



free flight • vol libre

5/97
Oct/Nov



Liaison



Strong and getting stronger SAC has fielded, on the topic of airspace, a most knowledgeable team of experts. In fact, I do believe that we have acquired the definite leadership position amongst the Canadian recreational aviation community. I am proud to announce that Roger K. Harris, a professor of aerospace law at the University of Western Ontario, has agreed to join our airspace committee. He will join Bill Green, Ian Grant and Scott McMaster in this essential function. SAC is getting stronger because more and more of you are lending a helping hand and unselfishly donating your time and expertise so that our sport may continue to expand and flourish.

In praise of older people What's the problem with being over 45! None whatsoever. Actually they should be our prime targets for recruiting. Here is why:

- They are at the apex of their career. They have never earned more,
- Their disposable income has never been better,
- Their children who consumed so much of their time are now away from home, and
- They have a dream to fulfill ... flying.

1997 membership highlights The membership of clubs throughout Canada is quite variable. Some clubs have done an outstanding job. Gatineau Gliding has reached 101 members. Club de Vol à Voile de Québec has gone from 29 members in 1996 to 55 so far this year. These are truly outstanding results and we should all follow these examples. Some other clubs are on a downward slide for the last few years. York Soaring, I am sad to see, had fallen to 76 members. This is truly strange for an organization with such a large number of aircraft.

Recruiting For those of you who visit the Roundtable on the SAC website, you will see a growing number of articles dealing with recruiting and the need thereof. Al Schreiter submitted a text suggesting that we look at the Air Cadets graduating from the gliding scholarship. We have a SAC program to attract them. Unfortunately, less than half of the clubs have participated. At my club, a quarter of the members are former Air Cadets, I am one of them.

New service to members We have now a classified section on our web page thanks to Susan Snell from the Winnipeg Gliding Club. Again, we are getting better because of proactive action by two of our talented and generous members.

Board meeting The directors will meet in Winnipeg on October 30. More on the results in the next issue. During this three day work marathon, we will look at the ground covered in '97 and chart the path forward. We will discuss airspace issues, reassess our use of Internet and evaluate the results of the 4 October Aero Club of Canada special meeting, to name a few of a long list of issues. The insurance program will also receive more than its fair share of attention in light of some lessons learned in the last fifteen months.

Rick Officer The Canadian soaring community is saddened by the passing away of the president of the Gatineau Gliding Club. I met Rick when we worked together at the '92 nationals in Hawkesbury and was able to appreciate his warm and friendly personality. His mother, Terry Tucker, served as SAC executive secretary for many years. Likewise, Rick was always ready to help out and contribute whenever we needed help. We will all miss him immensely.

Comme vous l'avez lu plus haut, il faut souligner la performance extraordinaire de recrutement du Club de Vol à Voile de Québec. Il faut féliciter Denis Pépin (sans lien de parenté avec moi) et son équipe pour cet exploit. Comme cet hiver j'organiserai une rencontre informelle des présidents des clubs du Québec, nous lui demanderons de nous expliquer leur recette et de leurs plans pour garder un maximum de ces nouvelles recrues en '98. Je suis un peu désolé que nous n'ayons eu qu'une demande pour le cours d'instructeur, et d'une personne qui l'est déjà par surcroît, Jean Richard. Je vous demande à tous d'y penser pour le printemps '98. Nous devons constamment augmenter nos effectifs d'instructeurs si nous voulons donner un service qui attirera de nouveaux adeptes tout en ne brûlant pas le contingent d'instructeurs que nous avons.

AVV Champlain évalue la faisabilité de tenir les compétitions nationales '98. C'est une tâche imposante et ce serait intéressant que cet effort, à l'instar des compétitions de '92, soit réparti sur des membres de plusieurs clubs. Si cette expérience enrichissante vous intéresse, veuillez contacter André Pepin au (514) 923-3631. Bonne fin d'année

Pierre Pepin president

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Cover

Chris Brownhill flying his Ka6 at York a few years ago. photo: Jack Humphries.



Glider pilot medicals & CARAC

Here's a prime example of what SAC does for you.

Jim McCollum, SAC Executive Director

CARAC, the Civil Aviation Regulatory Advisory Council, is a private/public sector consultative body which examines and reviews proposals for legislative and regulatory amendments. It is the principal vehicle for regulatory change in the aviation area and its deliberations can, and do, have direct impacts on the gliding community. Accordingly, it is essential that SAC participate in CARAC; not to do so is to risk, if not invite, regulatory encroachment. In addition to being a member of the Council, SAC is represented on a number of its committees and working groups — our participation is selective of course, since not all of CARAC's activities are relevant to us.

There are two working groups who are reviewing different aspects of pilot medicals and whose activities are of interest to glider pilots. One is focusing on ways to streamline the medical revalidation process by eliminating unnecessary paperwork. Hopefully this will prevent situations wherein a pilot is prevented from flying simply because the authorities are unable to process the necessary documentation in a timely manner. The current procedure, where a physical examination is required, is for a Civil Aviation Medical Examiner (CAME) to issue a temporary document, which is then replaced by a medical certificate issued by a Regional Aviation Medical Examiner. The proposed procedure would essentially eliminate the second stage; barring notification to the contrary by Transport Canada, the document issued by the CAME would be evidence of a valid medical. This work is on a fast track and the new process should be in place before the 1998 season.

The second relates to the Class IV self-declaration medical for solo and passenger-carrying glider pilots. Transport Canada's initial proposal was to reintroduce the involvement of a CAME and physical examinations. The proposal for passenger-carrying pilots was the most onerous. These pilots would have been subject to an initial examination by a CAME followed by an examination every five years below the age of forty, every two years between forty and fifty, and annually thereafter. Had this proposal gone forward, glider pilots would have been subject to considerable additional expense and inconvenience. (The direct out-of-pocket costs would have been the costs of the more frequent medical examinations and the higher administrative charges associated with more frequent renewals.) SAC argued that the additional restrictions could not be justified from a public policy perspective and would be detrimental to soaring. Following discussion, the working group concluded that a medical was unnecessary for glider pilots (including passenger-carrying pilots) and it is this recommendation, among others, that will be contained in the group's report, which will be considered by CARAC in the fall. SAC was represented at the most recent meeting of the Class IV Medical Working Group by Dr. Peter Perry and Jim McCollum. Dr. Perry, a CAME, is the chairman of the SAC Medical committee. ❖



The SOARING ASSOCIATION of CANADA

is a non-profit organization of enthusiasts who seek to foster and promote all phases of gliding and soaring on a national and international basis. The association is a member of the Aero Club of Canada (ACC), the Canadian national aero club representing Canada in the Fédération Aéronautique Internationale (FAI), the world sport aviation governing body composed of national aero clubs. The ACC delegates to SAC the supervision of FAI-related soaring activities such as competition sanctions, issuing FAI badges, record attempts, and the selection of a Canadian team for the biennial World soaring championships.

free flight is the official journal of SAC.

Material published in *free flight* is contributed by individuals or clubs for the enjoyment of Canadian soaring enthusiasts. The accuracy of the material is the responsibility of the contributor. No payment is offered for submitted material. All individuals and clubs are invited to contribute articles, reports, club activities, and photos of soaring interest. A 3.5" disk copy of text in any common word processing format is welcome (Macintosh preferred, DOS is ok in ASCII text). All material is subject to editing to the space requirements and the quality standards of the magazine.

Prints in B&W or colour are required. No slides or negatives please.

free flight also serves as a forum for opinion on soaring matters and will publish letters to the editor as space permits. Publication of ideas and opinion in *free flight* does not imply endorsement by SAC. Correspondents who wish formal action on their concerns should contact their SAC Zone Director whose name and address is listed in the magazine.

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Vice President	Richard Longhurst
Executive Director	Jim McCollum
Corporate Treasurer	Jim McCollum
Legal Counsel	Robert Wappel
Secretary	vacant

SAC office: 101 – 1090 Ambleside Dr.
Ottawa, ON K2B 8G7

tel: (613) 829-0536 fax: 829-9497

e-mail: sac@comnet.ca

website: www.sac.ca

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L'ASSOCIATION CANADIENNE DE VOL A VOILE

est une organisation à but non lucratif formée de personnes enthousiastes cherchant à développer et à promouvoir le vol à voile sous toutes ses formes sur une base nationale et internationale. L'association est membre de l'Aéro Club du Canada (ACC) représentant le Canada au sein de la Fédération Aéronautique Internationale (FAI), administration formée des aéro clubs nationaux responsables des sports aériens à l'échelle mondiale. Selon les normes de la FAI, l'ACC a délégué à l'Association Canadienne de Vol à Voile la supervision des activités de vol à voile telles que tentatives de records, sanctions des compétitions, délivrance des brevets de la FAI etc. ainsi que la sélection d'une équipe nationale pour les championnats mondiaux biennaux de vol à voile.

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Les épreuves de photo en noir et blanc ou couleur sont requises; pas de diapositives ni de négatifs s'il vous plaît.

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Veuillez vous adresser au bureau national à l'adresse indiquée à gauche du bas de la page pour tout changement d'adresse et abonnement à *vol libre*. Les prix des abonnements à cette revue sont les suivants: au Canada \$26, \$47 et \$65 pour 1, 2 ou 3 ans et aux Etats Unis et outre-mer les mêmes montants mais exprimés en \$ américains.

EDITOR

Tony Burton
Box 1916 Claresholm, AB TOL 0T0
tel & fax (403) 625-4563
e-mail free-flt@agt.net

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Letters & Opinions

QUO VADIS SOARING?

The following letter was printed in a recent "Australian Gliding" magazine. The writer rags the Australian national executive for placing too much emphasis on competition as somehow being the saviour of their membership decline. We don't have that problem in Canada — from my seat it seems that no matter how much SAC wrings its hands about our declining membership, no one seems to be doing a thing about going after prospective club members where they actually exist. How many clubs out there can prove me wrong? Getting members is a lot like getting free flight stories; you have to chase after them — not nearly enough will fall in your lap. editor

I have before me the minutes of the GFA [Gliding Federation of Australia] executive meeting of the 22/23 February 1997. They make melancholy reading indeed.

From a high of 4395 members in 1984/85, we have plunged to 2777 at present. This is a loss of just on 37% over twelve years, incurred at an almost unvarying steady rate of about 3% per annum. If this rate of attrition continues, it will not be all that long before we become a passing phase in the history of aviation.

There are a number of reasons given for the decline, some valid, others just excuses. Economic downturns since the peak period have certainly had an effect, as gliding is no longer a cheap sport. But this explanation does not cover the whole story by any means. In the first place, the graph showing the decline does not reflect any economic swings — it is a straight line sloping down. In the second place, light aircraft operations have not shown anywhere the same trend, and it costs much more to fly a Cessna or Piper. There are more and more motorgliders coming on our register, which are in a price range similar to that for light aircraft. Price and money is not the whole answer.

Ultralights and hang gliding are alternative ways of getting into the air, and are blamed for our decline also. Both are capable of diverting prospective pilots at the point of entry into aviation, but I am not aware of any significant loss of glider pilots to these sports, so that explanation does not hold water. If we lose recruits to other branches of aviation at the decision point, something is wrong with the way we sell ourselves. We are making a mistake somewhere.

Marketing techniques look at "products" and "customer segments" in order not to waste resources. In plain English, what you want to sell must be of acceptable quality and aimed at the proper people. (Teen-

agers will not buy houses, pensioners are not likely to purchase skateboards, no matter how good the quality or attractive the price.)

The quality of our product — soaring — is not the problem. In general, our operations are well run, aircraft usually properly maintained and so on. But the marketing is pathetic to say the least.

Look at our "customer base". It is predominantly male in the age group 35 years and upwards. We might not like it, but that is a fact, as only at that age is there enough disposable income and time to follow a hobby like ours. Well under a quarter of this group ever takes part in competition of any sort, while over three-quarters are made up of recreational and student pilots. This majority provides the bulk of the revenue and is the backbone of the gliding movement. It is also volatile, as dropouts occur here, not in the sporting group, which is made up of the converted. We must recruit into this beginners group, as we neither can nor need to attract people who are accomplished pilots already. Membership losses occurring for whatever reason can only be made up by new members, who by definition will be largely ab initios. And in the main, they will come from the over 35 year age group looking for recreational flying. One in five of them may later fly competition, by which time we no longer have to worry about them.

Do we tailor our activities to attract this section? No way. For some inexplicable reason, the GFA executive considers that the solution to our ills lies in more competition activity which flies in the face of all the evidence. The minutes of the executive meeting before me fill eleven pages, the equivalent of about 500 lines of text. Of these, 103 lines deal with competition and associated matters, most of the rest is devoted to routine. The decline in membership rates fifteen lines

What we need to do is to target our potential market — the 35 year olds, and possibly their children, if dad will pay for their flying. There must be untold numbers in that category, who will have dreamed of flying when younger but did not have the time or money during their earlier days.

It may be well worthwhile to consult professional marketers about the best way to reach this group efficiently, instead of constantly preaching to and catering for the converted.

Rudi Salter
Winmalee, NSW

The crucial skill

efficiently extracting environmental energy

Nick Pfeiffer

Vancouver Soaring Association

CROSS-COUNTRY FLYING is one of the most satisfying endeavours that a soaring pilot can achieve. However the secrets do not come easily. I have learned from trial and error (mostly error) and I have faithfully read Reichmann's wonderfully detailed book *Cross-Country Soaring*. I have performed many calculations and made many spreadsheets and can claim to understand some of the mysteries of gliding polars, circling polars, and MacCready speed-to-fly. I found, as a beginning cross-country pilot, that none of this actually helped me fly better or further or faster.

What finally helped me was a sage rule of thumb – "when high fly fast, when low fly slow". But all too often I slowed down too late, just in time to start the circuit for the nearest farm field. I have since learned when to fly fast and when to fly slow (although I still visit my share of farmers) and believe that there is a better way to tell novice cross-country pilots about flying speeds.

I have cribbed the following explanation of speed-to-fly theory from a short seminar I gave at the 1997 SAC Conference in Vancouver last March. Much of the information is simplified from an Advanced Cross-Country Ground School course taught by the Vancouver Soaring Association. Please don't take the explanation as gospel, but rather as something that will point you in the right

direction. When in doubt, trust MacCready and Reichmann.

The fact that the average speed can never exceed the interthermal speed is the main reason that we fly faster between stronger thermals. Using the same calculation method as before, we can construct tables and graphs showing the effect of interthermal speed on average speed for a constant climb rate. The calculations for a 4 knot average climb rate is shown in Table 3.

Figure 1 shows a glider's path during typical cross-country flying, the classic MacCready model where it is assumed that the glider circles over one spot while climbing

Time to climb	= 1000 ft/100 fpm	= 10 min
Time to glide	= 6 nm/60 kt	= 0.1 hr = 6 min
Total time	= climb time + glide time	= 10 + 6 = 16 min = 0.27 hr
Total distance	= 6 nm	
Average speed	= total distance / total time	= 6 nm/0.27 hr = 22.5 kt

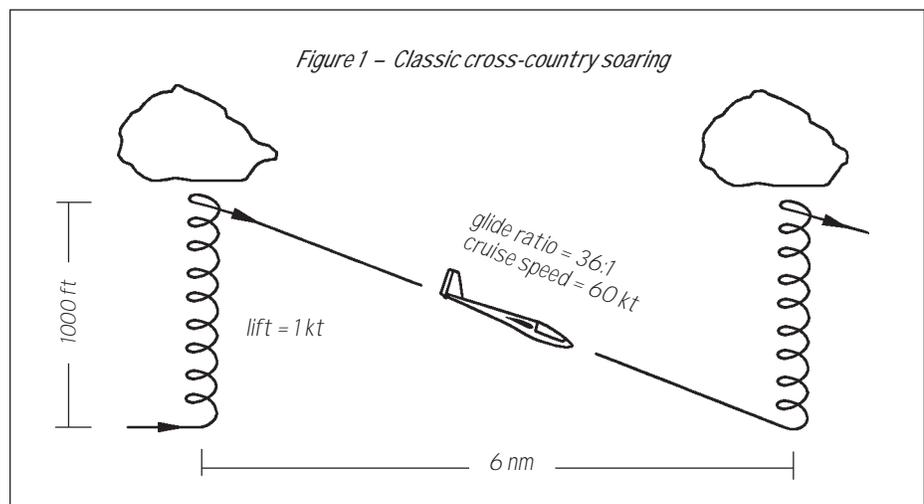
*Table 1
Basic cross-country speed calculations*

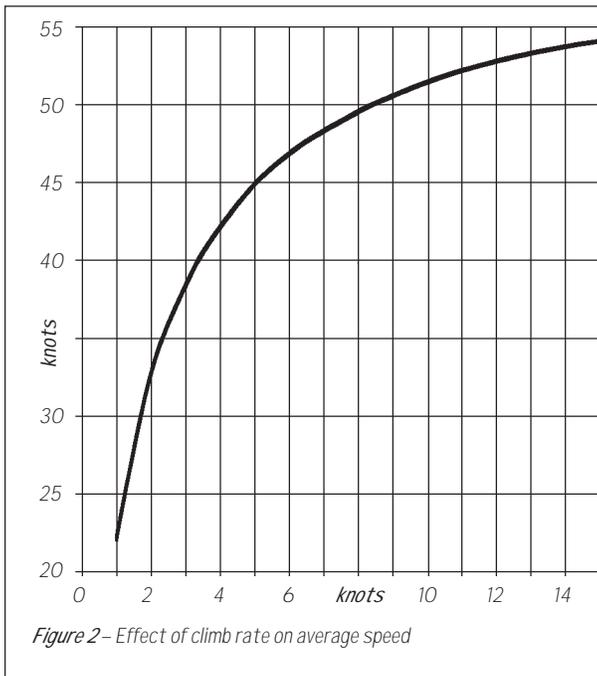
(we will be neglecting dolphin flying in this article). In this particular case, we have arbitrarily made each climb 1000 feet with a six mile separation between climbs. A Grob 102 with a 36:1 glide ratio at a 60 knot interthermal cruise speed has been used as being representative of a typical club cross-country glider. Note that the 36:1 glide ratio gives us approximately 6 nm (36,000 feet) to lose 1000 feet of altitude, hence the climb separation distance. Working the math in Table 1, it is easily calculated that the glider takes 6 minutes to glide 6 nm and descend 1000 feet. With the glider climbing at 1 knot (actual average climb rate) as shown, the time taken to climb 1000 feet is 10 minutes (1 knot is 101 fpm). Each climb and glide cycle results in the glider at the starting altitude (bottom of the thermal) six miles further along. The average speed is calculated by taking the total distance of 6 nm and dividing by the total time of 16 minutes (0.27 hours) to yield an answer of 22.5 knots. Hardly record setting! Even though we are flying 60 knots between thermals, our average cross-country speed is less than half this! Fortunately, the same

Avg lift (kt)	Time to climb (min)	Total time (min)	Avg speed (kt)
1	10.00	16.00	22.50
2	5.00	11.00	32.73
3	3.33	9.33	38.57
4	2.50	8.50	42.35
5	2.00	8.00	45.00
6	1.67	7.67	46.96
7	1.43	7.43	48.46
8	1.25	7.25	49.66
9	1.11	7.11	50.63
10	1.00	7.00	51.43
11	0.91	6.91	52.11
12	0.83	6.83	52.68
13	0.77	6.77	53.18
14	0.71	6.71	53.62
15	0.67	6.67	54.00

Climb height – 1000 feet
Distance between climbs – 6 nm
Glide time @ 60 kt cruise speed – 6 min

Table 2 – Effect of climb rate on avg speed





calculations can be performed for other values of lift and interthermal cruise speeds. Keeping the cruise speed at 60 knots, we can easily calculate the effect of increasing lift on average speed.

Table 2 and the accompanying graph in Figure 2 clearly show that, as expected, the average speed improves as the climb rate increases. The average speed increases sharply with lift from 1 to 5 knots and then increases at a slower rate. The average speed of 42 knots with 4 knot lift is only nine knots slower than that obtained with 10 knot lift. Note also that the average speed never exceeds the interthermal speed of 60 knots. The limitation that the average speed can never exceed the interthermal speed is the main reason that we fly faster between stronger thermals. Using the same calculation method as before we can construct tables and graphs showing the effect of interthermal speed on average speed for a constant climb rate. Such a table for a 4 knot average climb is shown in Table 3.

Avg lift (kt)	Optimum interthermal speed (kt)	Avg speed (kt)
0	54	0
1	60	24
2	66	34
3	72	41
4	77	46
5	82	51
6	86	54
7	90	57
8	94	60
9	98	63
10	102	65
11	106	67
12	109	70
13	112	72
14	116	74
15	119	76

*Table 4
Speed-to-fly for a Grob 102*

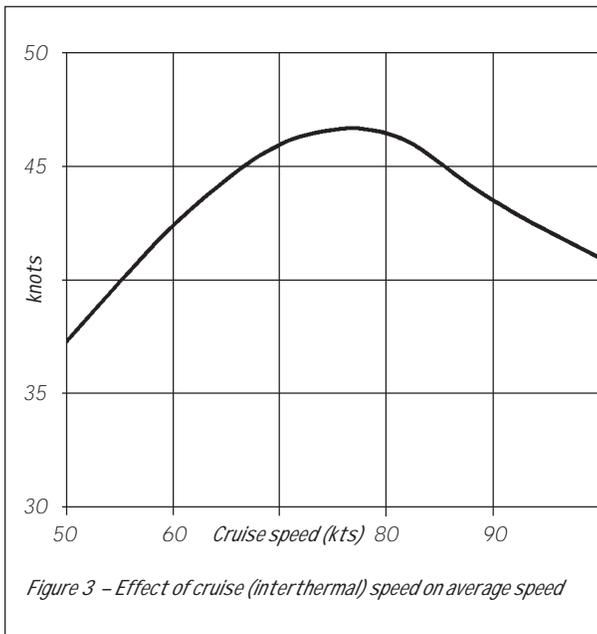
Cruise speed (kt)	Glide ratio	Time to glide (min)	Total time (min)	Total distance (nm)	Avg speed (kt)
50	36.5	7.30	9.80	6.08	37.2
60	36.0	6.00	8.50	6.00	42.4
70	33.3	4.76	7.26	5.55	45.9
80	27.6	3.45	5.95	4.60	46.4
90	21.0	2.33	4.83	3.50	43.4
100	17.4	1.74	4.24	2.90	41.0

Climb height: 1000 feet
Average lift: 4 knots
Time to climb: 2.50 minutes

*Table 3
Effect of cruise (interthermal) speed on average speed*

Table 3 shows that not only does the glide ratio decrease as the interthermal speed increases, but so does the total cycle time (climbing and gliding). The distance between 1000 feet climbs is shorter for higher interthermal speeds also. The Figure 3 graph clearly shows that there is an optimum interthermal speed to fly between 4 knot thermals. Speeds slower or faster than the optimum speed of 77 knots result in a slower average speed. However, the penalty for flying the wrong speed is slight; interthermal speeds from 60 to 90 knots result in only about a 10% maximum decrease in average speed. Similar graphs constructed for other climb rates will show the same overall shape with an optimum interthermal speed resulting in the highest average speed. Completing these calculations for a range of climb rates will eventually yield a Speed-to-Fly table such as that shown in Table 4.

Table 4 is essentially the same table that the graphical MacCready Speed-to-Fly method generates using the glider's polar curve. Similar tables can be constructed for any glider provided that the still air glide ratio at different speeds (the polar) is known for the desired configuration (wet or dry, flap settings, etc.). Modern flight computers and older speed-to-fly rings present this information to the pilot in flight.



Summary Having explored the effects of climb rate and interthermal speed on average cross-country speed, we are now ready to draw some conclusions (with some biased observations thrown in):

- The climb rate (good thermalling) is more important than the interthermal speed.
- For medium strength thermals, there is little penalty for interthermal speeds from 60 to 90 knots.
- For a given interthermal speed, there is less average speed gain as thermals get very strong (classic MacCready theory neglects dolphin flying).
- The lift should be at least 2 knots before attempting early cross-country tasks or else the average speed will be too low.

Notes The polar used in this article is that of a Grob 102 Club III B and is modeled as a parabolic glide polar approximation as per Reichmann, page 105-107. Although an arbitrary climb height of 1000 feet was used in this article, any other climb height would have worked just as well, as would varying thermal heights. Proof of this is left to the reader. Those interested in this topic and in the analysis of sailplane flight polars in general are most welcome to contact the author at peiffer@uniserve.com to obtain Excel spreadsheets.

How I spent my summer holidays

Tony Burton



The morning pilots meeting at Cowley

Chris Manning
SOSA

RUNNING ACROSS THE FIELDS toward Highway 22, waving his arms, was someone obviously anxious for a ride. As my daughter and I slowed to pick him up, we saw a glider over in the background — Jack Despres was the first landout of the Cowley Summer Camp. In the half hour that it subsequently took us to get to Cowley, I was fortunate to receive a lively commentary from Jack on what I was likely to find on this, my first visit to Alberta's famous soaring site.

July 1997 was the 25th summer camp. However, as I was to learn from *Stalking the Mountain Wave*, Ursula Wiese's authoritative book on the area, glider pilots from western Canada have been using the field since the early fifties. At that time, Alvie Cook's ranch at Pincher Creek was used as the base from which to fly the Cowley Wave. Because of the long tow from there to the Livingstone Range, the source of the wave, it was recognized that Cowley would provide a more convenient location. After extensive negotiations with the provincial government, which had established Cowley as one of the emergency landing strips of the Trans-Canada Airway before WWII and was still using it as a weather station, the gliding community was eventually given responsibility for the field's operation.

In the years that followed, Cowley became one of North America's best known soaring locations. Scores of record and diamond altitude flights were made from there, starting with Bob Cheston's record height gain in June 1957.

Attracted by what I had read in *free flight*, I had decided to use the last of my frequent flyer points to see my daughter and her family in Calgary and spend time gliding at Cowley. To my delight, my daughter and her husband quickly decided to bring their two young children and their tent-trailer out to Cowley. Thus it was that I was able to enjoy their company while soaring in what must be one of the most beautiful parts of Canada. By the final Saturday, over 100 pilots, families, and friends of all ages were also gathered there from all over western Canada for the camp's celebratory barbecue.

As a visitor from a club out east, an "orphan", I was adopted by Cu Nim, the club responsible for running the camp, who, with typical western hospitality, quickly made all five of us feel thoroughly at home.

The camp was well provided with gliders and there was a Lark from Winnipeg and four Blaniks, including Cu Nim's brand new one. With many of Cu Nim's own members and friends at Cowley, the two-seaters were much in demand but it was still possible to have a flight every soarable day. My daughter and her husband were both introduced to soaring for the first time, learning something about the sport that had drawn so many of us to the camp.

My first time up was with Dave Fowlow, the Camp Director and one of the Cu Nim instructors. I quickly learned the difference between flying near the Rockies and soaring in southern Ontario. At home, you are

fortunate to find more than four knot lift, while getting over 5000 feet agl is occasion for comment. Out there, you get rocketing lift and, just as suddenly, amazing sink — and one's altitude is not even worth discussing unless it is at least 20,000 feet for wave and 10,000 for thermals!

Another thing I, as a flatlander, found unusual was the difficulty of keeping the nose level while thermalling. Trained to orient myself to the horizon, I found that, in one direction, it seemed to stretch away to infinity. But 180 degrees in the other direction, it towered above me — and where my eye went, so went the nose of the glider.

And, oh, that wind! Where we at home would shut down flying operations as being unsafe, an air of expectant anticipation ran through the Camp when the morning meeting heard that the wind strength was likely to be 20-30 knots. To the Cowley folks that meant wave, exactly what they had all come for. Never mind that two people were sometimes required to hang onto the struts of the towplanes to prevent them from flipping over when they turned around; never mind that you turned final at 500 feet directly above the end of the field to avoid landing short — the stronger the wind, the better the wave!

For someone used to the standard 2000 foot tow, it came as something of a surprise to find that 4000 foot tows were fairly common, and even the odd 6000 footer was not unusual as pilots tried to hook wave on the "non-classic" days. The turbulence could make these tows interesting and there

were two rope breaks during the week I was there, one of them presenting the Lark's pilots with something of a challenge when they landed out as a result. Operating in an environment such as this, Cu Nim's emphasis on safety was both comforting and understandable.

There was some wave on three mornings, with talk at the morning pilots' meeting of opening "the block" and how high it should be. But you needed to get up to about 10,000 feet to connect on the day I flew with Terry Southwood, Cu Nim's friendly and helpful CFI, and we were not able to do that — my one major disappointment of the camp. Others certainly did, though, as attested to by reports from Mike Glatiotis (who got the best climb of the camp to 29,000 feet) and other pilots at the morning meetings.

But if I was not able to experience the wave, I had other memorable flights with the Cu Nim instructors, who were always there to lend a hand when local conditions demanded it: thermalling over the Porkies (Porcupine Hills) just east of the airfield with Jos Jonkers; flying near Frank Slide with Dave Fowlow but being shut down just 500 feet below the critical height needed to soar the Livingstone Range; a late afternoon flight with Gary Arthurs looking down on that spectacular scenery. If my flying revealed some of the shortcomings of a low-time flatlander, every one of the Cu Nim instructors that I flew with were extremely patient and made all my flights truly memorable experiences.

Cowley naturally brings together many of the best pilots in the west. I was privileged to meet Bruce Hea, a veteran of the camp, who told me what it was like to achieve Canada's 10,485 metre absolute height record in 1981. There was the legendary Dick Mamini, who got his Diamond altitude in 1965 and who flew his ASW-12 in the 1972 and 1974 World Championships, explaining at a morning meeting what was involved in flying on the other side of the Continental Divide. And there too were Ursula Wiese, past holder of the 8035 metre Canadian women's absolute height record, and Tony Burton who, among other things, piloted the pressurized *Alcor* experimental sailplane in the mid-1980s.

Daily spells as timekeeper or field manager introduced me to other names and helped me to put faces to them: Jerry Vesely, George Dunbar and the friendly Mike Cook from Kimberley in *Zulu One*. One quickly became familiar, too, with the delightful call signs of the gliders: *Jolly Miller*, *Fruit Juice*, *Funny Girl*, and *Putt-Putt* (the PIK-20E motorglider).

Cowley is not only about flying, though, and some of my best memories are of things like the towpilots' Coyote pancake breakfast; Stephen Morgan sounding reveille for the morning pilots' meetings; Stewart Tittle from Oregon, seriously injured in a gliding accident a few years ago, talking about the

importance of positive control checks; Dick Mamini showing my grandchildren how to make whistles from pods by torchlight; listening to "Ridge Runner" and other soaring songs in the evening by the campfire; Dave Fowlow flying his model glider and shooting off his rockets; David McAsey, president of the Alberta Soaring Council, taking his spell as head of the outhouse brigade, and, perhaps most memorable of all, an early morning flight with Todd Benko in one of the towplanes to get the weather soundings.

One would be wrong, too, if one thought that Cowley was just a place where glider pilots go to have fun. There are plenty of

things for non-flying visitors to do and see, like the Frank Slide, Waterton National Park, Pincher Creek, and Head-Smashed-In Buffalo Jump.

Distances in Canada often discourage people from visiting the places that they would like to. The small number of people from the east who get to Cowley demonstrate the truth of this, which is a pity. Spending time at Cowley should be on every glider pilot's wish list. Even if there can be no guarantee that the weather will be as perfect as it was during the week that I was there, Cowley is a splendid place to "slip the surly bonds of earth and dance the skies on laughter-silvered wings". ❖

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Un séjour de vol à voile dans les Alpes du Nord

Robert Girard, CVV Québec

DÉBUT AVRIL 1994: départ de Mirabel dans la "slush" du soir. Le lendemain midi au soleil, je passe Paris en train du réseau express régional (RER) et en métro pour la gare de Lyon où j'ai mon train grande vitesse (TGV) pour Chambéry. Juste avant le coucher du soleil ce soir de Pâques, à Chambéry, je peux voir les Alpes tout près. Il fait assez frais, c'est comme à Montréal. On me dit que le temps a été très maussade ces derniers jours. Le rayon de soleil qui se pointe, c'est moi qui le leur apporte, à ce qu'il paraît... Oh! Moi qui pensais que ça serait plus chaud ici, enfin! Ça va, la chaleur viendra bien.

Le lendemain matin, je me rends à l'aérodrome Challes-les-Eaux situé à quatre kilomètres de Chambéry. Le chef instructeur m'explique que je peux devenir membre du *Centre Savoyard de Vol à Voile Alpin*. Ma licence de pilote de planeur du Québec peut être valide, en autant que j'en fasse une demande à la direction générale de l'aviation civile (DGAC) à Paris, en y joignant la photocopie. La semaine suivante, je reçois ma validation de licence. Le chef instructeur me liste tous les planeurs du club, soit 10 biplaces et 29 monoplaces, des appareils à hautes performances pour la plupart.

On m'indique que le club se classe le 3^e de France en terme de kilomètres parcourus par ses membres, après Fayence et Vinon, enregistrant de 12,000 à 15,000 heures de vol par an. Le record de distance du club appartient à Claire Lugat et à J.-Michel Garcin en ASH-25, soit 936 kilomètres en 11 heures de vol — Provence, Autriche, puis retour à Challes ...

En plus des deux avions remorqueurs, le club opère un treuil, ce qui me permettra d'économiser un peu pour les lancer. Le coût pour une treuillée de 350 mètres est environ le tiers d'un remorqué par avion. Le tarif d'utilisation des planeurs est uniforme pour tous les types, avec ou sans instructeur. Il y a trois instructeurs permanents rémunérés et plusieurs instructeurs bénévoles. Comme les coûts sont comparables à ceux du Club de Vol à Voile de Québec, où j'ai obtenu ma licence de pilote de planeur, je n'hésite pas à devenir membre, d'autant plus que je peux obtenir une chambre confortable à l'aérodrome, à deux pas de la cantine du club. Je verse une avance

pour les vols et pour la cantine, et me voilà dans un "Club Méd" du vol à voile en montagne. Je suis aux petits oiseaux!

Mon premier vol se fait sur ASK-13 avec le chef instructeur, Pierre Pellier. J'ai le cœur serré, mais je suis heureux de reprendre le manche à balai que j'avais délaissé ces dernières années. Je recommence mon entraînement, mais cette fois dans les splendeurs des Alpes. Je crois rêver en voyant ces magnifiques vallées pleines d'histoire et de vie, flanquées de ces majestueuses montagnes escarpées qui culminent à 1000 et à 2000 mètres, situées si près, dans le circuit de l'aérodrome. À moins de 50 kilomètres s'élèvent des montagnes de 2500 à 3500 mètres et, un peu plus loin, le Mont Blanc culmine à 4800 mètres. Que j'ai hâte de survoler ces merveilles!

Pierre me bombarde de noms de lieux, tous aussi exotiques les uns que les autres: «Ici on est à la chapelle du Mont Saint-Michel... Là, droit devant toi, c'est la croix du Niviolet; à droite: le Mont Peney. Cette arête à l'est, en arrière du Mont Saint-Michel, c'est le Margérias; on y va si on a 1300 mètres». Peu à peu, je finis par me familiariser avec ces nombreux noms de lieux.

Je consulte la carte à la cantine. Le massif des Bauges comprend: Le Mont Gelas, le Pic de la Sauge, le Revard à Aix-Les-Bains, le Pont de l'Abyme, le Semnoz près de Annecy, le Mont Colombier près de Aillon-Le-Jeune & Aillon-Le-Vieux... Dans la Vallée de la Maurienne et près de Albertville on retrouve la montagne du Grand Arc, le Grand Pic de la Lauzière, le Grand Perron des Encombres, le mont du Galibier, puis la chaîne Belledonne, Les Aravies.

On parle souvent d'un pont que l'on photographie comme point tournant, lorsque les planeurs vont dans le sud: c'est le pont d'Aiguines, à 200 kilomètres de l'aérodrome, près de Nice. Je ne sais pas s'il est aussi beau que le fameux Pont du Gard, l'aqueduc romain que l'on voit dans les livres d'histoire. Toutefois, ce pont d'Aiguines semble tenir une bonne place dans l'histoire des kilomètres du club.

Le rythme s'installe. Chaque matin à 9^h 30, c'est le briefing. Il y a un rappel de la météo et des performances réalisées la journée précédente, la météo du jour et les consignes de sécurité. Ensuite, répartition des tâches: qui opère le treuil, qui pilotera

l'avion remorqueur? Qui désire voler en solo, en double? Qui désire travailler au ponçage de l'aile de Sierra Hôtel? C'est le ASW-20 que l'on "regelcoat" à l'atelier. «Allez Jacques, tu as une voiture? Tu peux aller avec Robert chercher le matériel de plomberie et le ciment à Chambéry pour le travail du drainage de l'atelier! Un volontaire s'occupera bien aussi de vider les poubelles de l'atelier...» Et ainsi va la vie jusqu'à la mise en piste des planeurs. Les vols sur la campagne débutent vers les 10^h 30 à l'aide de l'avion qui remorque les planeurs sur les faces est, déjà très ensoleillées, et où l'ascendance est manifeste. Ceux qui désirent décoller au treuil attendront que la biroute soit tournée vers la pente du Mont Saint-Michel, soit vers les 13 ou 14 heures.

On se rencontre à la cantine à midi, et le gros des opérations de vols débute après, soit vers 13^h 00. Elles se poursuivent jusqu'à la tombée de la nuit, vers 20 ou 22 heures. Une fois le hangar fermé, c'est le pot traditionnel à la cantine, suivi du repas entre amis. C'est là que l'on fait plus ample connaissance avec plusieurs vélivoles en vacances. Quelques-uns viennent des environs de Paris. Un couple est venu d'Angleterre en voiture, tirant leur planeur derrière. Ils ont mis le même temps que moi pour se rendre ici. Un autre type charmant vient de la Suisse, située à moins d'une heure de voiture. La charmante cantinière nous accueille tous, avec sa chaleur naturelle.

Au début de mon séjour, j'en profite pour accompagner d'autres pilotes. Avec la championne Claire Lugat, j'ai eu la chance de voler dans le fameux planeur de vol en circuit, le ASH-25, 25 mètres d'envergure, finesse maximale de 60/1. Avec 1000 mètres d'altitude, ça peut mener à 60 kilomètres plus loin en air calme. L'agilité du grand oiseau me surprend: même avec ses 25 mètres d'envergure ça tourne presque aussi bien qu'un planeur standard de 15 mètres. Cela s'explique par le fait suivant: le travail des ailerons est aidé des volets dans un virage serré. À une autre occasion, j'ai le plaisir d'accompagner Claire dans un vol au-dessus des centres de ski dans le massif Belledonne et à Saint-Jean-de-Maurienne. Ce vol m'a fortement impressionné: imaginez-vous en vol au fond d'une vallée enneigée, en cul de sac, avec des parois blanches verticales en bouts d'ailes, limitée par le ciel bleu et quelques brouillards neigeux. On se demande comment Claire tient le Janus en l'air; c'est de la magie!

Une autre fois, c'est une autre membre, Chantale, qui m'invite en ASK-21. Je vole sur la falaise du Revard, haute de 1550 mètres. La vue est formidable sur Aix-Les-Bains, une station thermale sur le plus grand lac de France: le lac du Bourget ou lac de Lamartine (18 kilomètres de longueur). Là, c'est une véritable dégustation du vol en planeur.

L'instruction continue: altitude 1200 mètres au-dessus de l'aérodrome situé à 290 mètres, Pierre me propose: «On va essayer la petite chaîne». Dans le premier cirque d'abord. C'est une falaise rocheuse en forme de cercle. Puis nous passons dans le deuxième, et ensuite le mont Granier, «mais seulement si on atteint 1700 mètres afin de passer le col, où il y a de sérieux rabattants». «Ne t'aventure pas de l'autre côté, sur la face ouest; vire avant!» «C'est bon, colle un peu la falaise, maintiens ta vitesse dans le virage». «C'est dans un virage mal coordonné que l'on perd le plus». «Face à la montagne, ne cabre pas, je vais te le répéter à chaque fois, Robert... Face à la plaine, tu peux cabrer, mais pas face à la montagne». Avec de la patience, beaucoup de patience, celle d'un vieux chasseur, Pierre finit par m'imposer la vérité: du respect face à cette montagne! Un décrochage dans l'air instable, la paroi est si proche, que l'on ne pourrait récupérer.

Un soir, à la cantine, c'est à mon tour de payer un pot. Je suis lâché sur Ka6E. Je vais poursuivre mon entraînement en solo, en vol local, soit dans un jardin de 20 kilomètres sur 20 kilomètres. J'ai encore beaucoup à découvrir et à apprendre.

Pour être autorisé à piloter les magnifiques planeurs de performance, comme le Pégase, le ASW-20, un pilote doit compléter l'insigne d'argent. Cet insigne comprend un vol avec un gain d'altitude de 1000 mètres, un vol d'une durée de cinq heures, et un vol d'une distance de 50 kilomètres en ligne droite. Il me manque cette dernière épreuve. Au cours des jours suivants, reconnaissance pour le 50 kilomètres avec l'instructeur Gilbert. Puis j'attends les conditions météo pour réaliser ce vol en solo dans le Ka6E: 50 kilomètres, de Challes à l'aéroport de Annecy. Comme le bon temps passe vite, c'est ma dernière semaine! Je délaisse cette épreuve du 50 kilomètres pour me concentrer sur un vol en campagne (vol en distance ou vol en circuit), accompagné d'un instructeur.

Au briefing, je m'inscris pour un vol de circuit en Janus. Philippe Mageau sera mon instructeur. Il propose un triangle Challes/Brig/Chamrousse. Le lancer se fera au treuil, en début d'après-midi. On aligne le planeur dans les premiers à décoller, aussitôt que la pente du Mont Saint-Michel sera active. Treuillé à 550 mètres, on accroche la pente qui ne tient qu'un faible 0.5 à 1 m/s au maximum. Entre 500 et 800 mètres, on gratte la paroi dans ses moindres recoins. L'on atteint 850 mètres par trois fois. On ne peut percer la couche d'inversion, qui se trouve à cette altitude. Ah! Si on avait pu accrocher une petite bulle passant à ce niveau! On aurait atteint le Margérias plus haut et ensuite, on aurait quitté le local. Mais Philippe et moi n'en pouvons plus d'avoir chaud... Nous sommes prisonniers de cette paroi. On atterrit pour se reposer. Puis on redécouvre un demi-heure plus tard, mais cette fois avec l'aide de l'avion remorqueur, qui nous amène au-dessus de l'inversion. On largue à 1900 mètres dans un thermique de 2-3 m/s sur la

Margérias Nord. Aussitôt, nous grimpons à 2700 mètres; Philippe me montre un petit cumulus au-dessus d'une falaise rocheuse, en direction du Mont-Blanc. «C'est là qu'on va, Robert... Ajuste le calculateur de vol MacCready à 1 m/s. Augmente ta vitesse de façon à maintenir la pente du vol sud à ouest. Si l'aiguille monte, ralentis; si elle descend, tu augmentes la vitesse». Nous voilà partis pour la gloire, le Mont-Blanc, qui est encore à 70 kilomètres.

On continue vers la falaise des Aravies en passant au dessus du Lac d'Annecy. «C'est trop beau, Philippe! Passe-moi mon appareil photo...» On exploite un deuxième thermique pour reprendre notre plafond à 2700 mètres. Un peu plus loin, majestueusement, le Mont Blanc m'éblouit. Il est entouré d'une couronne nuageuse à 3500 mètres. Il émerge au-dessus, bien éclairé, tout blanc dans le bleu, à 4800 mètres. On y arrive à 2300 mètres, sur la pente du glacier situé dans le flanc sud, soit à l'Aiguille du Bionnassay.

Deux planeurs y sont déjà près du plafond, à 3500 mètres. Ils nous ont repéré. Louis, dans le LS-4, nous appelle et on s'identifie. Quelques minutes plus tard, on est à leur hauteur, je prends des photos pour Jacques Cottin dans son ASW-20 avec pennas. Un moment, on aperçoit l'Aiguille du Midi, à 3800 mètres, dans une petite éclaircie. Trop tard! Ça se referme... Cette photo-là, ce sera pour la prochaine fois. Suite à cela, survol de la vallée de Chamonix: un rêve que je croyais irréalisable avant de partir de Chicolimi. Heureux? Oui, très très!

Lors du retour via Albertville, Philippe me propose une promenade dans la vallée de la Maurienne. Nous survolons la Chaîne de la Lauzière. À 3300 mètres, on suit le contour de pics et de dents assemblés comme un dentier disloqué. En traversant la vallée juste à l'est de Saint-Jean-de-Maurienne, nous passons à travers une petite onde de 1 m/s. Puis on continue vers les Aiguilles d'Arves. Arrivés dans le secteur, le soleil commence à être bas. On décide de rentrer. Nous sommes à 3500 mètres, à environ 60 kilomètres en ligne droite de notre aérodrome de Challes. Comme nous sommes derrière la chaîne de Belledonne, qui a des sommets de 2500 mètres et des petits

cols à plus de 2000 mètres, nous décidons de revenir par où nous sommes entrés, même si c'est plus long. Toutefois, au lieu de suivre les crêtes de montagnes, nous re-traversons la vallée en grande diagonale, à la hauteur de Saint-Jean-de-Maurienne. Pour la première fois dans ce vol, ça chute beaucoup: -2 m/s, -3 m/s ... Arrivés à la sortie de la vallée, nous nous retrouvons à 2400 mètres. Philippe évalue la situation: on a assez d'altitude pour rentrer avec une pente de seulement 2000 mètres sur environ 30 kilomètres, soit un rapport de 1/15. Comme c'est la finesse minimale de ce planeur à sa vitesse limite de 220 km/h, on rentre à 200 km/h. Dix minutes plus tard, nous voilà en vent arrière dans le circuit d'aérodrome, à 550 mètres. L'atterrissage, c'est comme le retour en silence à Baie-Saint-Paul par un beau soir, le fleuve Saint-Laurent en moins.

Même après plus de 20 minutes au sol à 20°C, je note la présence de condensation juste au bout droit des longerons d'ailes. Il a fait froid là-haut! On lave le planeur, on l'essuie et on le rentre au hangar avec l'aide des autres vélivoles.

J'inscris à mon carnet 1h 25 sur la pente du Mont Saint-Michel, puis 4h 10 au Mont Blanc, Aiguilles du Bionnassay, Grand Pic de la Lauzières, les Aiguilles d'Arves, soit un triangle de plus de 200 kilomètres. Grâce à mon instructeur Philippe Majeau, j'ai pu réaliser un vieux rêve d'il y a 25 ans: voler dans les splendeurs des Alpes.

Je vous souhaite à tous de vivre l'expérience d'au moins un de ces vols! Je remercie chaleureusement tous les vélivoles du Centre Savoyard de Vol à Voile Alpin, et principalement, Pierre Pellier. Là, j'ai vraiment vécu la "douce France" de Saint-Exupéry, pendant 2 mois, et 52 heures de vol.

Note: Pour les intéressés, voici quelques coordonnées: Centre Savoyard de Vol à Voile Alpin, Aérodrome Challes-Les-Eaux, route de Barby, 73190 CHALLES-LES-EAUX, France. Tél: (011)-(33)-79-72-97-19 au bureau; (011)-(33)-79-72-87-57 à la cantine. *Les coûts:* cotisation et assurance annuelle - 400\$ + 150\$; treuillée - 8\$; planeur: 25\$/heure; chambre - 10\$/jour. ❖

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Interview with a dead man

photo not available for the pdf file

SM: What I mean to say was conscious and subconscious... Basically, the typical experienced pilot has learned his piloting skills so thoroughly that they are well-seated in the subconscious mind. This is a good thing, since in a moment of crisis, it is frequently the subconscious mind that reacts correctly with the appropriate response — which is also a good thing, because in such situations things may be happening so fast we don't have time to let our conscious mind think a while about the possible alternative courses of action.

ff: So what does the conscious mind do while the subconscious mind is doing the flying?

SM: If the radio chatter on 123.4 MHz is any indication, it's telling all the other pilots just how good this *particular* thermal is!

ff: Hey! I resemble that remark! Let's get back on track.

Stewart Midwinter

free flight: SO, YOU SAY YOU'RE DEAD. But you look fine to me. Can you explain?

Stewart Midwinter: Well, you see, recently I made a bad mistake while soaring. Quite often, this type of mistake would be fatal. So, I think I must be dead.

ff: If you're dead, what are you doing here?

SM: Hmm, I'm not sure. Perhaps I'm not allowed to rest until I share the facts of my accident with you, in the hope that a similar accident may not befall others. You see, with the type of accident I suffered, you normally wouldn't have the opportunity to interview the pilot. Yes, that must be it, I've been sent back here to explain it all.

ff: So, in order for you to get some rest, you need to get this off your chest. Lead on, then!

SM: Thanks. I'm feeling quite tired, so I'll try to be brief.

ff: What exactly happened anyway? You have been a bit cryptic.

SM: Sorry, not intentionally. Basically, I suffered a stall/spin at low altitude, and hit the ground. I seem to be uninjured, but that must be a mistake, right?

ff: I don't know. You look a bit green ... but tell me how this could happen. Isn't stall/spin training part of the basic glider pilot training? Aren't you a licenced pilot? And aren't you experienced on type? What kind of glider were you flying, anyway?

SM: I was flying a Brightstar *Swift*, a foot-launchable tailless glider (*see Stewart's launch photo above*). It has two-axis control through elevons, half span flaps and a retractable sling seat, allowing takeoffs and landings either on foot or on the single wheel and nose skid. It weighs about 130 pounds, has a 16–18:1 glide ratio unfaired, or 20–24:1 with the lightweight fairing on.

ff: How much experience do you have with this glider? And have you tried any stalls or spins with it?

SM: I have about 40 hours on type, in about 15 flights, of which 3 (make that 4 with the last one) are foot-launched. All the others were tow-launched with a payout winch mounted on a truck. All my landings have been on the wheel to date. I've flown over 700 kilometres cross-country in the *Swift* in both flatland and mountain conditions, and have three FAI world records for triangle flights I made on it last year. As for stalls and spins, I've found its behaviour to be very benign. In fact, I have tried a few times to spin it, without success. And I've occasionally intentionally slowed into a stall while thermalling, without any incipient spin tendency showing itself.

ff: So your glider is a pussycat. So, how could you be so unlucky or, err, dumb?

SM: If I had a heart rate, it might be getting a bit worked up right now! But anyway, I think there are a few reasons. It all has to do with the conscious and unconscious mind and its role in piloting.

ff: You saying you fly while unconscious?

SM: One of the reasons why beginners are at particular risk in flying is that they haven't enough practise in the flying skills to have them all solidly stored in their subconscious. So, in a crisis situation their conscious mind gets easily overloaded with information and they can't process it all in time to make the right decision. The still untrained subconscious mind may take over and make the wrong reaction.

ff: Is that what happened to you?

SM: No, I should have enough experience on type to have trained my subconscious. Don't forget I also have over 1200 hours in hang gliders and paragliders, an ultralight instructor's licence and about 120 hours in airplanes.

ff: But that's your conscious mind talking! Let's drag the subconscious mind out here and ask it!

SM: Err, it's sleeping right now. But I can speak for it. I'm going through a marital separation right now, and I believe my subconscious mind was busy working on that problem. When I needed it in the crisis, it wasn't at home! In fact, I still can't get its attention to get a proper answer out of it.

ff: What you're saying is, with your subconscious mind troubled and brooding, you were flying with only half a mind. How is that different from normal?

SM: Hey! Getting back at me for the last cut, eh? That's okay, I can take it. Anyway, there were also a few other factors to complicate life. I had just returned from a month

of paragliding in Spain, and my airspeed feel may have been off. It didn't help that I never looked at my ASI once after takeoff, or that my audible stall indicator may have been turned off. Recall that paragliders don't need much attention to airspeed, and will happily fly along at trim speed all by themselves. And, the Swift's trim speed is strongly influenced by flap setting. Since I had about 20 degrees of flap set to help me with the takeoff (I was a bit intimidated by the steep drop-off below the launch ramp), my trim speed was reduced to about 40 km/h, still above the 30 km/h stall speed, though. I may also have been fatigued by the effort of dragging the glider 300 feet up a narrow trail to the top of Mt. Swansea in Invermere. My thought was to try a world record flight in the category of speed over a 100 kilometre O&R course. Given that I had made two incomplete attempts from Mount Seven in Golden, I had thought that perhaps I should try my luck further south. But it was a hot day and undoubtedly the hikes (four trips) took their toll on my energy. It also didn't help that I let myself be distracted by a recalcitrant knob on the take-up reel for my sling seat.

... I had just gotten it all settled when the earth began to rotate rapidly beneath me.

ff: Basically, summing up all your excuses, you're saying that your conscious mind was distracted, and your subconscious mind wasn't at home. So who was flying the glider?

SM: I think you're beginning to see the problem.

ff: At the point the earth began to rotate you knew you were spinning, right?

SM: Sad to say, no. My immediate thought was that I had forgotten to properly connect a control, like a Swift pilot in the USA last year. I tried to stop the turn with side stick motion and nothing happened.

ff: This is a classic trap! You never tried forward stick to lower the nose?

SM: I'm still not clear on this. I may have pushed forward somewhat, but not enough to end the spin. Also, although I had been about a hundred feet above takeoff and out in front of the peak, after the first turn I was suddenly aware of the summit cliff right in front of me, and didn't want to dive into it. But then the cliff was past and the trees were coming up. I just waited for the now inevitable impact 300 feet below the takeoff ramp.

ff: Wait a minute! I know that the Swift has a rocket-deployed reserve parachute. Why didn't you fire that before impact?

SM: This is the really scary part — it never even crossed my mind! I'm sure that I didn't know at that moment that I had one. And yet, each spring along with at least fifty other local pilots I practise deploying both hang glider and paraglider reserve chutes.

Typically I can get them out in about three seconds ... and the rocket will have the chute fully open in a fraction of a second after the handle is pulled.

ff: How did the spin end?

SM: As the wing hit the trees, I braced for impact and the inevitable injury — or worse. A few seconds later, I was surprised to find myself on the ground, apparently with nothing injured. But we can't be *too* sure about that, can we? I had hit a forest of tall Ponderosa pines and came to rest pointed along the ridge line, that is, with one wing pointed uphill, and the other downhill. I was on a 45° slope of soft ground and pine needles. My totally recumbent seating position and good head support (that undeployed parachute) must have helped take the impact. Right next to my point of impact was a large rock. If I'd come down on that ... I got out of my shoulder restraints and stood up, surveying the damage. One wing was broken open, and one winglet was torn off. The pilot cage had a few dents in it but had largely done its job of absorbing otherwise damaging deceleration. Then I heard shouts from the launch site where two friends, Max and Margaret, were just sick after seeing me spin out of sight. The other usual tourists probably had no idea what had happened.

ff: Were you helicoptered out? And did you just abandon the glider where it lay?

SM: No, I had conveniently impacted at the same elevation as the parking lot, so a couple of people helped carry the wings over to my car and we packed it all away for eventual return to the factory for repairs. Then I took my friends for dinner.

ff: Were you upset about the broken glider?

SM: At first I was just sick at the thought of the dollars involved in the crash. Fortunately Max and Margret helped me to see that it was only money involved, which can be earned again. The apparently uninjured body was a priceless miracle, though. I say *apparently*, since the next day every single muscle in my body hurt, probably from the sudden charge of adrenaline that had been received, but also from the impact.

ff: You are one lucky guy!

SM: Either that, or I really *am* dead.

ff: Planning on doing any more flying?

SM: I'm going to try to get my personal affairs in order before doing a lot more flying. I was out thermalling my paraglider last weekend, but I'll try to keep it low key over the winter months.

ff: Thanks for sharing this with us.

SM: If my tale causes one distracted or disturbed pilot to decline to fly one day, and so prevents him or her from suffering an accident, then my shame and embarrassment in relating this story will be easier to bear. Now maybe I can get some rest! ❖

Stewart has been flying flex-wing hang gliders for 23 years, with over 2300 flights and 1000 hours logged. More recently, he has been flying airplanes, ultralights, sailplanes, paragliders, and rigid-wing hang gliders including the Swift. He is the first person to obtain a Silver badge in all three soaring disciplines. Tony

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SOLAIRE
CANADA

People are the answer to accidents

– are they? –

Ian Oldaker,
Chairman, FT&S Committee

INTRODUCTION

FLYING GLIDERS has become much more technological in the past several years, and people too are much more tuned into the modern technical way of doing things. Perhaps the simplicity of gliding has become lost to the technology of computerized instruments such as flight directors and satellite navigation, and indeed in our homes TV has taken over from reading! Do we teach flying today by sound bite rather than careful explanation, practise and reasoned, assisted learning backed up by good manuals?

“Seventy to 80 percent of all aviation accidents are attributed to human error.” If we accept this statement, and I have no grounds for disputing it, then identifying the causes of the accident will help us prevent a similar accident from happening again. Actually we need to find the underlying factors, the errors, the causes of conflict and human factors that will help us understand why the accident occurred. Having found the best explanation we can then address these issues and advise all pilots how best to avoid a similar occurrence themselves.

Advancing safety in flight requires constant evaluation of our resources and the strategies we use to get the message across. To provide the right message the professional aviation community is switching from an emphasis on the individual to collective thinking; that is, investigations are moving away from the allocation of blame and towards appraisal of the performance of the aviation system as a whole. We are now seeing the examination of *all* components of the flying environment. We are no longer seeing the “blame and train” cycle so predominant in the past. The failures of people in their daily routines are often the symptoms of deeper problems within the organization, and in the gliding community one would liken this to the structure of the club, the National Association and even the rules and regulations by which we fly.

THE ORGANIZATION

Can we admit that the organization, our club or our association is imperfect? It is easy to point a finger at the association and/or the national regulator, but when all is said and done, it is the integrated whole that matters. Human error is the predominant factor in accidents today just as it was in 1944. In recent years, industry has

recognized that blame and punishment take us nowhere. We have admitted that the system is imperfect, and the challenge that is now before us is to address its flaws without denial. I suggest we need to do the same within the gliding community. We should be embarking on a long term strategy for improving gliding safety through a free flow of information exchange between clubs, the association and aviation safety professionals.

Within any organization such as a gliding club, the decisions, the links in the organization, the training, the equipment, the club rules, the ways errors are dealt with, and the communication between all concerned with the operation of the club are the organizational factors that affect pilots in their gliders. The climate of the club is often called the “club culture”. This last word conjures up images of a miniature social system with its own rules and code of conduct. This club culture is largely shaped by those in charge and will slowly change and develop, depending on the experiences and desires of the individuals or group running the club, and the difficulties which can be financial, operational, organizational or a combination of these.

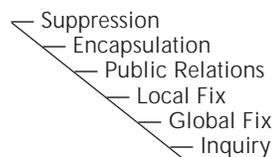
CONTROLLING THE ATMOSPHERE

Tolerating unsafe behaviour can produce serious organizational problems which creates a climate that is not conducive to good airmanship. People who are appointed or who find themselves in positions of responsibility in a club will shape that club’s climate. These people, by their actions and decisions, create the atmosphere in which club members will operate. The overall

Investigations are moving away from the allocation of blame and towards appraisal of the performance of the aviation system as a whole.

club atmosphere can vary over a range, depending on how information is handled. Information may flow in a pathological, bureaucratic or generative manner.

It is well established that *unsafe conditions* tend to build up before an accident. What we mean by unsafe condition is anything that, if not fixed, could lead to an incident or accident. In an organisation in which information flows briskly, as in a *generative* organization, the problem is seen early and remedied. However, in a *pathological* club the problem and any messages are suppressed, and the messengers are unable to get anything done. The table below shows the spectrum of responses. The more typical *bureaucratic* response is one of repair, in which the problem is explained away or remedied, but no thought-provoking questions are asked or inquiry is set up. This is the typical quick fix in which no big accident occurred to force positive action. Unfortunately, an accident has to occur sometimes to get major problems addressed. Then the items below are brought into play:



A typical example of a global fix is the airworthiness directive that applies to all aircraft of one type. An inquiry can include a leader or organization taking action to address a particular problem, such as spinning in gliders. Many readers may recall

<i>Organization types</i>			
	Pathological	Bureaucratic	Generative
Information	is hidden	may be ignored	is actively sought
Messengers	are “shot”	are tolerated	are trained
Responsibilities	are shirked	are compartmented	are shared
Bridging	is discouraged	is allowed but discouraged	is rewarded
Failure	is covered up	the organization is just and merciful	causes inquiry
New ideas	are crushed	create problems	are welcomed

that the OSTIV Training and Safety Panel highlighted this worldwide problem a few years ago, and the Association took action to publicize the importance of spin training and indeed started by improving the training curriculum for our instructors courses. At the Dryden Accident Inquiry, Chief Justice Virgil P. Moshansky helped reach an understanding of the accident's organizational causes. He conducted an exhaustive investigation into the aviation system as a whole, and was able to show that the pilots and dispatchers were only the last links in a chain of unsafe practises. He won the 1995 Transport Canada Aviation Safety Award for his significant contribution. "Risk assessment and risk management will continue to reap the benefit of his monumental work", are some of the words used at the award presentation.

In a typical club, situations occur that put pressure on those in charge and these can lead to problems even if they try to foster a positive climate. For example: in a club that is declining, the person (often one) who is trying to hold it together seldom seems to get help for the many tasks in the club — he or she is overloaded with responsibilities. A club that is expanding looks at things differently — they can keep on growing, nothing is impossible, the flying becomes less disciplined, more people are involved in the club organization but they have little experience, more sophisticated gliders are available to the pilots who may be low-time for the type, and the club gets slack — here too the leaders are overworked. Growth and change cause leaders to be overloaded and, without support from others in the organization to take on some of the load, this can have disastrous results.

Not all safety problems are caused by overload of course. Complacency can hide many latent problems that will remain hidden unless the club rethinks its approach to safety, and to the operational requirements of rules and procedures that will be fair and easily understood and therefore willingly followed by all pilots. As we continue to improve our flying training and safety awareness programs, we shouldn't neglect the operational and organizational side of the equation. After an accident, this organizational culture is often brought into the open by an inquiry such as that after the Dryden accident, but in a gliding club such inquiries normally do not take place. We will have to rely on a club's management to institute this sort of thing within the club. We care for the gliders; why not care also for the club's culture and its atmosphere? The study of organizational factors is only just beginning, and the future will be interesting.

REPORTING

Accidents hardly ever happen without warning. Consider a 1974 incident in which two crews of different aircraft misunderstood the same chart and descended early towards a mountain. The first crew was in good weather and saw the mountain. A second crew, in bad weather, flew into the moun-

tain. During the ensuing accident inquiry the earlier incident came to light. This accident provided the impetus to set up a national aviation safety reporting system in the USA, the ASRS. The purpose of the ASRS is to report such safety information, and this has produced a great improvement in the safety of aviation south of the border. Incidents such as the one that preceded the accident just mentioned give us a great opportunity to discover the causes of incidents and errors made by pilots. Had the ASRS been operating at that time, the second fatal accident would have been avoided. Voluntary and confidential reporting systems have successfully identified human errors and, with corrective actions, have prevented aviation accidents. Effective incident reporting programs can then go a long way to achieving this goal.

Whether we have effective reporting in the gliding community is a concern that many of us have. This is mainly because some feel it is difficult to maintain confidentiality of reports, and because pilots often feel that an "incident" is not worth reporting, or that there will be action taken against them. Whether this is covert or open has the same chilling effect of stopping any reporting.

Accident prevention is a goal everyone must surely share. Incident reporting which is effective can go a long way towards achieving this goal. How, then, can we improve our incident reporting? Experience shows that confidential reports that do not contain the identity of the pilot(s) or even of the location, etc, are the best approach. However; this approach must be known by all pilots, and the use to which the report is put must also be fully understood. Reporters need to see value in reporting, they need to see feedback is provided in the form of articles that describe safety lessons learned, that are informative and that congratulate them at the same time.

We can develop some rules from this:

- there will be no regulatory or financial sanctions taken against the reporting pilot,
- the reports will be used to provide useful feedback to the pilot population in general,
- *show this to pilots* by having an active safety improvement program in the club and national gliding association; it is insufficient to merely say this will be done! This can take the form of an active club newsletter and of course *free flight*. I would be remiss if I neglected to mention the excellent *Aviation Safety Letter* published by Transport Canada. Though it has few gliding-related items, it is always useful, and soaring pilots can obtain insights from the reports.

Of course ease of reporting will help get reports filled in, but here we have to balance the need to obtain enough detail to make the report useful, with the willingness of the reporter to take the time to write a report. Open type questions are fine with enthusiastic pilots but here too we have to ask specific questions to obtain data relat-

ing to type of glider, experience of pilot and so on. An immediate question from pilots will be along the lines of how will the organization that receives the report maintain confidentiality and protect the pilot from being identified. In a large organization such as an airline or national association, pilots reporting incidents are much more likely to remain anonymous. This is increasingly difficult as the organization gets smaller — a well-known incident is likely to be discussed by all in the club! We should nevertheless try to de-identify the incident and accident reports, and at the same time show the pilots that sanctions will not be imposed. The offer of immunity in reporting to the American ASRS has produced about 32,000 reports a year, far more than in similar programs in other countries. The improvement in aviation safety is palpable.

Let us assume that we receive sufficient reports to be able to put together meaningful information to send to all glider pilots. Several steps are needed to turn the information into useful feedback. Critical reports such as cracks developing in control system fittings should result in immediate action to other pilots who can then remedy the hazard in their aircraft. Very critical hazards like this are covered by airworthiness directives, but here too someone had to report the problem in the first place! Reports that are less time sensitive will be put away for analysis later, perhaps to be added to the data base for action in future years. Of course, the more reports that are received the more chance we have of being alerted to trends. This can be important in training; for example, a number of improvements have been made to our training manuals over the years, and the impetus for many of the changes came from incident reports.

I should perhaps mention that there are several levels of feedback that can be used: the club, the national association, and the national regulator. At the club level there is probably not enough statistical data to show a trend, so any reaction is likely to be on a single incident, as a club is not immediately aware when an incident is part of a trend. There may also be no reaction at all! A club system also suffers from lack of knowledge of other clubs' incidents and critical safety issues, particularly when the club is remote or feels cut off from the national scene.

Club systems tend to reflect very much the club atmosphere or culture. This varies from one of denial that there are any safety concerns to that of open resolution of internal problems, a very powerful approach to safety. But this approach requires dedicated people who encourage reporting within the club and at the same time maintain the confidence of pilots that they will not be punished for errors and mistakes. The variation between clubs extends from one end of the spectrum to the other!

Training and safety concerns can be discussed at all levels, and club news- ⇨ p20

club news

My first out & return attempt

Bob Leger
from COSA Cross Winds

IN YEARS PAST I have been setting goals for myself — something to achieve during the short flying seasons — I think everyone should do this. My first year in gliding (1990) I decided to get my glider pilot licence and move up through our fleet of five sailplanes to the point where I would fly the club's Astir CS. I did all of that and flew 88 glider flights to boot. I was pretty happy with my accomplishments by the end of that season.

Year two brought about cross-country flying and taking a shot at the Silver badge. I got the 1000 m height gain and the five hour flight, but the 50 kilometres still eluded me by the end of that year ... it was difficult getting a club ship for the day, or even a few hours, in order to try for this distance.

Over the next couple of years that 50 kilometre flight continued to dodge me. After a few successful distance trips over a two year period, I failed to get back home after rounding the turnpoints. If I had simply landed at the turnpoints I would have had the Silver badge, but alas, I always tried to get back home. Finally on 30 July 1995 I did it. It required me to land the club's ASW-15 at my turnpoint, Baldwin Airport, 62.5 kilometres away. I had to get a tow back in the late evening, but at least I had the Silver!

The goal I set for myself in 1996 was to get my own sailplane and not have to rely on club ships any longer. On 25 June I bought full ownership of a Cobra 15 along with its T-hangar, both located right on our airfield. The sailplane came with a good chute and an Ilec electric vario. Very handy indeed. Now I could do some serious cross-country flying. I racked up a lot of hours last year. I had some nice cross-country flights too, including one just-for-fun flight with Jim Carpenter (in his Discus) of about 260 kilometres.

Now finally to my current goal, a 300 out and return flight. Yes, I know I could do a triangle, but for unexplainable reasons I wanted to do the out and return instead. On 29 June I took off on my first attempt. Camera, barograph, declaration, and even a borrowed GPS in hand, I set off for my turnpoint which I had declared as York Soaring's main hangar, 158 kilometres away.

If I made it back successfully the flight would be about 316 kilometres total and I could sew on that new badge I was after.

I set off alone at about noon, but Jim Carpenter would launch some time later and catch up to me, after which we would do the rest of the flight together. Well, I was happily on my way, and about fifty kilometres away on course before Jim showed up in that beautiful Discus of his. We chatted on the radio off and on as we worked our way westward. We had to stay north of the Toronto control zone and south of Lake Simcoe, leaving a narrow corridor to fly through. I managed to stay with Jim who was slightly ahead of me to about Bradford.

The slightly hazy horizon made it very difficult to see his pure white glider from any distance to the rear, and I lost him a number of times. As we went along I found myself getting lower and further behind Jim. I expected this because he is the better pilot and his sailplane outperforms mine easily. My mistake was that I wandered around trying to find him, and when I did find him, I didn't top out on the thermals that he was just leaving. In my mistaken desire to follow him, I would leave thermals too soon so as not to lose sight of him. I can't blame Jim for that; he was flying his flight, and had probably spent enough time baby-sitting me. Yes, I had a map with me and I knew where to go, but I ended up zigzagging all along the course I had set for myself. I knew I didn't need to follow him, but I ended up doing it anyway. Maybe it has something to do with subconsciously not wanting to be caught out alone so far from home base. I was doing it and I shouldn't have; I should have flown my own flight.

The cu had started to get scraggly and further apart, and you guessed it, I got low, around 1500 feet above what appeared to be a very landable field, only 8 or 9 kilometres from the turnpoint. I had forest to the west of me, what looked like decent cu about one kilometre north and another the

same distance to the south. Not all of the clouds had had working thermals under them so I was leery about straying from my chosen landing field. I decided to search out lift in the immediate area around my chosen landing field instead.

Well, I didn't find any lift, so I radioed Jim that I was landing out and that I would phone the club for my retrieve crew. Jim passed on the message and got things rolling. I had selected a reasonably good low field and was down safely just minutes later. It was about 3:30 in the afternoon. I had just climbed out of the cockpit when Jim radioed me that he too was getting low. He was down to 2000 feet above ground somewhere not far away. A minute or so later he said he may have found some lift, and he went off the radio. I was never able to raise him on the radio again, and so didn't know if he had made it back home or had landed out himself.

Next to my landing field was a farmhouse with a very friendly family, a telephone, a cold drink, and a few laughs at my predicament. I waited a long time for my crew and didn't get back to the airfield until 11 pm. (Jim did manage to get home that day — I told you he was the better pilot!)

I firmly believe that I made one of my few correct decisions at that moment just before landing. Don't go wandering off from your chosen landing spot in search of possible lift. If that lift isn't where you hope it will be, and there isn't other landable terrain nearby, you may find yourself in a pretty desperate situation having left your best options behind. In ending this story, I would like to thank Jim Carpenter for baby-sitting a little, and my crew for coming to my rescue (it was almost a three hour drive each way for them). Oh, also make sure both your glider trailer tires have air in them before you go on a cross-country flight! ❖



Silverstar is in the air!

Gliding operations have begun at Vernon airport. On Friday, 11 April, Dave Crerar got a tow hook mounted on his Cessna 182 and I had my first launch in my LS-4 from Vernon. It was not what you would call a normal soaring day but it was productive. A dozen fast turnaround launches were made and at the end of the day, with Dave cracking the whip (one turnaround took 2 minutes and 35 seconds from the time the glider landed to the time it took off again!), we were in possession of the world's two newest towpilots — Dean and John.

On the last launch I was towed to Vernon mountain and found some lift, and although it was weak and scattered it was sufficient to make for a flight of 45 minutes. The long awaited "fix" was under way.

Monday, 21 April, was a boomer with strong cu everywhere. Unfortunately, the 182 was down for a 100 hour inspection, so I spent the day walking around with bricks in my pockets to keep from being sucked off the ground.

The following morning looked promising but by 11 am the cu that had been around since 9 appeared to be dying, but by 2 pm it had strengthened and it looked like it would be worth a try. UD was rigged and I was in the air just after 3.

A tow to Vernon mountain found some reasonable but disorganized lift that took me up to 7000 feet (I'm blaming the lift but probably the word disorganized should be directed at me). A quick run over to Silver Star and I was nearly thrust through the bottom of the cockpit when I flew beneath a large dark, promising looking cu. My vario went berserk and pegged at 10 knots in a broad, smooth thermal that rocketed me to 10,500 feet! Not being a skier, Silver Star never really held much value for me — until now. If that's an indication of what our "house thermal" is like we're going to have a ball soaring around here!

I spent the next 2-1/4 hours getting a feel for the area running around to Enderby, up to Shuswap, back to Silver Star and out to the Cherryville area before returning to land at 5:30. There was still plenty of lift around at that time but I had spent the entire time at a good altitude and was getting cold (it was -10°C at 11,500 feet). My fix is complete. Who of us will be next?

Now on to what else has been going on. We've had several meetings and the general consensus is positive that we have enough interested people generating enough interest to make a go of a gliding operation in Vernon.

The Regional District has been approached and what amounts to a "gentleman's agreement" permitting us to have a gliding operation out of Vernon Airport has been

approved. (There does appear to be a little "tail chasing" still going on in the shadowy background but that's only a bureaucratic formality.)

We decided at our first meeting not to establish ourselves as a gliding club but rather to be an association of pilots with shares in the aircraft we wish to fly. However, it was decided early on that, for a number of reasons — having been invited for one — it would be a logical thing for us to operate as part of the Vernon Flying Club. This will give us the use of the clubhouse, we will be part of a larger voice on the field should any issues arise involving us, and there is the social aspect. Membership is only \$40 a year, one of the most inexpensive deals in aviation!

The feeling is that the purchase of a two seater is the way to get things started for the majority of the interested parties. As we are not a gliding club as such, with no generated revenues available to purchase equipment, this purchase will have to be in the form of a syndicate with shares allotted according to the percentage each individual invests in the purchase. It's a straight forward thing: no buy — no fly. An active search is under way for a used Blanik, an all-metal machine that can be stored outdoors without the need for hangar space rental. The Blanik would be a satisfactory training and fun-to-fly ship.

While some of our group have glider pilot licences, most others don't and this opens the question — what about training? Due to our very early stage of development we feel that a formal training program, including ground school and training flights from "effects of controls" onwards, is beyond our scope at the moment. For those that have a gliding background but have been away from it for sometime and need just a little more dual time, or power pilots who are interested in experiencing the joys of soaring flight, we feel there are a few of us that can easily handle the training needed to bring folks back up to standard or to break them of all the bad habits developed while flying the gas gobblers. There is also the option of going somewhere like Pemberton to take a formal course to bring one to licence standard.

Malcolm Rhodes

... Silverstar's Blanik arrived from the London Soaring Association in August after a long and hairy trip from Ontario. The driver had to seek shelter between a semi-trailer and a building to avoid a tornado — fortunately we did not have to ride that updraft!

In addition to the Blanik you will find a few other sailplanes on the Vernon airport: a Monerai in its unpowered form, a vintage 2-22 that is dressed in Air Cadet colours but belongs to a group of three who intend to operate independent of Silverstar Soaring, and of course Malcolm's LS-4.

Our group consists of licenced glider and power pilots and, while the membership is

low now, we hope to attract a few more like-minded souls to shoulder the burden. We may decide to have each member pre-pay the fixed operating expenses and then only the towing expense per flight as a method to encourage more use and hence develop better flying skills. The operation is in conjunction with powered traffic so a little grass off to the side of the runway would be nice, but for the time being we have a "quick response team" on the ground to remove landed gliders swiftly.

The thermals in the Okanagan valley and the occasional wave hold promise and we will update you with more hot air stories as our future unfolds. The name of Silverstar relates to the local ski mountain which we will use to lift us to its peak, above, and beyond.

Hans Kruiswyk

SOSA X-Country Clinic

The lady in the medical supply shop looked at me knowingly when I said I was a glider pilot and needed a catheter. "So you're another one of those glider guys," she said, lowering her voice and in the same breath added, "we get a lot of your type in here." It made me wonder if glider pilots in general had trouble holding their water or whether she really knew what I was talking about. I wanted to know what one looked like before I put down hard cash, so she showed me their stash of catheters, bags and assorted plumping. Not being a hot contest pilot, I opted for the regular size and beat a retreat back to the gliding club, hoping that the skies would start to clear.

The previous day, August 25, was a soaring day that I will never forget and that was the main reason for my visit to the above mentioned shop. I discovered that little Ziplock bags just don't do the trick and I wanted to be prepared just in case there was going to be another amazing flight during that week. Jörg Stieber and Dave Springford were the two seasoned cross-country hands who would shepherd their fledgling chickadees away from the nest and through the fine theory of soaring. A buddy system was also set up to give the students all the help they needed just in case someone got into trouble. Each novice was teamed up with more experienced pilots like Ed Hollestelle, Chuck Keith, Richard Longhurst, and Tom Coulson.

Monday started out nicely, with the clouds and their associated thermals starting to pop in the early afternoon. It was decided that we should be conservative on the first day so we set course for the dam at Woodstock, which would be our first turnpoint. The next leg would take us just north of Tillsburg and the next turnpoint, Mount Elgin. (The turnpoint used to be Tillsburg airport but skydivers started to complain when they were free-falling through gaggles of gliders.) Some of the thermal apprentices managed to leave their guardian angels behind in weaker conditions and reach

hangar flying

homebase before them. With the exception of one landout, the first day was a success with all the others making it back to field. Pilots flew anywhere from 160 to 200 kilometres depending on when they decided to call it quits. At our informal debriefing it was decided that we would all attempt a 300 kilometre badge flight if the conditions were good enough the following day.

Well, the conditions were just about as perfect as any glider pilot could wish for. Just before noon, the thermals were taking us up to 5000 msl and by 12:30 we were on our way to the first turnpoint which was the town of Granton, just northwest of London. The next leg was to the northeast and the town of Varney, which is south of Angus. 123.4 was full of chatter throughout the afternoon, with instructors giving encouragement to their students and pushing them along the course. At one point during the second leg of the triangle, it dawned on me that I was halfway around the course and the conditions were improving as we went along. It was at that point that I took a moment to absorb the astounding view of Southern Ontario from 6000 feet. The patchwork of fields, the dancing cloud shadows and the coast of Lake Huron off towards the west. It was truly an awe-inspiring sight. At the same time I was so happy my colleagues were slaving away at the office and would never be able to comprehend the beauty of this particular soaring flight.

After rounding the final turnpoint (two or three times for those of us who aren't very good at snapping the shutter), it was time to head back to SOSA. Most of the pilots left Varney with 7000 msl or more on the clock. For those who had them, the final glide computer and the GPS came in very handy. For the novices like myself it was a question of counting the ten kilometre rings on the map, looking at the altimeter and counting my fingers while still trying to fly the glider. Everyone managed to figure it out, because all made it back to the field in times varying between 4.5 and 5.5 hours.

This short description can only give you a hint of the day and the spectacular conditions. But, as with so many things in life, you really had to be there. Something like ten pilots completed the 305 kilometre course and there are a number of Gold and Diamond badge leg applications being processed including those belonging to Tony Rywak, Tom Coulson, and myself.

The cross-country clinic was a resounding success even if we only flew for two of five days. For pilots who are looking for new challenges and the excitement of departing SOSA for unknown destinations, I highly recommend signing up next year. There's nothing like learning the ropes from some of Canada's best soaring pilots. Finally, if you take the course you'll certainly have the confidence to final-glide a 2-33 (or in my case an LK-10A) from the African Lion Safari back to Rockton without a plastic bag strapped to one's calf.

Herrie ten Cate

WHAT'S SO GREAT ABOUT 27 DEGREES OF BANK?

The major problem that beginners have with thermalling is that they will not bank steeply enough to keep the glider in the core of the thermal. While thermals can be quite large, usually there are one or more stronger cores imbedded in the thermal.

If a pilot is to make any reasonable cross-country speed that will enable a 300 kilometre or greater task to be completed, it is necessary that the cores of the thermal be used, rather than the easy-to-find 2 knot thermal surrounding them.

Examining the way top pilots fly, it is possible to work out that they use thermal cores that are mostly less than 200 metres in diameter. Rather than try to measure the angles of bank that are used, which is difficult without setting up some measuring gear, I measured the time it takes to make a complete circle. The top pilots take 20 to 24 seconds to make their turns when flying at speeds between 45 and 55 knots.

Circle size is related to the angle of bank and speed of the glider. The time taken to make the turn can be calculated taking these variables into account. The bank angle also determines the "g" loading that the glider and pilot experiences during a turn. The table below shows these relationships, giving circle time and diameter for the general range of speeds and bank angles used. From the table it can be seen that 20 to 24 second turns over this speed range give circles having diameters between 156 and 194 metres.

I've timed a large number of pilots at various levels of experience from pre-solo to solo pilots having around 200 hours. When

left to find their own "natural" bank angle in a Twin Astir, flying at 50 knots, they consistently flew circles taking about 32 seconds. At that speed this worked out to a 27° bank, 1.12 "g" load, 265 metre diameter circle. A circle this size has little chance of being in the core of a thermal for the whole turn, so unless the pilot does something different, good climb rates will not be achieved and cross-country distances only possible on the most favourable days.

A factor that does not appear in the table but is related to the "g" load is that when the bank is increased to the 35 to 45 degrees required, some extra effort is required to keep the speed constant. Possibly, 1.12 g is the limit where speed control effort is minimal, and that is what makes the 27 degree bank angle so universal for the inexperienced.

Maurie Bradney
from *Australian Gliding*

ULTIMATE TEAM FLYING

At the Overseas Nationals, held in Le Blanc, France this May, the competition was won by a pair of English pilots who took team flying to its absolute limit.

In sharing first, the pair both flew LS-8s, scored the identical number of points on each of the four competition days, *and* were identical twins, Paul and Steve Crabb!

This contest tried a scoring innovation (done in Canada in the 1989 Western Interprovincial contest at Claresholm) — dropping the pilot's worst day score from the overall results. The intention of the rule is to encourage more risk-taking and reduce gaggle flying by giving the pilot the possibility of winning despite a bad result on one day.

		Circle time (sec) / Circle diameter (m)								
		bank angle in degrees								
		20	25	30	35	40	45	50	55	60
airspeed in knots	40	36/237	28/185	23/150	19/123	16/103	13/86	11/72	9/60	8/50
	45	41/300	32/234	26/189	21/156	18/130	15/109	12/92	10/76	9/63
	50	45/371	35/289	29/234	24/193	20/161	16/135	14/113	12/94	10/78
	55	50/448	39/350	31/283	26/233	22/194	18/163	15/137	13/114	10/94
	60	54/534	42/416	34/336	28/277	24/231	20/194	17/163	14/136	11/112
	65	59/626	46/489	37/395	31/326	26/272	21/228	18/191	15/160	12/132
"g"		1.06	1.10	1.15	1.22	1.31	1.41	1.56	1.74	2.00

1997 SSA SAILPLANE DIRECTORY

The July 1997 issue of SOARING magazine is the newly-published sailplane reference for all sailplanes which have ever been registered in the USA (this does not leave too many left out). It is the fifth such directory compiled by Soaring Society of America (the last was in 1983). Each listed sailplane has a photograph, technical information and a short history. Sailplanes are indexed by type and manufacturer.

The directory also contains an article by Derek Piggott which compares many sailplanes as a guide to the purchase of used ships. Individual copies of the directory may be ordered by non-subscribers for US \$14.20 (shipping incl.) Address: SSA Merchandise Department, Box E, Hobbs, NM 88241. Phone (505) 392-1177, fax (505) 392-8154, e-mail 74521.116@compuserve.com

FIRST 500 AT COSA

Congratulations to Brian Milner for the first 500 kilometre flight out of the COSA club at Omemee, ON on 19 August. The task was an O & R to North Bay in his Nimbus.

ASC ASSETS STOLEN

In early September, it was discovered that the Alberta Soaring Council's bank account had been emptied. About \$85,000 are missing and the treasurer, John Barry Woods, is being sought in connection with this theft. This is a serious blow to the Alberta clubs who had these funds set aside or used for towplane replacement, Cowley upkeep, competition, and many other ongoing provincial plans. Although ASC gets substantial support from the provincial sports foundation, it is going to take careful planning and several parsimonious years to rebuild our funds to a safe level.

AIRSPACE RELIEF AT BLUENOSE

The Bluenose Soaring Club and NavCan Moncton will test the concept of an airspace which, when activated by the club, will exempt gliders from the requirement to establish contact with Halifax Terminal while within this airspace.

The airspace (for convenience called the "Bluenose Block") extends to 5000 feet asl and goes from Stanley 13 nm northwest to the Halifax 35 nm arc, 19 nm clockwise around the arc, south 12 nm to Shields Lake and then back the 6.5 nm to Stanley. When activated, ATC will keep IFR traffic out of the area and will provide separation to known VFR traffic. Bluenose gliders are still responsible for establishing radio contact with Halifax before leaving the block or otherwise entering the Class D terminal airspace. The trial agreement will be in place 1 September to 15 November. At the end of the trial, all parties will meet to establish

SSA calendar photo not available for pdf file

The SAC National Office now has in stock the Soaring Society of America soaring wall calendar. SAC is able to offer it for a slightly reduced price over last year - the 1998 calendar is \$16 + \$4 p&h.

what worked, what were problems and to craft a long-term agreement which will satisfy as many of the requirements and desires of all participants as possible. Bluenose has not had many problems with Halifax Class D airspace this summer and, although this block is small and largely over unlandable country, it will reduce the volume of radio traffic with the terminal considerably. We are generally pleased with this first step by TC/NavCan to address our concerns.

Karl Robinson

GPS LANDOUT

Jonathan Gere told this story of a landout he made at the 15m US Nationals in Albert Lea this summer. The day died and he was on final glide over flat "land anywhere" ground toward an airport that his GPS said he could make. He arrived at 300 feet agl - no airport. After frantic circling and looking he landed in a one inch crop and rolled up to a farm house. When the owner came he asked about the airport and the owner replied, "Oh, I plowed 'er under last spring!"

The Ontario and Alberta XC Soaring Ladders as of September 15

Pilot	Club	Glider	Call Sign	No. Flts	Total km	Pts best 4	Place
Ian Spence	SOSA	ASW-24	WW	4	1759	1841	1
Ian Grant	GGC	LS-4	ZT	5	1302	1341	2
Doug Bremner	SOSA	SZD-55	XT	6	1767	1298	3
Sue Eaves	LSS	LS-4	SU	5	979	824	4
Dave Frank	RVSS	ASW-20	SR	1	355	334	5
Dan Cook	GGC	Std Jantar	DBW	1	74	76	6
Tony Burton	Cu Nim	RS-15	EE	10	2882	2339	1
Buzz Burwash	ESC	ASW-20FP	AB	3	976	1025	2
Rod Crutcher	Cu Nim	Ventus	26	2	747	1003	3
Bruce Friesen	ESC	Std Austria	SL	3	701	998	4
Mike Glatiotis	Cu Nim	Std Cirrus	JM	4	639	825	5
Terry Southwood	Cu Nim	ASW-20	PM	3	660	773	6
Darwin Roberts	Cu Nim	HP-16	BH	2	503	688	7
Gerald Ince	Cu Nim	Mini Nimbus	54	3	509	623	8
Paul Scott	ESC	Pilatus	TA	2	288	351	9
Dave McAsey	Cu Nim	Ka6CR	ML	1	168	264	10
Ken Freeland	ESC	SZD-59	KM	1	168	210	11
Mike Swendsen	Cu Nim	HP-16	BH	1	121	158	12
Al Hoar	Cu Nim	Std Cirrus	4E	1	111	138	13
Rick Dawe	ESC	Std Jantar	JJ	1	88	110	14
Mike Freeland	ESC	SZD-59	KM	1	58	73	15

People ... accidents from page 15

letters, *free flight* and the *Aviation Safety Letter* are the vehicles by which safety articles and information are sent out to pilots. At the national association level, we belong to the international scientific and technical organization for gliding known as OSTIV. Specifically we are represented on the Sailplane Development* and the Training and Safety Panels, and over the years much data has been exchanged and compared. At the OSTIV panel meetings, trends in accidents worldwide and national safety programs are discussed and compared. It may be transparent to many, but the work of the OSTIV panel has been instrumental in improving our training and safety programs. I expect this work to continue. But, we still have a long way to go with the reporting within our sport.

In our Association we have a national incident and accident reporting system that varies in its success from very poor reporting to somewhat better than poor! This is unfortunate as not all of us will live long enough to make all the mistakes in the book that other pilots may be making. I may say this flippantly, but in truth the lessons learned are not getting back to our pilots. In industry for example, if some part of production does not proceed according to the quality program and the product does not meet specifications, an inquiry is launched to find out the root causes of the failures, and the lessons learned are put to good use. The production procedures are corrected and production resumes. In safety programs too, reports are acted upon to improve safety for the workers, for what could be more valuable to the employer than a fit and injury-free work force? But

* The Sailplane Development panel members of OSTIV have been actively pursuing safety in addition to airworthiness matters. They have, for example, defined requirements for pilot protection such as impact resistant seating and cockpit structures, until recent years ignored by the manufacturers.

in gliding we seem to have a "devil may care" attitude! Why can't we see the light in our sport and voluntarily submit incident reports for the betterment of the rest of us? I would really like to know the answers please (your comments will be kept confidential).

HUMAN FACTORS

In the 1980s a new set of ideas sprang up out of a program run by the FAA, GAMA and Transport Canada. This was the Pilot Judgement Training program. The training was personality oriented and it included self-administered tests for personality. But pilots did not like to be told that they had to adapt their behaviour to recognize their personality traits and to make decisions accordingly. In the airline industry this was recognized and a second generation of training, now more universally called crew resource management or CRM, was developed. This abandoned the questioning of personality and instead concentrated on attitudes, leadership, communication, and collective decision-making.

Programs then began to address the concept of error and the need to understand how a situation can arise. It was here that human error was designated as the primary cause of accidents through the concept of a chain of errors. Error management was seen as important and the interplay between pilots and ground crew was included in training programs. Very soon this was extended to beyond the cockpit to include the organization, its culture, its philosophy and how it manages its operation.

What we need to use from this in the gliding environment is the adaptation of all aspects of a club's environment and organization towards an overall management of the club's resources to stimulate improved safety. Resource management must be integral with the training programs and must be directed at club management to deal with group dynamics and with pilot/club

relationships. It must not only ask "what?" and "how?" but also "why?"

I see this as a real challenge for us in the next few years, to try and recognize that it is the overall system that comes to bear on the safety of the flying operation in each of our clubs. Notice that I said safety of the flying operation, and I did not mention the pilot. He and she are part of the operation, and from what has gone on earlier in this article, I hope you will agree or will come to agree that it is the integrated whole that we must address, not just the individual in the cockpit.

References

Nadine Sarter, assistant professor at the Aviation Research Laboratory at the Institute of Aviation at the University of Illinois. The results of the research at this lab are reported in several publications such as the International Journal of Aviation Psychology, 2(4), 1992: 303-321.

Human Factors Experts Beginning to Focus on Organizational Factors in Safety, Ron Westrum, Professor of Sociology and Interdisciplinary Technology at Eastern Michigan University, ICAO Journal, Vol. 51, No. 8, Oct 1996.

Aviation Safety Letter, Issue 3/95, published by Transport Canada Aviation, Safety Programs Branch.

Confidential incident reporting systems create vital awareness of safety problems, Mike O'Leary, Manager, Human Factors Research, British Airways, and Sheryl L. Chappell, Senior Researcher, NASA, ICAO Journal, Vol. 51, No. 8, Oct 1996.

Human factors training initiative that first emerged in the 1970s has reached maturity, Jean Pariés, former Deputy Chief of the Bureau Enquêtes-Accidents, France, ICAO Journal, Vol. 51, No. 8, Oct 1996. ♦

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SAC news

SOME PEOPLE ARE USING REALLY OLD SAC ADDRESSES & PHONE NUMBERS!

I received a telephone call from a lady who was complaining about receiving frequent calls for the Soaring Association of Canada. Her telephone number is quite different from the present SAC number. As it turns out it is the same number that SAC used to have several years ago: 739-1063. Could you kindly put a reminder in *free flight* that the telephone number changed about two and a half years ago.

Along the same line, mail is occasionally sent to SAC's old address at 1355 Bank Street, even to 486 Bank, and it has been close to a decade since SAC moved from 486 Bank. Mail has also been received from members addressed to Jim Leach, who left SAC about fifteen years ago! I don't think that I would bother mentioning the address stuff — however, since we did receive a specific complaint on the telephone number, and it would be annoying to the person involved, we should probably do our bit and mention it. Bell reassigns telephone numbers after six months.

Jim McCollum

CANADIAN SOARING E-MAILING LIST

A mailing list called *soaring@wgc.mb.ca* has been created for the discussion of Canadian soaring related topics (ie. airspace, club news, events, equipment sales, good

Club

Club	Membership (20 Sep)		
	90-96 avg	1997 total	% avg
ASTRA	5	7	140
Air Sailing	29	19	66
Alberni	12	18	150
Base Borden	15	13	87
Beaver Valley	11	16	145
Bluenose	39	25	64
Bonnechere	9	9	100
Bulkley Valley	12	5	42
Central Alberta	10	11	110
Champlain	56	55	98
CVV Québec	37	55	149
Cold Lake	26	18	69
COSA	43	34	79
Cu Nim	62	63	102
East Kootenay	5	15	300
Edmonton	66	58	88
Erin	32	29	91
Gatineau	87	101	116
Grande Prairie	9	13	144
Guelph	30	24	80
London	42	41	98
Mont Valin	5	3	60

1997 SAC "MEMBERSHIP METER"

Montréal	103	93	90
Outardes	29	24	83
Pemberton	9	9	100
Prince Albert	10	12	120
Regina	33	28	85
Rideau	16	10	63
Rideau Valley	38	23	61
Rocky Mountain	3	4	133
Saskatoon	13	19	146
Silverstar	0	8	-
SOSA	124	127	102
Swan Valley	6	6	100
Toronto	19	16	84
Vancouver	98	83	85
Westman	4	1	25
Wheatbelt	6	6	100
Windsor	11	8	73
Winnipeg	69	62	90
York	88	76	86
Non-club	11	26	236
totals	1340	1273	95

Membership is now somewhat greater than our 1996 total which was 1257.

flights, etc.). Any e-mail message sent to this address is resent to everyone on the list. If you want to be added to the list, send an e-mail to *soaring-request@wgc.mb.ca* with the word "subscribe" in the subject line of the message.

Howard Loewen

SPORTING CODE CHANGES

The next issue of *free flight* will describe the 1 Oct 97 changes to the Sporting Code and list the amendments required to be made *Badge and Record Flying, edition 7*.

mid-Oct Toronto Area Ground School

Erindale College. For info contact: Ulf Boehlau (416) 410-3883 (W), (905) 884-3166 (H), email *cm855@torfree.net*

Mar 1998 SAC annual general meeting, Toronto. date likely 1 March weekend (more next issue).

Directors & Officers

President & QUEBEC Zone

Pierre Pepin (1997)
590 rue Townshend
St-Lambert, QC J4R 1M5
(514) 671-6594 (H)
(514) 761-7015 (B)
(514) 768-3637 (F)
prpepin@videotron.ca

VP & ONTARIO Zone

Richard Longhurst (1997)
100 - 1446 Don Mills Road
Don Mills, ON M3B 3N6
(416) 391-2900 (H)
(416) 391-3100 ext 250 (B)
(416) 391-2748 (F)
richard_longhurst@mintzca.com

PRAIRIE Zone

Howard Loewen (1996)
233 Lamont Boulevard
Winnipeg, MB R3P 0E8
(204) 489-1148 (H)
(204) 489-3086 (F)
loewenhw@mbnet.mb.ca

ALBERTA Zone

John Broomhall (1996)
1040 - 107 Street
Edmonton, AB T6J 6H2
(403) 438-3268 (H)
(403) 423-4730 (B)
(403) 423-4734 (F)
john@ciips.ca

PACIFIC Zone

Harald Tilgner (1996)
50090 Lookout Rd, RR2
Chilliwack, BC V4Z 1A5
(604) 858-4312 (H)
(604) 521-5501 (club)

Executive Director & Treasurer

Jim McCollum
6507 Bunker Road
Manotick, ON K4M 1B3
(613) 692-2227 (H)
(613) 829-0536 (B)
(613) 829-9497 (F)
sac@comnet.ca

Committees

Air Cadets

Bob Mercer
Box 636
Hudson, QC J0P 1H0
(514) 458-4627 (H)

Airspace

Bill Green
2181 West 22 Avenue
Vancouver, BC V6L 1L4
(604) 737-1136 (H)
(604) 886-8981 (cottage)
Mbrs: Ian Grant
grant.i@atomcon.gc.ca
Scott McMaster
scott@mcmal.cis.mcmaster.ca

Contest Letters

Robert Binette
5140 St-Patrick
Montreal, QC H4E 4N5
(514) 849-5910 (H)
(514) 362-7363 (B)
(514) 362-7365 (F)

FAI Awards

Walter Weir
3 Sumac Court Burketon
RR 2 Blackstock, ON L0B 1B0
(905) 263-4374 (H)
waltweir@inforamp.net

FAI Records

Dave Hennigar
404 Moray Street
Winnipeg, MB R3J 3A5
(204) 837-1585 (H)

Flt Training & Safety

Ian Oldaker, RR1
Limehouse, ON LOP 1H0
(905) 877-1581 (H)
(905) 823-9060 ext 4526 (B)
(905) 822-0567 (F)
oldakeri@aecl.ca

Mbrs: Ken Brewin (Safety)
Geo. Eckschmiedt
Fred Kisil (Training)
Marc Lussier
Paul Moggach
Karl Robinson
Terry Southwood

Free Flight

Tony Burton
Box 1916
Clareholm, AB T0L 0T0
(403) 625-4563 (H&F)
free-flt@agl.net

Historical

Ulli Werneburg
1450 Goth Avenue
Gloucester, ON K1T 1E4
(613) 523-2581 (H&F)

Insurance

Richard Longhurst
100 - 1446 Don Mills Road
Don Mills, ON M3B 3N6
(416) 391-2900 (H)
(416) 391-3100 ext 250 (B)
richard_longhurst@mintzca.com
Mbr: Doug Eaton

Medical

Dr. Peter Perry
64 Blair Road
Cambridge, ON N1S 2J1
(519) 623-1092 (H)
(519) 740-6547 (B)

Meteorology

Bernie Palfreeman
266 Place de Brullon
Boucherville, QC J4B 2J9
(514) 655-5935 (H)

Radio & Comm

David Morgan
223 Pump Hill Rise SW
Calgary, AB T2V 4C8
(403) 252-3717 (H)

Sporting

Charles Yeates
110 - 105 Dunbrack Street
Halifax, NS B3M 3G7
(902) 443-0094 (H)
yeatesc@ra.isisnet.com

Mbrs: Colin Bantin

ccbantin@globalseve.net
Tony Burton
free-flt@agl.net
George Dunbar
dunbar@freenet.calgary.ab.ca

World Contest vacant

Statistics

Randy Saueracker
1413 - 7 Avenue
Cold Lake, AB T0A 0V2
(403) 639-4049 (H)
(403) 594-2444 (B)
(403) 594-4977 (F)
ifs@ccinet.ab.ca

Technical

Paul Fortier
RR2, Mountain, ON K0E 1S0
(613) 989-1369 (H&F[call 1st])
ae605@freenet.carleton.ca
mbrs: Chris Eaves
Herb Lach
Glenn Lockhard

Trophy Claims

David McAsey
47, 2300 Oakmoor Dr SW
Calgary, AB T2V 4N7
(403) 281-7962 (H)
(403) 281-0589 (B&F)
mprosoar@agt.net

FAI badges

Walter Weir

3 Sumac Court Burketon, RR2, Blackstock, ON L0B 1B0
(905) 263-4374 email waltweir@inforamp.net

The following badge legs were recorded in the Canadian Soaring Register during the period 1 July to 4 September 1997.

DIAMOND BADGE

90 Neil Gegenbauer Vancouver (at 19, the youngest in Canada to date)

SILVER BADGE

887 Andrew Parker SOSA
888 Andrew Corrigan SOSA

DIAMOND DISTANCE (500 km)

Tracie Wark York 506.4 km ASW-19 Julian, PA
Neil Gegenbauer Vancouver 520.5 km ASW-20CL Invermere, BC

DIAMOND GOAL (300 km)

Pierre Pepin Champlain 306.0 km Diamant 16.5 Julian, PA
Neil Gegenbauer Vancouver 520.5 km ASW-20CL Invermere, BC

GOLD DISTANCE (300 km)

Pierre Pepin Champlain 306.0 km Diamant 16.5 Julian, PA

SILVER DISTANCE (50 km)

Andrew Parker SOSA 72.0 km 1-16 Rockton, ON
Andrew Corrigan SOSA 62.7 km Ka6CR Rockton, ON
Pierre Pepin Champlain 64.4 km Diamant 16.5 Julian, PA
Stewart Baker Bluenose 57.6 km Ka6E Stanley, NS

SILVER ALTITUDE (1000 m gain)

Andrew Parker SOSA 1830 m Grob 103 Rockton, ON
Stewart Baker Bluenose 1740 m Ka6E Stanley, NS
Jan Cina SOSA 1410 m Blanik L-13 Rockton, ON

SILVER DURATION (5 hours)

Donald Macaulay SAC 5:07 h Astir CS Clermont, FL

C BADGE (1 hour flight)

2561 Andrew Robbins COSA 1:36 h 2-33 Omeme, ON
2562 Stewart Baker Bluenose 3:20 h Ka6E Stanley, NS
2563 Donald Macaulay SAC 5:07 h Astir CS Clermont, FL

the "backwards" camera

I almost rejected a Diamond goal claim because it appeared from the negative that the task had been flown in reverse. Fortunately I noticed that the times were also reversed. It turns out that this make and model of databack camera winds all of the film out of the canister as soon as it is loaded and then takes the first picture on frame 24, the second on frame 23 and so on. This is a good design feature since accidental opening of the camera will not result in lost pictures. If you have a camera like this and it either has no data-back or the databack is printing "date" instead of "time" you will need to have some other way of proving photo sequence if sequence is critical to your claim. A new time added to your declaration for the closing photo would be one acceptable method.

OO lists expire soon

It's time once again for Senior OOs from each club to send me their list of current OOs. We do this every three years and the last time was 1995. After 1 April 1998, no claim will be accepted from a club that has not resubmitted their list of current OOs.

badge claims deadline

Lastly, since I spend my winter basking in sunny Florida, I can't process claims between 15 December and 1 April. It amazes me how many people don't get around to sending in a claim for a July flight until the six month deadline almost nails them in December. Every year I receive claims in the winter, but they won't get processed until spring. ACT NOW.

FAI records

Dave Hennigar

404 Moray St, Winnipeg, MB R3J 3A5 (204) 837-1585 H

The following record claim has been approved:

Free Distance, territorial, 542.3 kilometres, 7 June 97, Tony Burton, RS-15, C-GPUB. Flown from Black Diamond, AB with turnpoints of Cowley airfield and the Coutts border crossing, and return to Black Diamond. This is a new record category with no past claims.

SAC SUPPLIES FOR CERTIFICATES AND BADGES

1	FAI 'A' badge, silver plate pin	\$ 6.00	
2	FAI 'B' badge, silver plate pin	\$ 6.00	
3	SAC BRONZE badge pin (available from your club)	\$ 6.00	(12 for \$55)
4	FAI 'C' badge, cloth, 3" dia.	\$ 6.00	
5	FAI SILVER badge, cloth 3" dia.	\$ 6.00	
6	FAI GOLD badge, cloth 3" dia.	\$ 6.00	
7	FAI 'C' badge, silver plate pin	\$ 5.00	
8	FAI SILVER badge, pin	\$45.00	
9	FAI GOLD badge, gold plate pin	\$45.00	
	<i>Items 4-12 ordered through FAI awards chairman</i>		
	<i>Items 10, 11 not stocked - external purchase approval given</i>		
10	FAI GOLD badge 10k or 14k pin		
11	FAI DIAMOND badge, 10k or 14k pin and diamonds		
12	FAI Gliding Certificate (personal record of badge achievements)	\$10.00	
	Processing fee for each FAI application form submitted	\$15.00	
13	FAI badge application form (also stocked by club)	n/c	
14	Official Observer application form (also stocked by club)	n/c	
15	SAC Flight Trophies application form (also stocked by club)	n/c	
16	FAI Records application form	n/c	
17	Flight Declaration form (also stocked by club) per sheet	n/c	
18	Badge & Record Flying, ed. 7	\$ 6.00	
19	FAI Sporting Code, Section 3, Gliders (rev 1 Oct 96)	\$10.00	

Please enclose payment with order; price includes postage. GST not required. Ontario residents, add 8% sales tax. Items 1-6 and 13-19 available from SAC National Office. Check with your club first if you are looking for forms.

SAC National Office, 101 - 1090 Ambleside Drive, Ottawa, ON K2B 8G7 tel (613) 829-0536 • fax (613) 829-9497 • email sac@comnet.ca

ARTICLES ACVV POUR CERTIFICATS ET INSIGNES

Insigne FAI 'A', plaqué argent	\$ 6.00
Insigne FAI 'B', plaqué argent	\$ 6.00
Insigne ACVV BRONZE (disponible au club)	\$ 6.00
Insigne FAI 'C', écusson de tissu, 3" dia.	\$ 6.00
Insigne FAI ARGENT, écusson de tissu, 3" dia.	\$ 6.00
Insigne FAI OR, écusson de tissu, 3" dia.	\$ 6.00
Insigne FAI 'C', plaqué argent	\$ 5.00
Insigne FAI ARGENT	\$45.00
Insigne FAI OR, plaqué or	\$45.00
<i>Les articles 4-12 sont disponibles au président des prix de la FAI</i>	
<i>Les articles 10, 11 ne sont pas en stock - permis d'achat externe</i>	
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FAI Code Sportif, Section 3, Planeurs (rev 1 Oct 96)	

Votre paiement devrait accompagner la commande. La livraison est incluse dans le prix. TPS n'est pas requise. Les résidents de l'Ontario sont priés d'ajouter la taxe de 8%. Les articles 1-6 et 13-19 sont disponibles au bureau national de l'ACVV.

Trading Post

Personal ads are a free service to SAC members (please give me the name of your club). \$10 per insertion for nonmembers. **Send ad to editor**, not the national office, Box 1916, Claresholm, AB T0L 0T0 tel/fax (403) 625-4563, free-flt@agt.net

single seat

1-26, #122, 2250h, in good shape. \$8500. Call Howard (250) 493-1992. mmozal@hatch.ca

Tern II, 17m, basic instruments incl portable radio. Recently constructed, still in test flight phase at Winnipeg. \$4900 obo. Call Jim Cook at (204) 489-6734, outside Winnipeg 1-800-224-7508 or email accessm@escape.ca

Skylark 3D, 18 m, vg condition, basic instruments, chute, trailer (needs work). \$5500. Barry Usprech (514) 273-3451 (day).

K-8B, C-FZKQ, vg cond, Imron paint, radio, encl trailer. \$9000. Contact Ralph Webber (519) 337-2042, Fritz Schreiner (519) 542-2204.

K-8B, C-FROP, enclosed trailer. Eric Durance (519) 969-7889, Kurt Moser (eves only) (519) 472-8876.

BG12A, CF-RCU, 350 h, flies real well, 3/4, one-piece canopy, reconditioned in '95 - all the work is done. Fibreglass trailer, Security 150 chute, portable radio, wing covers. \$4500 obo. Call Norm Wagner (250) 344-6685.

Duster, C-GHEU, 226h, Genave 100 radio, two mech varios, 3-1/8 and 2-1/4 altimeters, ASI, 10ah gelcel, encl metal trailer. Canopy extended to accommodate 6'-4" pilot & chute in comfort. Asking \$5500. Harold Weidemann (403) 474-0139, weidefam@connect.ab.ca

Ka6E, C-GTXP, 804h, g cond, Cambridge vario, constant flow O₂, encl homebuilt trailer. US\$8000 obo. Aaron Archibald, Golden (250) 344-7427.

Ka6CR, CF-GXF, '68, a John Kuhn trailer, excel cond, chute, O₂, Libelle ballast bags. Eric Durance (519) 969-7889.

Ka6CR, CG-CJB, #6608, Built in 1967, 1200+h. Just passed the annual. Based near Cleveland, Ohio. In good/very good condition. New instrumentation. Factory trailer. Slim pack parachute. Michael Steckner. For serious inquiries, e-mail mks@gwis.com or phone me at (216) 473-9365.

Monerai, C-GIHZ, 160h, excel cond, extended wings, elec vario, enclosed alum trailer. \$5150. New Chairchute 150, \$650. 3-cyl König engine, 24 hp, direct drive. Still in crate, \$1250. Tom Stoer (705) 721-5539.

Phoebus B, 15m, C-FURK, 1034h, good cond & gelcoat, Cambridge vario, radio, constant flow O₂, encl homebuilt trailer. US\$11,000 obo. Aaron Archibald, Golden BC (250) 344-7427.

Phoebus B, 910 h, never bent, elec audio vario, speed-to-fly vario, O₂, T&B, chute, EdoAire 360 radio, encl alum trailer. Asking \$14,000. Derek Kirby (905) 458-0819.

K5 (PIK wings, homebuilt fuse. see colour photo in ff 1/95), C-GZMB, O₂, chute, radio with headset. Asking \$20,000. Mike Cook (250) 427-5471/2598.

HP-18, C-GTRV, completed in '94 with initial flights only. Selling as I'm out of country most of the summers. All drawings, special tooling, spares. All new instruments: CPT50 & CAV50 netto varios with speed ring, ATR 720 radio, new thin pack chute, etc. Maurice Engler (403) 246-6611.

Jantar Std, 1350h, Cambridge MkIV, tinted canopy, EDOAire comm, gear warning, encl trailer. Never broken, make an offer. Greg (306) 586-5493 eve.

Std Cirrus, C-FAQV, excellent condition, no damage history, O₂, final glide comp, factory trailer, ground handling kit, chute. All reasonable offers considered. Stewart Baillie (613) 226-4595 stewart.baillie@nrc.ca

Std Cirrus, CF-DMW, 660h, never bent, excel cond. Radair 360, O₂, 3 varios, metal trailer. Winter and Peravia bars, Radair 10s, Security 150 chute, etc. **'77 Ford Club Wagon**, 3/4t, low miles, excel cond, towing package, AC, wired for ground station. All unused past 7 years. Prefer package sale. Monty Williams (604) 929-1749.

PIK20Bc, C-GXWD, carbon fibre, 820h, very good condition, new paint, Ball 400 c/w netto & cruise, Edoaire 720 radio, chute, O₂, gear warning. Call Lee at (403) 242-3056 or Denis at (403) 526-4560.

KW45, C-FSNZ, 500h, Open Cirrus wings, home-built glass fuselage, never damaged, excel cond. Factory water ballast, tinted canopy, radio, O₂, Ilec vario system, aluminum trailer. Fred Wollrad, (403) 479-2886.

Ventus B 16.5 CF-CYP, contest ready with Dittel radio, Zander flight computer/vario as well as a Cambridge and mechanical vario. Komet trailer and many extras including parachute and O₂. US\$40,000. Hal Werneburg at (403) 686-6620, westech@cadvision.com or Rick Zabrodski (403) 271-5123, rzabrods@acs.ucalgary.ca

Ventus B, Masak winglets, tinted canopy, M Nav, Schuemann CV vario, Becker radio, Bohli, 5-point harness, Garmin moving map GPS, dual batts, sheepskin cushions, chute, O₂/mask/bailout bottle, Cobra trailer with one-man rigging system. King handheld radio, ground station with long range antenna. Spare parts. Andrew (403) 435-4425.

miscellaneous

Two trailers. Encl metal suitable for Lark or other 2-place. Enclosed glass clamshell suitable for 15m ship. Eric Durance (519) 969-7889, Kurt Moser (eves) (519) 472-8876.

Two winches, single drum with 3500 ft of cable, V-8 powered, very low time on both engines, on single axle frames with trailer hitches, excellent economical launch vehicles. Eric Durance (519) 969-7889, Kurt Moser (eves) (519) 472-8876.

Finders fee will be paid to finder of any of the following items: Fauvel AV36 with or without trailer, any other glider needing tender loving care, ultralight with full cockpit enclosure (ex. Chinook) with or without engine, Jodel 1- or 2-place with or without engine or project. Send card with phone number please. Ed Mux, 1500 E Main St, Merrill, Wisconsin 54452, (715) 536-7404.

Wingtip wheel assy. Two sets wanted for 2-33. Sylvain Bourque, AVV Champlain (514) 641-3913 champlain@videotron.ca

Security 150 chute, recent repack. \$300. Horst Dahlem, ph/fax (306) 955-0179 or e-mail Dahlem@sk.sympatico.ca

Base station. Genave Alpha 720 comm with matching 115V power supply & carbon mic, telescoping antenna. Offers? Len Gelfand (613) 749-5101. ck297@freenet.carleton.ca

Slim Back chute, \$855 + \$24 s&h, no GST, no PST, brand new, carrying bag included. Peter Doktor 36 Buchanan Rd, St. Catharines, ON L2M 4R6 (905) 935-4938 ph/fax.

Humorous greeting card or T-shirt for the glider pilot in your life? Write for a full catalogue. A six-pack of black and white cards c/w envelopes \$9.00 + applicable taxes. Mike Morgulis, 1411-15 Eva Road, Etobicoke, ON M9C 4W3, email mike.morgulis@sympatico.ca

towplane

PA-25-235, 1205h, wing tanks, spray gear removed, tow hook. US\$17,000. Aaron (250) 344-7427.

two seat

Lark IS28B2, C-GVLI, 1500h, basic instruments, Cambridge vario & repeater, Varicalc computer, Alpha 100 radio, g-meters, chutes, professionally built open trailer. Winnipeg Gliding Club (204) 837-8128 or wgc-info@lark.magic.mb.ca

K7, C-FWRX, needs overhaul, enclosed trailer. Eric Durance (519) 969-7889, Kurt Moser (eves only) (519) 472-8876.

2-22E, no damage. Not flown for past nine years. Covered trailer. \$4000. Also ICOM hand-held radio \$400. (604) 536-2819.

magazines

SOARING — the monthly journal of the Soaring Society of America. Subscriptions US\$43 second class. Credit cards accepted. Box E, Hobbs, NM 88241-7504. (505) 392-1177, fax (505) 392-8154. 74521.116@compuserve.com

NEW ZEALAND GLIDING KIWI — the bi-monthly journal of the New Zealand Gliding Association. Editor, John Roake. US\$32/year (seamail). Private Bag, Tauranga, NZ. john@roake.gen.nz

SAILPLANE & GLIDING — the only authoritative British magazine devoted entirely to gliding. Bi-monthly. BGA, Kimberley House, Vaughan Way, Leicester, LE1 4SG, England. £16.50 per annum. fax 01 16 251-5939.

AUSTRALIAN GLIDING — monthly journal of the Gliding Federation of Australia. US\$34.80 surface mail, airmail extra. Payable on an Australian bank, int. money order, Bankcard, Visa, Mastercard. Box 1650, GPO, Adelaide, South Australia 5001. fax (08) 410-4711. AGeditor@gfa.on.net

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