that more than half of the illness in Canada is psychological in origin.

How does the stress of life changes affect us? It lowers our resistance to all kinds of infectious disease such as colds and influenza. It worsens most diseases and slows down recovery. Once we face more stress than we can cope with, the effects multiply relentlessly. Office workers may get more ulcers, **pilots may become less careful and cause accidents.**

The message from stress research to date appears to be that the mind rules the body's response to outside threats. The implication for pilots is that stress can lower a pilot's reaction to the threat of an accident, by decreasing his concentration on the precise tasks required to fly an aircraft safely.

Many psychologists have become involved recently in the analysis of life changes, in the genesis of disease, and in performance. Dr. Thomas Holmes has spent a lifetime in this work and has evolved an interesting point scale for the many life changes we all encounter, from happy changes such as a marriage to unhappy changes such as death in the family.

The narrative of the fictitious pilot, by the way, has a point score of 230 on Holmes' scale, which according to Holmes indicates that the pilot was undergoing a degree of stress that would produce an illness of some kind.

Work on stress is still in its infancy and the relationship between stress and such pilot attributes as vision, concentration, mental computation, reaction time, etc., remains at the moment only a suspicion. Having all gone through stressful periods ourselves, we don't need psychologists or doctors to tell us that we tend to concentrate our attention on the source of our stress at any particular moment to the detriment of our other responsibilities and duties. We all have experiences in which we missed a routine turn while driving, because we were thinking about something other than the task of driving the car. Such lack of attention while flying could have disastrous results. The cockpit is not a magical shield which cuts off all concerns except the safe operation of the aircraft. The pilot is not immune in the cockpit to the worries he will face on landing.

Pilots are active people who try to do something about what is causing their stress. They don't usually need professional counselling to help them cope. What they **DO** need is an understanding of how much stress is **TOO** much. The annals of aviation accident reports have many cases of pilots who said they "felt fine", while they were really worried sick about family illnesses, arguments or other personal matters. If you as a pilot feel jittery or concerned about something, if you find

that your mind is continuously wandering back to some problem, if you are continually turning events of some past or future occurrence over in your mind, then you are probably a prime candidate for a few days off from flying.

The distress of life changes affects us in psychological, physiological, and behavioural ways. For example, we may experience a mental and emotional "downer" after a posting, and a change in attitude towards our job, our home and our self. The physical effects of such distress may be stress on our heart, an ulcer, or maybe just a case of diarrhoea. The behavioural changes such as change in reaction time, the conception of elapsed time, inattention, carelessness, irritability and impatience would have an obvious effect on a pilot's ability. These three factors are operating together, and as long as the cause of the stress is not dealt with will remain to augment and compound each other.

What to do? The obvious answer is to give the pilot time off to sort out his problems and reduce his stress. This is not feasible in most cases for the reason that the pilot's pride will not allow him to admit that his stress is serious enough for this action. Secondly, there is the thought, "What will the flight surgeon and the Squadron Commander think if I ask for time off? Maybe they will think I'm going a little bit squirrely, and then how will admitting to stress affect the way the CO sees me as a pilot?"

The tendency in the long run is to repress the thought that stress can affect our abilities ("yeah, it can affect some people but not me") and to keep on flying. We may have built in capacities to handle stress, but no one is immune to it. Stress will sap your capacity to function in your job. The very minimum that you can do in acknowledging this flying hazard is to consciously be aware of it, and make allowances for it by increasing vigilance during the critical flight stages of take off and landing. If you can manage a few days leave to sort out your problems, so much the better.

Oh yes, the end of our narrative. There are at least three possible endings. Take your choice:

- The pilot landed wheels up due to lack of attention to flying the aircraft.
- The pilot realizing that his personal problems were bothering him so much that they were affecting his ability, decided to double-check himself on the critical flight phases.
- The pilot talked his problem over with the flight surgeon who was completely sympathetic to the pilot's problems and recommended time off from flying duties. The squadron commander did not accuse the pilot of "goldbricking" but commended him on a good Flying Safety Attitude.

Safety

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

AIRCRAFT EMPATHY



When driving your car do you:

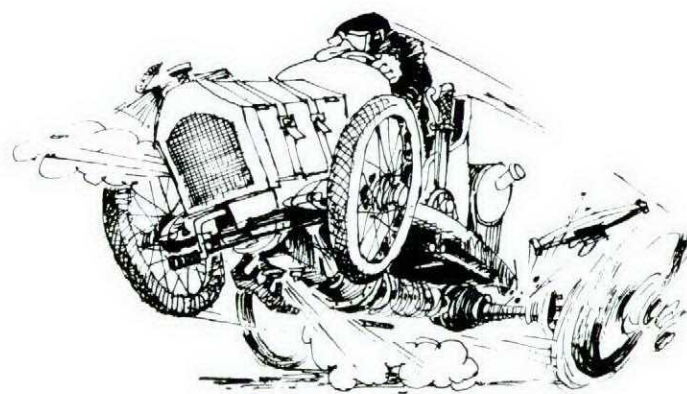
- (1) Turn the steering wheel when stationary?
- (2) Sit at traffic lights in gear with your foot on the clutch and then do a racing start on the green?
- (3) Drive off from cold without warming the engine?
- (4) If stalled at night with headlights on, leave them on while restarting the engine?
- (5) Force the synchro-cones to adjust the engine rpm when changing gear?

Asking for Moon Rocks?

The aim is not to question the habits of car owners, but to concern those who fly aircraft in a feeling for the machinery. The quest is for aircraft empathy.

In order to get the best from an aircraft to stay in the air longer for a tankful of fuel, to fly safer and for the aircraft to last longer, the operator must be sympathetic to the aircraft he flies. The pilot who does not have a working knowledge of aerodynamics is at an obvious disadvantage. If he does not appreciate the effect of the stress he imposes on his aircraft, he is a liability.

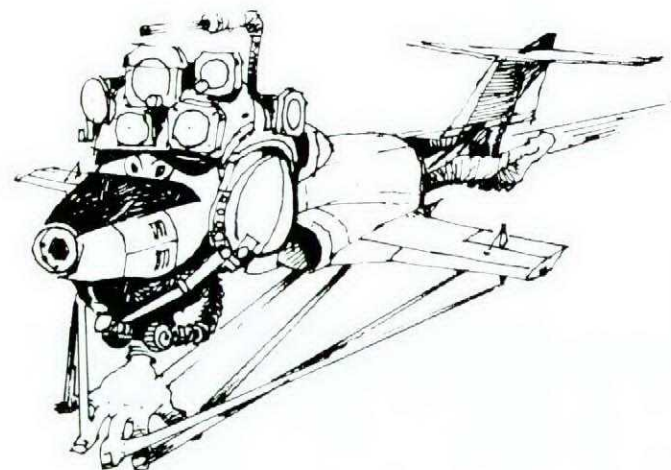
Aircraft empathy starts as an educated understanding of the hardware of the aircraft, and progresses to a common sense, realistic and sympathetic handling of that hardware. Philosophically, the control column becomes an extension of the hands and the instruments extensions of the brain. The aircraft becomes a mechanical alter ego.



If you answer "No" to most of these questions then you are qualified to read on. You probably have sufficient feeling for machinery to criticise this article constructively. If you answer "Yes" you could be one of several types:

- a. You have never considered such ideas.
- b. You understand the questions but consider them irrelevant.
- c. You believe that all machinery is built in the service of man and ought to perform to his wishes under all forms of treatment. Further, if it breaks it should be replaced.

Type a might find the article revealing. Type b may see that if he wants his car to last longer, the questions become relevant. For Type c there is no hope: the article will either fall on deaf ears or the blood will boil with rage and indignation.



The need for empathy

The arguments for empathy become pedantic by their repetition. However, the Service has lost the lives of pilots and many thousands of pounds through thoughtless and crude handling of its equipment.

Empathy is certainly desirable and important, there can be no argument about that. I think it is vital. I recommend that it should be considered, taught and even assessed at flying training schools.

How to start

The first stage in achieving empathy is understanding. What is required is not only the essential details given in most pilot's notes, but a broad education about the valves, switches, jacks, motors and generators, pipe joints and unions etc. Size, material, stress level, wear rate, working temperature, and the position in the aircraft of all these items should be appreciated. The aircraft structure should be studied (not necessarily to degree standard!), how it's built, where the stress paths are and what it is made of. Furthermore, knowledge need not be limited to the aircraft. There are vast areas of relevant information in such subjects as strength and property of materials, metallurgy, workshop practices, high-temperature plastics, transistor theory, and many others, all of which are building blocks for empathy.

The next step in achieving empathy is more abstruse, but can be likened to the advantage of card sense for playing cards or numeracy for manipulating figures. The aircraft operator has to apply sympathetically his ever-increasing knowledge and understanding to the handling of his aircraft. This requires acceptance of the importance of empathy to the long term benefits of the aircraft. It requires a schooling of mechanical finesse to the natural manipulative skill that is gained during flying training.

The final step is to realise that perfection can never be achieved. There is a process of continual refinement, and there is a real sense of excitement and achievement in developing this mechanical other self.

Achievements

The two most important achievements of the application of empathy are that machinery, which is subject to wear and failure, can be made to last longer, whilst flight becomes safer.

Reconsider the analogy of the car made in the introduction. The wear rate on cylinder walls is dependent on several factors: the number of cold starts, lubrication, and engine rpm during warm up. By adjusting driving technique and the use of the car, the wear rate can be changed by at least a factor of 2. A driver who:

- a. Idles his cold engine will full choke,
- b. Drives away from cold using over 4000 rpm, or
- c. Forgets to change the oil regularly,

may ruin the cylinder bores in 40,000 miles. However, the driver with mechanical sympathy who:

- a. Pushes his car into the garage, if it is parked just outside,
- b. Walks to the corner shop for his cigarettes,
- c. Warms up a cold engine at 1500 rpm for at least a minute, or
- d. Changes the oil at the first signs of degradation,

may well double the bore life of the engine. And it costs him only the oil change. Clutch and brake wear, battery life and fuel consumption all improve with empathy, at no extra charge.

Back to aircraft. The civil variant of the Avon is "lifed" at about 3000 hours, but the RAF changes the Avon at 500 hours. Obviously a fighter cannot be operated like an airliner, but the point is therefor a change in handling the life increases by a factor of 6. Think again, though: there are aspects of the airline style that could be used for the fighter. Instead of the slam acceleration relying on the ACU, lead the rpm by a controlled movement of the throttle. Thermal shock to the turbine is reduced, fuel consumption is also reduced and the engine is accelerated as far away from the surge line as possible.



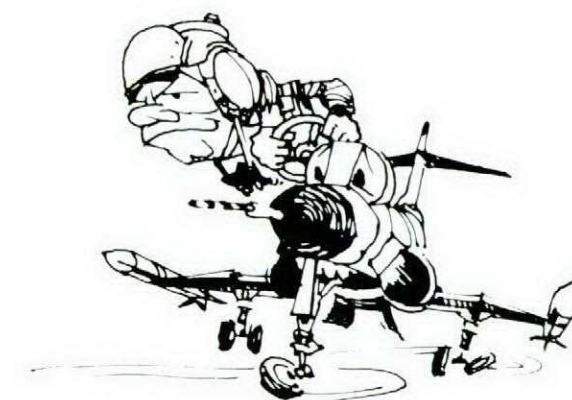
Non-operational climbs could be restricted to the maximum continuous rating instead of full military power. Throttle 'pumping' in close formation is another source of engine and airframe wear. Large throttle movements which are made to produce minute corrections of the aircraft position cause unnecessary compressor blade fatigue, intake skin panting, thermal cycling of the turbine and increased fuel consumption. If a particular aircraft is two feet aft of correct station, a quarter of an inch movement of the throttle forward may marginally increase the thrust sufficiently to move the aircraft. The same quarter of an inch should be removed as the aircraft approaches its correct position. The formation result may not approach 'Red Arrow' perfection but surely it's good enough for government work. An Avon costs about \$250,000 and a Spey costs about \$600,000; if their lives could be doubled the Service would halve the cost of engines.

Do you still need convincing that machinery should be cared for? Why break into the circuit at 6g when 4g will do? Why land 10 knots fast and force the 'chute or brakes to cope with the square-law increase in kinetic energy? Why carry out the controls full and free checks by running the protesting hydraulic jacks and motors hard up against their end stops? Why taxi fast round corners, throwing the aircraft weight onto the outer wheels or bogies? Why wind on maximum nose wheel steering and expect the tyres to hold onto the tarmac? And why risk FOD either to your own engines by taxiing close to your leader or to other engines by letting your jet wake cross parked aircraft?

Conclusion

Aircraft empathy involves the operator in man-machine intergration. It requires a full understanding of the aircraft, its systems and the environment in which it flies. Aircraft handled with sympathy will last longer, fly safer, and will cost less to operate. (Besides which, it is more professional—Ed.)

From RAF AIR CLUES



Ground Egress

by Richard T. Linn - Training Specialist

Initially, every flight crewmember should be formally trained in the proper emergency ground egress procedures for the aircraft he is about to fly. This training is normally given with the in-flight emergency egress procedure prior to any crewmember's first flight in an aircraft. Also, the regulations of any military or commercial airline should specify periodic retraining times for egress proficiency training, since it is a fact that the crewmember who has recently practiced rapid egress from his aircraft under controlled conditions is most likely to do it properly and rapidly under actual emergency conditions.

Many of the training and safety articles that I have reviewed have stressed the point that it is very easy to become complacent about ground egress training and it almost always seems to be unpopular. Also it is not enough to know how to operate and unfasten various equipment release mechanisms — we must be able to do it fast and equally well during a moment of stress.

We all know that these statements are true, yet most of us are guilty of putting it off until the next flight, of feeling stupid making a practice rapid departure from our bird after parking, or we may even have thoughts of coming over the side too fast and breaking a leg on the ramp during practice.

Take the time to set up practice for a group, with full flight gear properly hooked up and a stopwatch to show your progress. For these practice sessions, it is advisable to use an old mattress on the ramp or hangar floor in addition to a safety man to guard against a fall.

When you read your actual time from announced emergency — to unfastening of all life support equipment — to final clearance from the aircraft — while thinking how rapidly aircraft fires can erupt, you will have a built-in incentive to cut down the time with frequent practice sessions.

Certainly, any pilot or crewmember can plan to practice an emergency ground egress from his aircraft after a flight is completed and wheels in the chocks. Promise yourself a "practice" emergency ground egress at the next opportunity. If you find a quicker/safer procedure, report your findings and recommendations to your local flight safety officer, so that others may also profit by your practice.

PRACTICE MAKES YOU FASTER!!!

Northrop F5 Technical Digest

Stubbed Runway Toes

By Lt Col Robert J. Brun
Directorate of Aerospace Safety

Back in the early days when there were a lot of Gooney Birds in civil and military fleets, I remember seeing a pilot from the former group discover and bemoan the reason for the persistent five-degree right bank his machine developed immediately after his precision two-point landing "right on the numbers." Unfortunately he had been less than precise and stubbed the right gear on the toe of the newly-commissioned runway extension. The tire took the impact okay but the gear rotated aft sufficiently to produce the five-degree list and a bulge in the upper wing skin where the drag brace retreated rearward and upward.

One of our Air Force pilots blunted his career and a four-engine transport in almost identical fashion a few years ago. One difference was that he was more precise — the wings were perfectly level — and he parked both main gear assemblies against the forward edge of the new runway extension and "rolled out" on the belly and nose gear.

Along came jet equipment and its nearly-constant pitch attitude and final approach sight picture which should have reduced the number of short landings dramatically and virtually eliminated the category for these aircraft. For a variety of reasons, which probably includes pride, visual illusion problems and plain misjudgment, they continued to occur.

A C-135 type aircraft was recently involved in an under-shoot accident when the right seat pilot tried to salvage an erratic approach. The wing-wagging final terminated in a cloud of dust and the aircraft came up onto the runway at a decided angle to the centerline. The parts-replaced list included an engine pylon and two tires on the main gear.

A jumbo jet was damaged in a short landing when the pilot cut it a little too thin during a landing on a minimal runway with an overwater final approach. The touchdown was

on an embankment, 20 feet short and 30 inches below the threshold.

Studies resulting from this last accident reiterate the dangers associated with the flat final and the importance of establishing and holding a stabilized final approach slot. Comparative figures used to illustrate this point show that in a large jet transport the main gear touchdown point is 1600 feet behind the pilot's aim point on a flat approach (1.5 degrees). Some additional approach angle figures are provided in the table. These figures show beyond a doubt that flying a flat approach in a big airplane can get you in a heap of trouble. While avoidance is the logical and perfect answer, the real world solution is early recognition and reaction to approach irregularities and the willingness to go around when it's called for.

The odds against salvaging a bad approach on short final vary directly with the size of the aircraft, so the decision not to flirt with the approach overrun during landing should be made early — like before takeoff.

GLIDE SLOPE ANGLE (DEGREES)	PILOT'S AIM POINT ON RWY (FEET)	MAIN GEAR HEIGHT OVER RWY THRESHOLD (FEET)
1.5	1000	-14.8
1.5	1500	- 1.7
1.5	2000	11.4
2.5	1000	2.6
2.5	1500	24.4
2.5	2000	46.2
3.5	1000	20.2
3.5	1500	50.7
3.5	2000	81.0

Aerospace Safety

ALTIMETERS

In the old days aircraft had an interesting item installed in their instrument panels which worked on the barometric principle. It was known as an "altimeter", a quaint term probably derived from the fact that it *metered* altitude.

No — that's wrong — it didn't do anything of the sort. The pilot metered altitude after making an initial setting, through interpreting the antics of various needles and pointers on the instrument face. The altimeter just sat there and reacted.

There was a problem however, pilots from time to time mis-set the altimeter either initially or inflight. Furthermore, unbelievable as it may seem, they sometimes even *mis-read* the altimeter when it was properly set. In reaction they became upset with this instrument (which after all didn't *do* anything at all) so they had it redesigned.

Now the redesigned altimeter was an interesting piece of machinery. It still worked on the barometric principle, but there was an "interface" (a quaint expression common in that time) through an intricate set of gears and levers, gas and spring operated, electrically driven, with a computer and a radio device. The computer increased accuracy and the radio device reported the shortcomings in the pilots ability to maintain an assigned altitude. No simple billows device this, this was a real machine. (At this time man was fascinated by machines, in fact some suggest that he was subservient to them — voluntarily).

No longer could the pilot mis-interpret the meaning of the needles — for they were backed by numbers of great clarity. One could however mis-set as before (perish the thought!), and another variable was added — that was *the gears, levers, gas, springs, or electrons could malfunction*. When this occurred, the altimeter (for so it still was called) no longer *metered altitude*. In fact it could meter whatever (if anything) it pleased. Sometimes it metered ascent even though its aircraft descended, sometimes it did the opposite, and sometimes it chose to fixate on some pleasant altitude and simply stay there. This was not great.

Fortunately most pilots were filled with skill and cunning, and were able to co-relate the passage of time and rates of climb and descent or the lack thereof and deduce that something was amiss. A pilot at a known altitude could set up a rate of descent and level near a predetermined altitude using his super stopwatch and the VSI — which was OK if the ceiling was high enough. Alternatively a formation descent could be carried out if another and compatible aircraft was about. A final alternative of course was the use of the MK1 eyeball in VFR weather conditions.

All of these techniques had their shortcomings and I will



not belabour the points involved as that would be flogging the proverbial dead horse. I will however, make the following statement and invite comment.

The old altimeter is gone or going — a victim of the times. It couldn't run a "squawker" nor did it have the level of accuracy required for today's airways structure. Long live the new altimeter.

But the new altimeter being more complex is many times more subject to failure and must be watched with a steely eye. Don't just set it and forget it, and don't just read it and believe it. *Cross Check* — and long live you!

T-33 Landing Gears Doors Vs Arrestor Cables

In this continuing saga, arrestor cables are still wining. We are still damaging gear doors for various reasons. In the last 8 years we have damaged the doors on 13 aircraft. One incident was caused by improper donut spacing, and in another the damage occurred while performing a 180-degree taxiing turn over the cable. Two aircraft were damaged because extra wide (2") donuts were installed on the cable.

This means that eight aircraft were damaged during take-off roll over a serviceable cable. If a pilot must cross an arrestor cable on take-off roll, he risks incurring damage to his aircraft. The best way to prevent damage is to avoid using bases, such as some Navy bases, which give no choice but to take off over a prone cable.

Maj Brian C. Bernet, CF

Comments

In this edition your friendly editor is going to take advantage of this otherwise blank space to grind a few axes which might otherwise go unground and which are definitely worthy of periodic sharpening.

Articles

We find ourselves almost perpetually short of articles and hence must frequently take advantage of the kind co operation of "Approach", "Air Clues", "Interceptor" and a host of other fine publications to fill out our pages with words of wisdom. Now there is nothing wrong with foreign source material from the standpoint of quality, but we too are subject to a pressure to up our Canadian content (Time and Readers Digest take note) and besides that we have some unique equipment and problems. Please send us any article which you think is even half-way acceptable. If need be we'll rework it, and for sure we'll appreciate it.

Good Shows

The processing of a Good Show takes a minimum of three months and probably an average of four or five although we're working on it. This processing period is only lengthened by queries as to "how its coming along", since we have to drop everything and answer them (good staffwork they call that). Take my advice if you want rapid action on Good Shows. First of all, make sure that you write it up clearly and concisely (foreget about Nato stock number, EO references etc) and that an incident report has been filed. Send along an appropriate photo and check it for safety infractions since it is easier for you to reshoot than me. Wait patiently, for in the fullness of time all will be well. We will not communicate with you unless the award is disapproved, we will simply send you the award which we hope will be suitably mounted and framed for presentation. Remember that a Good Show does not replace a good PER writeup, it just supplements it.

434 Article

Some of the wartime photos may not be of actual 434 Sqn aircraft due to technical considerations, but most are. We aim to please but sometimes perfection is beyond our grasp.

Letters

We appreciate your comments on the magazine be they pro or con. It is only through receipt of such comments that we can respond to your needs. We will publish letters when space permits if the language isn't too strong and the content is relevant.

Invitations

In search of material for the magazine the editor would be more than pleased to accompany any unit or portion thereof on any air related exercise or task which might yield an article. In the offing are a cruise on a DDH in the chilly North Atlantic, and a stay at the Airborne centre in Edmonton. All of this takes some time and reams of paperwork, but we think it will be worthwhile. Incidentally, the invitations don't have to be to arctic areas, Jamaica and Puerto Rico would be quite acceptable. Make us an offer we can't refuse.

Cover Photo

This editions cover was taken by a 434 Sqn recce bird and has been assigned photo unit Rockcliffe negative number PCN 75-1318,

J.D.W.



NATIONAL DEFENCE HEADQUARTERS DIRECTORATE OF FLIGHT SAFETY

COL R. D. SCHULTZ
DIRECTOR OF FLIGHT SAFETY

MAJ D. R. WILLIAMS
Education and analysis

L.COL F. G. VILLENEUVE
Investigation and prevention

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Editor Capt John D. Williams
Art & Layout DDDS 7 Graphic Arts

Flight Comment is produced by the NDHQ Directorate of Flight Safety. The contents do not necessarily reflect official policy and unless otherwise stated should not be construed as regulations, orders or directives. Contributions, comments and criticism are welcome; the promotion of flight safety is best served by disseminating ideas and on-the-job experience. Send submissions to: Editor, Flight Comment, NDHQ/DFS, Ottawa, Ontario, K1A 0K2. Telephone: Area Code (613) 995-7037. Subscription orders should be directed to Information Canada, Ottawa, Ontario, K1A 0S9. Annual subscription rate is \$1.50 for Canada and \$2.50 for other countries. Remittance should be made payable to the Receiver General of Canada.

WATCH YOUR FRUSTRATION THRESHOLD

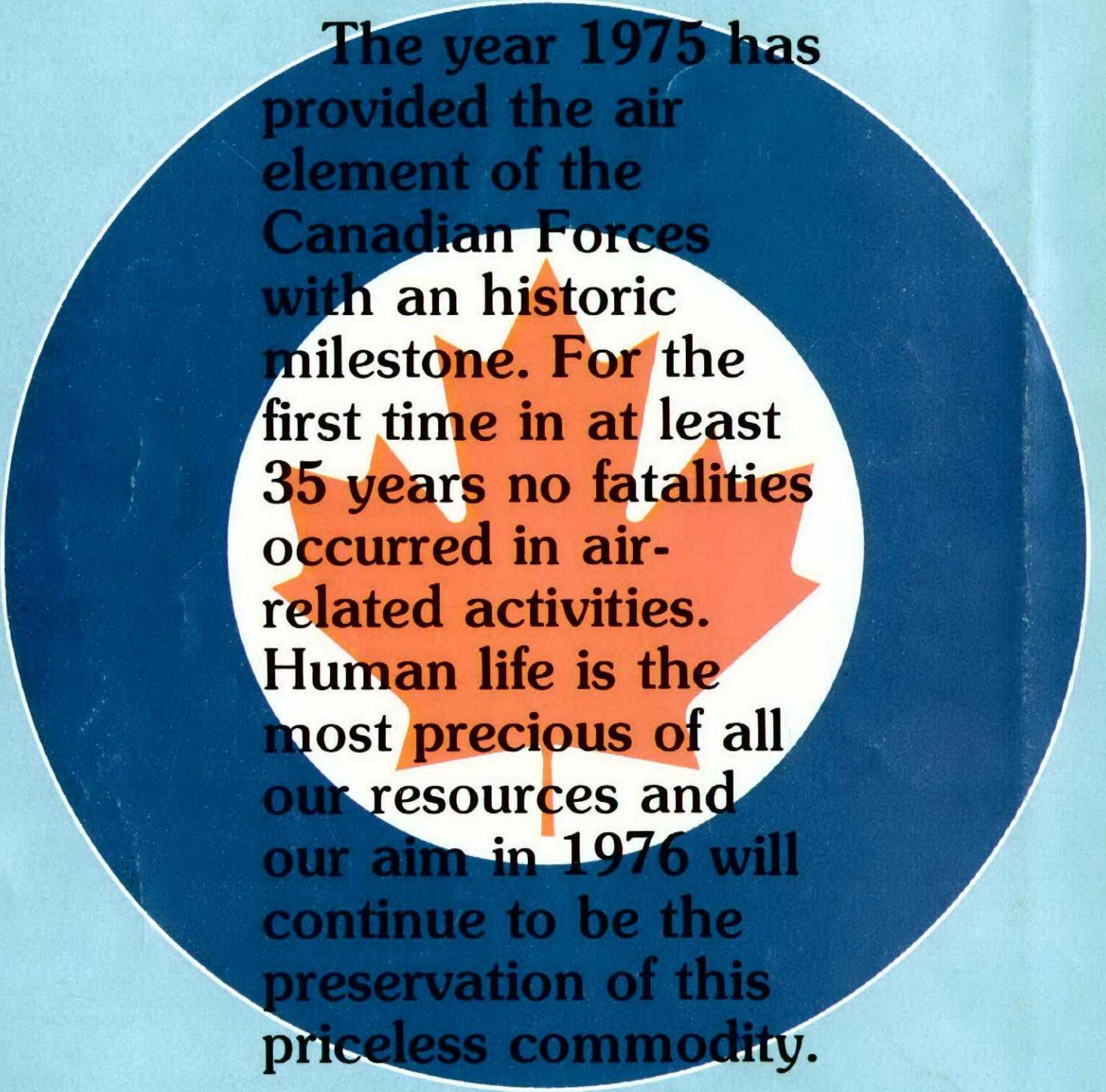
Frustration is a negative word describing a negative state of mind which sooner or later leads to trouble. How much trouble depends upon the individual concerned, his ambitions and his set backs, whether real or imagined. Since no one is immune to this human trait and everyone is affected by it to some degree, it is a factor that deserves constant consideration in any "before the fact" accident prevention program.

This is easier said than done in this day of constantly changing values and pressures; but essential nevertheless. The supervisor and the individual are both involved; the former has a clear responsibility to know what is influencing his subordinates attitudes and to do all he can to maintain morale at the highest possible level while the latter must be constantly aware that frustration can adversely affect his ability to carry out a job properly.

Whatever part you play in the conduct of aircraft operations be it that of aircraft crewmember, air traffic controller, or technician, know your reaction to frustration and make a conscious effort to keep it from influencing attention to the job at hand. Any adverse signs call for positive action. At all costs don't let pride override common sense.



COL. R. D. SCHULTZ
DIRECTOR OF FLIGHT SAFETY



The year 1975 has provided the air element of the Canadian Forces with an historic milestone. For the first time in at least 35 years no fatalities occurred in air-related activities. Human life is the most precious of all our resources and our aim in 1976 will continue to be the preservation of this priceless commodity.