



free flight • vol libre

2/97
Apr/May



Liaison



My first words will be to forward my most sincere gratitude to the members of the Vancouver Soaring Association, under the leadership of Heidi Popp and Kalli Brinkhaus, who offered us a most interesting and well-organized AGM. And it was well attended! That was comforting. I have to tip my hat to Dave Baker, VSA's former president who came from the far away French islands of Seychelles, where he is an Airbus captain, to take part and preside the Saturday night awards banquet. It was nice to see familiar faces from past AGMs, members from throughout western Canada who came just to sit in on the presentations and learn. See the insert for all the details on the AGM.

It's high time now for all clubs to put the final touches on their marketing plans for recruiting. Yes, I said **MARKETING**. The roaring 90s impose upon us a more rigorous and focused attitude towards **RECRUITING**. We now have to seek individuals who are likely to join for the long time, not just wait for them to drop on us by chance. We need those with the time, the resources and, more than anything else, the **PASSION** to embrace the fascinating experience of soaring. We need 200 additional members over 1996. That is not a lot. That's only five members per club on average. Let's start now.

In 1997, the SAC leadership team will focus its efforts on three priorities. I use the expression leadership team to describe the Board of Directors and all the other committee members. Leadership team means people dedicated to soaring who will be reaching out to you to solicit your support, your involvement. These priorities are:

- Recruiting* SAC has more promotional material than ever and we are creating additional items. Our web site indicates how to reach your club. Resources permitting, we plan to put ads in aviation publications.
- Airspace* We now have a team of experts helping to create a national soaring perspective and is available for consultations on local issues.
- Funds* We are actively working on building up the Pioneer fund as it is SAC's future and will bring financial independence.

The Board revisited, with our editor Tony Burton, the principles of our editorial practises. We all agreed that members' letters are top priority, followed by SAC business (like airspace). Canadian material will be edited as little as possible, but when Tony has to do so, the final copy will be passed to the author for approval. Foreign material of general interest will be used as filler. (The Canadian-authored supply is irregular, to say the least — quite often, we go from feast to famine from one issue to the next.) We will make every effort to keep the number of issues of *free flight* at the current level. We will also make a conscious effort to increase the advertising content to contain costs. Have fun, and transmit to others your love of soaring and fly safely.

Comme vous le constatez, la question de l'espace aérien occupe beaucoup de nos énergies. Nos amis de Québec ont eu l'occasion de négocier avec Nav Canada une entente qui, je l'espère rencontrera leurs besoins. L'expérience de leur première année avec la nouvelle configuration de l'espace aérien nous aidera à diriger le cours de nos actions à venir.

En ce 23 mars, encore un mètre de neige recouvre le Québec. Champlain attend un Blanik qui arrivera d'Allemagne sous peu tandis que les Outardes déménageront leurs pénates dans les Cantons de l'Est à la fin de la présente saison. Tout cela est de bonne augure. Espérons que vous lirez ceci en attendant votre tour sur la ligne d'envol. Bons vols.

Pierre Pepin president

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2/97 April/May

The journal of the Soaring Association of Canada
Le journal de l'Association Canadienne de Vol à Voile

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what are they doing with your airspace
finland calling
bubbles or columns?
GPS tips & hints
glider accidents and incidents
SAC AGM INSERT
one flight, lots of lessons
le vol à voile – connaissance et technique



Cover
Towing into the wave at Lake Placid, NY. The photo shows Bernie Palfreeman in his PIK20 behind the L-19 during the MSC Wave Camp on 14 October 1996.
photo - Hicham Hobeika

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An easy SAC home page address

www.sac.ca

New!

What are they doing with your airspace?

... have a look at "Required Reading" on page 23 before reading this.

Jörg Stieber, SOSA

You *can* fight City Hall. You just have to call their bluff, that's all. Right now, your help and your voice are urgently needed to do just that. For close to a decade, government and now private initiatives in the form of Nav Canada, a billion dollar a year private airspace administrator, have been working towards restricting your access to airspace in key centres across Canada. Now, those same people also plan to open the door to charge user fees for the times you do use airspace. Make no mistake: despite official statements to the contrary, there are still no guarantees that you'll be headed for cloudbase next time you drive to your club's airfield. It's shocking that this is being allowed to happen in Canada, a country with a great pioneering aviation heritage. It's high time to take action.

We ask you — each glider pilot in Canada, ab-initio student to record holder, active or retired — to write a letter to the Minister of Transport, and send copies to your local member of parliament and NavCan, outlining your concerns about the ongoing and dramatic airspace grab in our skies. A set of important points you might wish to include is outlined below. Your letter doesn't have to go into tremendous detail but it needs to be sent!

Please circle 1 May 1997 as your mailing date so the letters will all arrive at once. It is our goal to have one thousand of your letters pile up in the Minister's, MP and NavCan offices during the first week of May.

While SAC is trying to get changes through official channels, this letter writing campaign is essential to insure continued access to our own sky. It is designed to apply political pressure on Transport Canada and Nav Canada from above, where it really counts, to relent their static position and become more flexible on the airspace access issue.

The background and the issues Transport Canada, operated by the federal government, and NavCan, a private company given sole control over air traffic, insist in pushing what they call "Standard Dimensions" in class B, C and D airspace structures around a number of airports. Expansion and creation of this airspace denies sailplane pilots their right to exercise their sport in a safe and meaningful way since gliders cannot be flown safely cross country at less than 3000 feet above ground level. Standard Dimension structures, if implemented, will expand into huge blocks of airspace, eating into local and cross country soaring in affected zones, cutting off your Sunday Blanik flights and making badge attempts things of the past. In some parts of the country you'll be lucky to get as high as 3000 feet without committing a crime or finding your glider is about to be impounded.

Much of the sky used by glider pilots is affected In the past, Transport Canada has moved to implement the new structure without consulting soaring airspace users in a meaningful manner. TC has approached the subject in a misleading way by stating repeatedly that the new structures would increase the volume of airspace available to aerospots. These assurances were given, for example, several years ago at a TC presentation at a SAC Annual General Meeting in Toronto. In March 1989 an article in General Aviation News quoted Mr. Dean Broadfoot, then Chief of Air Navigation Policies and Standards as saying "the new proposals will give increased free flying area over the present structure."

Reassured? Don't be. The latest proposed changes to public airspace will have the opposite effect. And they could cost so much you'd be priced out of your own sky. Together, we need to bring these verbal dodges out into the open and insist on positive responses written in stone.

Alternatives proposed by our own expert soaring representatives are being resisted by their counterparts at Transport Canada and NavCan, a privately owned monopoly created by our federal government through the passage of Bill C-20. As a private company without share capital it is not accountable to Canadians and it seems to be resisting locally derived sensible solutions. This is hard to understand ⇒ p15



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 Region Director whose name and address is listed in the magazine.

The contents of *free flight* may be reprinted; however, SAC requests that both the magazine and the author be given acknowledgement.

For change of address (and subscriptions for non-SAC members — \$26/\$47/\$65 for 1/2/3 years, US\$26/\$47/\$65 in USA & overseas), contact the National Office, address below.

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Deadline for contributions:

5 January, March
May, July
September, November

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.

vol libre est le journal officiel de l'ACVV.

Les articles publiés dans *vol libre* sont des contributions dues à la gracieuseté d'individus ou de groupes enthousiastes du vol à voile. Le contenu des articles soumis est la responsabilité exclusive de leurs auteurs. Aucune compensation financière n'est offerte pour la fourniture d'un article. Chacun est invité à participer à la réalisation de la revue, soit par reportages, échanges d'opinions, activités dans le club, etc. Le texte peut être soumis sur disquette de format 3.5" sous n'importe quel format de traitement de texte bien que l'éditeur préfère le format Macintosh (DOS est acceptable). Les articles seront publiés selon l'espace disponible. Les textes et les photos seront soumis à la rédaction et, dépendant de leur intérêt, seront insérés dans la revue.

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

L'exactitude des articles publiés est la responsabilité des auteurs et ne saurait en aucun cas engager celle de la revue *vol libre*, ni celle de l'ACVV ni refléter leurs idées. Toute personne désirant faire des représentations sur un sujet précis auprès de l'ACVV devra s'adresser au directeur régional de l'ACVV dont le nom apparaît dans la revue. Les articles de *vol libre* peuvent être reproduits librement, mais la mention du nom de la revue et de l'auteur serait grandement appréciée.

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.

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Letters & Opinions

FREE FLIGHT ESSENTIAL

I just received the latest *free flight* and would like to join those who believe it is one of the essential products of SAC. The indispensable functions of SAC are *free flight*, government relations and other activities related to maintaining our flying privileges, and promoting soaring. Remove any of these and SAC becomes unnecessary. Even such an important activity as training and safety can be dropped because excellent material is available from other countries. But starve *free flight* and you may as well kiss SAC goodbye.

Len Gelfand, Gatineau

MISCELLANEOUS CONCERNS

... Winnipeg has not been immune to the great TC airspace grab. The local ATC people were quite appalled at what TC HQ had forced on them last October and we are negotiating for some airspace arrangements building on our 20 or so year track record dealing with TRSAs, TCA, etc.

SAC seems to be up against the usual budget wall. My reading is that Pierre's \$28,000 is intended to pay the salary of a staff member in the SAC office plus purchase "professional assistance" of some unstated kind to lobby our position with Transport Canada. One cannot quibble with some occasional paid help to assist Jim McCollum but I am wondering about the hours we are going to require on top of the \$27,000 salaries paid in 1996. With a declining membership, how much office help is enough? I am skeptical of paying an Ottawa lobbyist to sit in on meetings on SAC's behalf if that is the other part of the plan.

There has been a sea change in Ottawa about user pay, etc. (thanks to ex-Minister Young) and all the howls of agony will not change this. Rather than carrying about our "God-given freedom to fly" and so on, my estimate is that we would be better off talking to our local air traffic controllers and getting on with dealing with the new regime. Another response might be to start shopping for transponders for those who feel badly done by with ATC. Again, paying money to sit in on TC talking shops when essentially permanent positions have been taken seems tossing good money after bad.

The point of the above diatribe is that I am a *free flight* supporter and would be loathe to see it reduced to less than your current fine product. For all the to-and-froing in Ottawa, it must be kept in mind that *free flight* is about the only tangible thing that most SAC members see for their membership fee. Reducing it to a biannual or whatever will make it hard to continue to justify

close to a \$100 hit (yes, partially tax deductible) every year for a SAC fee to the average member. I know it has not been for lack of trying, but SAC's recent track record in getting exemptions or whatever for glider pilots (such as medical exam fees) has not been good. Maybe it is time to consider a strategic alliance or whatever with the Recreational Aircraft Association of Canada (much preferable to COPA, in my view) to cover off some of the office costs and run an insurance scheme.

Jim Oke, Winnipeg

free flight is very important to SAC and its members. The magazine is a reminder to all of us that soaring in Canada is larger than what happens in our club. It is also a reminder of what people working together can do.

The Internet is not a solution to replace *free flight* as some members have suggested. Trimming production standards or having a "free flight lite" would help but a trimmed down magazine would lose its appeal and then be cancelled or transformed into a newsletter ...

The best defence being an attack, we need more pages, colour, more readers to make it worthwhile for advertisers to spend money in *free flight*. Joining forces with other organizations such as the Hang Gliding and Paragliding Association of Canada, etc. in a joint publication is an option that should be investigated.

Jean Lapierre, Champlain

NORDO = UNSERVICEABLE

I must say I agree with Peter Kuryllowicz's plea for more (and more serviceable) radios in gliders. In that very same issue of *free flight* is a report of an incident by Hugh McColeman that would never have occurred had the tow pilot simply been able to communicate via radio that the glider's spoilers were open. While I appreciate the need to have and practise the NORDO signals, they are extremely limited; they cover only a few situations, are more or less unidirectional, and are easily misinterpreted (or forgotten). Radio communication, on the other hand, is bidirectional, extremely expressive, natural and flexible.

The days of expensive, power hungry, and unreliable radios are gone. I can think of no easier way to improve the safety of soaring than to insist that all gliders have a fully functional radio, and that NORDO Equals Unserviceable.

Howard Loewen
Winnipeg Gliding Club

Finland Calling

Robert Hellier

Karhulan Ilmailukerho, Finland

IT'S A STRUGGLE familiar to most glider pilots: how to manage the co-occurrence of quality time, financial liquidity and favourable weather in an effort to become airborne on silent wings. My first ten years of soaring were no exception to this dilemma. Between foraging for an education, a wife, and a number of jobs, my successes at achieving synergies of cash, time and cumulus were predictably few.

Some steady pay checks, a car and a permanent address can work wonders, however, and in the summer of '86 my wife and I scouted around southern Ontario, to SOSA, York, Toronto and eventually to the very friendly operation called Erin Soaring Society, a few kilometres west of Orangeville. Having previously flown four hundred circuits with the Air Cadets — with only one flight over thirty minutes — it was in Erin that I had my first hint of what soaring was really about. Once I'd re-familiarized myself with the 2-33 and graduated to the club's venerable 1-26 and Blanik I completed several flights of 1-2 hours, placing this thermal-starved pilot in glider heaven!

1988 brought another interruption in my soaring activities though, this time in the form of a Scandinavian travel itch. Not wanting to do the usual tourist thing, we decided to try to live and work in Finland "for a year at most". Or so we thought at the time... Now it's 1997 and we're still here and now a family of four plus mortgage. I'm teaching at a university in Helsinki and my wife has her own cafe, so we're well established and wondering how we're ever going to get back! Those that have the perseverance to read on, however, may wonder why I would ever want to?

Baltic coast soaring Though I made some early attempts to fly in this new habitat, it wasn't until 1992 that I finally joined a club on the southeastern coast of Finland, sixty kilometres west of the Russian border. Called Karhulan Ilmailukerho (Karhula Aviation Club), it has a 52 year history, being founded on a fighter airfield named "Kymi" whose BF-109s defended the nearby port city of Kotka from Russian bombing during the later part of WWII.

Though the location is not an ideal one (it is often affected by sea breezes off the Baltic), this club has the advantages of being the country's least expensive — yet with one of the best club fleets. To Canadian eyes accustomed to 2-33s, 1-26s and Blaniks, the sight of a starting line of Puchacz and Janus two-seaters, a single place Junior, ASK23, Club Astir, LS4A, Jantar, SZD-55

and Discus was too good to be true! And if I were ever to become nostalgic for fabric covered sailplanes, the club retains a Schleicher K8b in mint condition.

Shrewd economics As mentioned, the costs are low. Yearly club-plus-national membership fees are \$90, a winch tow costs \$4 and rentals range from 15-30 ¢/min (badge and type flights are free). Last summer, after putting in 60 hours on club planes, my total costs amounted to less than \$900 Canadian.

These low prices have been maintained partly through shrewd financial management. For example, the club has insurance only on its two-seaters, preferring the "assurance" of a tight operation and thorough training to continue its excellent safety record. It has also avoided incurring large debts, doing as much of the required work through its own members and buying new ships only when it has the necessary coin.

It also has a close relationship with the nearby community of Karhula, which supports the club to maintain Kymi's military and civilian history. For example, a new 600 square metre museum/hangar was inaugurated by the town government in 1995 for the club's 50th anniversary and now contains a Fouga CM170 (Magister), Folland FO.141, Gnat Mk.1 and Mikojan MiG-21F-13, all donated by the air force and under restoration by the club. Museum gliders include the aforementioned K8b and a couple of vintage homemade types (Harakka I H-4 & H-12) from the immediate postwar years.

In addition, the club receives some material support from the Finnish Air Force, which uses the field occasionally for exercises and local airshows. In fact, one of Finland's foremost military test pilots, Jyrki Laukkanen, is a local boy and long time member of the club who sometimes arrives at the field in his employer's only remaining (and the world's only airworthy) Gloster Gauntlet biplane. He and two other club members, brothers Pentti and Oiva Lehtinen, are chiefly responsible for the club's ability to offer high quality soaring at an economical price to its 50 plus active members.

Basics are the best (for some) One of the nicest aspects of Kymi is that its operational almost every day of the flying season. This, combined with quick turnarounds from its winch operation, has enabled the club to consistently rank highest in starts nationwide. And many a weekday "boomer" occurs when every available glider is aloft. Even the K8 — dragged out of the museum by some latecomer — is taken aloft and

would soon be seen, circling tightly like a red flag in the thermal core, out-climbing its fibreglass brethren!

The club has two other hangars to house its sailplanes. Otherwise, it maintains a very primitive level of creature comfort, much to the chagrin of some (especially the few female) members. The maintenance shed/office, sleeping quarters/classroom and two-seater outhouse are the only non-hangar buildings belonging to the club, all built from wood during the war and unchanged since their more active days — even to the green and brown camouflage! These, along with the usual dust and flies of the field, surrounded only by coniferous forest and a local race track, make an impression on newcomers that this is not a club for families or the fainthearted!

No flash in the pan For a foreigner like myself, with limited experience in fibreglass, struggling with a strange language and the Finns' renowned reticence, it was certainly not an easy club to feel at home in! But four years of perseverance has paid off for me, not only in flight time, experience and memorable moments in the air, but also in the slowly developing friendships with fellow pilots that all share the love of soaring flight.

These days I'm either flying the Jantar or LS4, both sturdy, nicely balanced ships well suited for cross-country flying. Also, the Discus and SZD-55 which looked so unattainable when I first joined, are now only a few check flights away.

If you've ever entertained the idea of a gliding experience outside of North America, Finland probably was not at the top of your list. But as foreign pilots discovered in last summer's European Gliding Championships, Finland offers excellent aircraft, facilities, operations and — usually — widespread thermal conditions from May to August. The national gliding centre, Räyskälä, is located 80 kilometres northwest of Helsinki and offers the best choice. But many other clubs — like Kymi — offer unique, economical excursions for those that prefer to avoid the beaten track. Soar safely in '97!

Information about Finnish clubs and events can be obtained from:

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Bubbles or Columns?

Tom Bradbury
from *Sailplane & Gliding*

Nearly half a century ago the "bubble theory" of convection was introduced to explain the shape of thermals. It was not universally accepted and still produces protests from some pilots. The idea was disputed by some meteorologists too who preferred the idea of a "thermal plume", which is another way of describing the thermal as a column.

The bubble theory arose from studies of a water tank in which a dense salt solution (marked with a white precipitate) was allowed to sink through the less dense pure water. The difference in densities produced much the same motions as in a thermal which rises through a colder denser atmosphere. The time lapse photos looked remarkably like real cumulus clouds when the picture was inverted so that the salt cloud appeared to rise.

This picture of a thermal bubble appeared partly because the initial watery thermal was released as a cup-shaped mass in the first place. However, the majority of real thermals grow from a wide area above which the warm air exists initially as a shallow layer. As part of this air rises it forms a tall column which is fed by an inflow of surface air. On calm days, windsocks often reveal where a thermal has lifted off. The bubble shape first appears at the top of the column. This column probably remains intact until the supply of warm air is cut off. Thus thermals can be both columns and bubbles, but they usually begin as a column and develop the bubble circulation at the top.

Stubble fire illustration In one example of a stubble fire, brown smoke formed a column which changed into a bubble shape at the top where a small cumulus formed. Although the stubble fire supplies more concentrated heat than is available for most thermals, the shape of the lift is probably similar. While the fire continued, the smoky column had fairly parallel sides. When the fire died out the base of the column narrowed and broke off; the remaining smoke was drawn up into the bubble and soon spread out under an inversion.

Simple thermal structure It seems likely that many thermals have the same structure as in Figure 1. At A the column has just begun and the top is pushing the air aside initiating the outflow of a bubble. At B the column broadens at the top and the edges are developing the outward curving motion typical of a forming bubble. The column

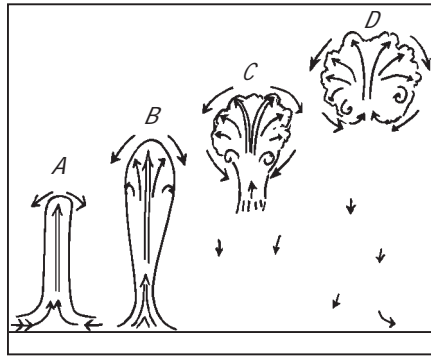


Figure 1 The sequence A to D shows how a thermal column can evolve from a layer of warm surface air. Exhaustion of the supply first produces a neck in the column. When this breaks, the bubble structure takes over.

also develops a neck near the base where the air is accelerating up. In C the supply of warm surface air has ceased and the column is drawn up into the expanding bubble. The final stage is shown in D. It is likely that the bubble, which is expanding as it draws in cooler air, loses so much heat that only its momentum keeps it still rising. Many bubbles come to rest soon after stage D but in very unstable air a few continue to shoot up leaving a trail like a rocket. Wind shear eventually blows them to one side leaving a slanting spur to evaporate in the dry air.

Vortex rings The extreme case of a bubble is the vortex ring. A fully formed natural vortex ring is probably rare. It can be observed when the thermal starts as an explosion, for example when a petrol tank blows up after an aircraft crash. Then the hot air is hurled up instead of rising naturally and instead of a column you get a vortex ring. The column forms later when the system settles down into a long-lasting fire. Old fashioned steam locomotives occasionally puffed out vortex rings from their funnels. Early atomic bomb tests also produced vortex rings.

There is a tendency for vortex ring structure to appear in strong thermals. It shows up in growing cumulus. The core of the thermal rises at about twice the speed of the summit. The upper edges of the cloud move outwards from the axis of lift and slow down. Figure 2A shows how the profile of a growing thermal expands with small bulges moving outwards as the cloud ascends. Seen through a theodolite these edges sink relative to the summit. Some actually are in sink. This sink can often be found just before you reach a thermal. Thus a thermal bubble contains the initial stages of a vortex ring but it seldom develops fully.

Figure 2B shows a true vortex ring puffed from a funnel. It is given a boost before it emerges and friction from the inside of the funnel helps create the spin which keeps the ring intact as it rises. Vortex rings do not all rise like this. Skillful pipe smokers can emit them at any angle.

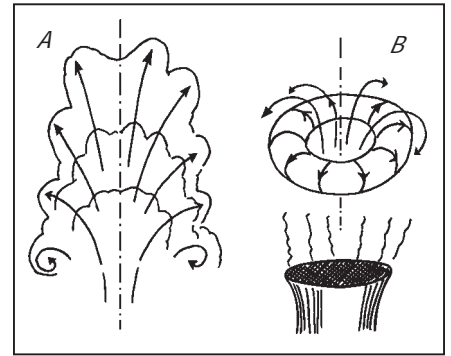


Figure 2 Air motions in a rising thermal showing in A how features move outward from the central axis. In B the bubble is hurled upwards (by an explosion or from a funnel) and a vortex can form.

Visual indications of thermal structure

Blue thermals remain essentially invisible until they pass the condensation level. Sometimes they carry up dust which forms a visible haze cap which shows up well when viewed through Polaroid glasses. Lasers have been used to track the dust in a rising blue thermal. An American helicopter pilot equipped with infra-red goggles said desert thermals appeared as snaky columns.

Thermals start to rise because they are warmer and lighter than their environment but once in motion they develop a momentum which can carry them up even when they have lost their excess temperature. A strong inversion halts most thermals within a few hundred feet. Little puffs of cloud occasionally mark the peak of a thermal which penetrates the inversion. These puffs appear when the condensation level is above the inversion. They are formed by an overshooting thermal thrusting into the dry stable air aloft. These puffs are extremely short-lived and do not look much like bubbles. Their motion is chiefly horizontal showing that the upward momentum of the rising column has been diverted sideways.

When the condensation level is just below the inversion one gets typical shallow cumulus. Any bubble which has formed lower down is flattened out under the inversion. In calm conditions one can see the elements of cloud moving out from the core in different directions before evaporating. A good time to watch this is when lying on the ground at the launch point waiting for one's turn. Strong thermals produce marked horizontal movements in several opposing directions where the air is deflected by the inversion. Small hook shapes may appear if the clouds are deeper. These are caused by the wind shear trying to roll up the cloud. I have seen a complete hoop formed this way but it evaporated too rapidly to photograph.

In less stable air when the inversion is high above the condensation level, clouds grow large enough to show the structure of the thermal more clearly. While the thermal column lasts the cloudbase is usually ⇒ p9

GPS tips & hints

... notes from the Net

Has anyone developed a set of techniques for use of GPS during soaring in thermals, waves and ridges? For example, my new (haven't taken it flying yet) Garmin 195 has a VNAV function that could be used to stay above a predetermined Glide Ratio (or rate of descent) centered at the destination airfield or other waypoint. Also, a Map Waypoint can be entered to mark any present lat/long position during a flight. I'm thinking this could be used to mark visual landmarks or the presence of a thermal. Having just got my glider rating, I'm anxious to try out some techniques with the moving map features and would like to discuss these with anyone who's used a GPS for soaring. Cheers,

Rick Fuller

I've been using the Garmin 90 for a couple of seasons and apart from the intended navigational uses, the waypoint feature is great to mark landable fields when low and pressing on over marginal terrain. Sometimes I punch in "GOTO NEAREST" right away so I can track my distance *from it* while trying for a save. You won't want to be punching *any* buttons when you are scratching around at 800 feet in zero sink and want to go back!

Yes, I've tried dropping waypoints to mark good lift, especially when the day is dying or I want to explore surrounding air for something better on a blue day without losing the "bird in hand". I have successfully returned to lift-waypoints many times this way, but missed some too. The thermal may be travelling along the ground as opposed to being 'anchored' by a stationary trigger feature, or the wind may be creating very slanted thermals, so that returning to a waypoint at a different altitude is a miss. Or of course, maybe it's just gone.

I read in SOARING, I think, about someone dropping "anchors" and "fish"(?) with the Garmin 45 to mark good and bad spots in wave for their return flight. No wave or ridge in Minnesota, but it sounds like a good idea! You can also learn a lot about your thermalling technique, wind strength and

direction, and where the thermal might be, by reviewing your trace after a climb. Keep your scale small (1 mile or so) and your sampling rate high (1 second) for a smooth trace. This gobbles up all memory in about 3 hours or so on my 90, so I use a 3-5 sec sample rate for longer tasks if I want the whole thing recorded.

Don Ingreham

Donald's description of uses is just about perfect, but here are my three cents, especially as you are new to the sport. Leave the GPS at home and keep your eyes out of the cockpit. Play with it while walking, running or whatever (in the car if you stop to play). Do not take it into the glider until all the novelty has worn off.

Henryk Birecki

I'd go even further: do not take it into the glider until you have at least several seasons of extensive cross-country experience using a sectional chart, compass, etc. (ie. the Stone Age way).

Trust me, you'll be very much happier the first time your GPS loses lock or the batteries expire or the Department of Defense runs some kind of whacko test or sun spots flare up or you transpose two digits entering a new turnpoint or ... you get the idea.

This would still apply, perhaps to a lesser extent, should you already have considerable cross-country time in power depending on how dependent you have become on VOR/DME/Loran/GPS, etc. There's just something different about trying to stay on top of where you are when half the time you're circling, low and in trouble over unfamiliar terrain and the rest of the time you're zipping along at high speed concentrating fiercely on that great looking cloud evaporating downwind of the course line.

Chip Bearden

GPS is very useful for marking lift, but make sure you keep your eyes where they belong!

1. Instead of marking areas of lift as user waypoints, which takes at least one and possibly two button pushes while you're trying to center the thermal, use the "track on" feature to leave bread crumbs, like Hänsel and Gretel.

The thermals show up on the large scale setting as areas with many circles — and no buttons needed to be pushed. This technique is also helpful if you think you turned the wrong way when entering the thermal. You can see when you're returning to the entry point and correct in advance. (This does require some adaptation since the display lags your true course by about 3-5 seconds.)

2. One of the postings referred to a letter or article in SOARING which discussed the issue. The only one I've seen was by Emil Kissel about 6 months ago — which he wrote after flying with me in my Super Dimona

equipped with a Garmin 95XL. Emil has been flying gliders since the late '30s and was amazed at what the GPS could do for marking lift. His letter discussed the use of dropping user waypoints, which he likened to having two gliders go into wave, with one going out to explore while the other stayed to mark the lift in case the exploration was unsuccessful ...

Martin Hellman

I used the GPS to help me ensure a landing spot was reachable by using the GOTO feature on my early Trimble. By leaving it set to return to the field of choice, it constantly displayed the glide angle based on my height, the programmed height (including pattern) at the destination, and the distance. Knowing my approximate glide angle (severely derated for conservatism) and allowing for variations due to head or tail-wind, I always knew if I had it made or needed to look for new lift by watching for the angle back to be greater (steeper) than my glide angle. For instance, if you could achieve 20:1, that would be a 3 degree glide angle. As long as the GPS angle back is greater than 3 degrees you should have it made (assuming no sink or greater than expected headwinds, etc.).

Ray Kile, CFGI

I've used my GPS 90 for two seasons now. I also recommend you practise with it a lot on the ground; having someone drive you around in a car is almost as good as going around in a two seater. It is distracting at first; later (say, 20 flights), it is less distracting than trying to use a map.

I use the "track up" mode ... this puts the maximum amount of map ahead of me. I set the track log rate to 10 seconds so I can get all of a typical flight, but can still discern the thermal circles well enough to determine drift direction and approximate wind speed. For a better estimate of the wind speed, I note the high and low ground speed indication during one circle, subtract the two, divide by two ... it seems good to within ± 2 knots.

[That's a nice tip. I look at circle overlap in a zoomed in scale, say .5 or 1 nm full scale. To get wind direction, I hit GOTO, GOTO, ENTER to reset the course line. That puts the course line on the zoomed-in map and I can directly see the angle between my current course and the local wind.]

a reply from ??

I load in waypoints from a PC, keeping separate files for each area I fly: home, Minden, Hobbs, etc. The PC is also used to display the track log, which is fun to look at. Zoom in on individual thermals, note wind changes with altitude, etc. Even my wife is more interested in the flight when she can see the track. I don't have much luck returning to thermals, but punching in waypoints for wave "hot spots" works well, plus the track can be followed while returning in wave. The VNAV function is useful in final glides, but it's a bit cumbersome to start, and sometimes it quits if I circle or deviate too much.

I really like the moving map display on it; the 195 should be even better. Because they are not optimized for soaring, you must experiment with them to find the best way to use what they have. Let us know how it works out.

Eric Greenwell

As for the use of GPS by new XC pilots, I think the soaring curmudgeons are exercising undue nostalgia. I'm sure there are octogenarians who think we're less than real pilots because we can't navigate celestially. I still carry my "whiz wheel" final glide calculator AND my sextant with me on every flight. Doesn't everyone?

As for the map falling under the seat: I actually did lose my map for a few minutes (don't ask) last summer on a contest flight. Now that I've experienced that and a GPS failure (not simultaneously), I can tell you that I was a lot more anxious about the missing map. Guess I'm out of sync with the times.

Chip Bearden

I use a Garmin 90 connected to a Cambridge SNAV and an EW logger. It is great! During the flight I get the wind direction, I can make really optimal and safe final glides, I can study my flights afterwards (so now I know why I will never be world champ), I make fast TP turns etc. etc.

I also found that the GPS is of more use than a flight computer. One day last summer my SNAV broke down just as the tow rope was attached. So I had to fly a 300 km task with my Winter, good old final glide ruler and the GPS. The only thing I really missed was the vario audio. BUT, I will never, never throw out my good old Swedish Air Force map, just as I will never throw out my Winter vario!

Robert Danewid

It's amazing how much attention the GPS demands, especially when you are first trying it out. Not owning a two-seater, I used the passenger seat of my car, with my wife driving. Then I tried it solo during my daily commute. I didn't scare too many other commuters (I hope).

I believe correct use of the GPS significantly increases safety. It has saved me from some stupid beginner mistakes, and it has relieved the navigation stress at times when I've been very low and very far from home.

When I was first flying club ships, I stayed close to home. I wanted to go farther away, but was never sure when I was too far to glide back. Then I built a final glide calculator and began to use it every flight. It let me fly much farther away, with greater comfort. I still had problems monitoring my final glide, because I couldn't know exactly where I was as I returned, but at least I could fly to a distant known location knowing exactly how low I could get before turning back. I would do the calculation on the way out, then just stay above that level. It gave me a feeling of freedom that had been missing when I was just "hanging around the field".

When I began to use the GPS, I had the same feeling of an increase in freedom — and for the same reason — an increase in my awareness of exactly where I was, and what my options were. Despite this, Chip has a good point that overreliance on the GPS reduces the pilot's pilotage skills. I find it necessary to constantly work at maintaining those skills. Nonetheless, I agree completely that GPS should just be the backup. I've had several cases where the GPS says I'm directly over a private airfield, and I can't pick it out from the other grass fields below, despite ten minutes of dedicated circling and looking. I would never final glide to an unknown field simply because the GPS says it's there and I can make it.

Another tip: if you fly with the "track direction ahead" on the map configuration, be ready for the GPS map reversal when you drift backwards a ways. The GPS doesn't know which way you're pointed, and the reversal of the map is very disorienting. I saw one landout in the mountains at the Mt. Washington wave for this very reason. Map reversal, disorientation due to loss of ground references, a turn into the down portion of the wave, and it's too late to get back upwind.

Todd Pattist ❖

Bubbles or Columns from page 7

flat and well defined. When the thermal column ends, the cloudbase gradually loses its sharpness but the top may go on rising. An active bubble is marked by a clearly defined dome shaped top.

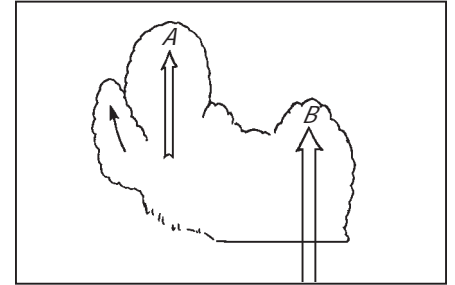


Figure 3 Thermal A is turning into a bubble with no supporting column below. The new cell B shows where useful lift occurs.

Rising domes show the outline of the thermal bubble for some time after it has lost its supporting column. At this stage it is probably a true bubble very like the laboratory model. There is seldom any useful lift below such a bubble. One has to move upwind to locate a fresh column of lift where the next thermal enters. Figure 3 illustrates this effect. The original thermal is at A where it is still rising with a well-formed dome but the decayed cloudbase beneath it shows there is no longer a column of lift entering the cloud directly under the dome. The new thermal at B is more recent and had lift below cloudbase at that time.

Wind shear pushes dying bubbles aside

A long lasting cumulus may be seen to have formed from several columns which broke off into individual bubbles of cloud. As the supporting column dies, the dome shaped bubble goes on rising for a time but is apt to be drifted sideways by any wind shear.

Active domes often have many smaller bulges growing out of them. When a dome decays the outline becomes flabby. The edges are the first to be eroded by mixing with the surrounding dry air. The old core is last to go.

Effect of strong winds Long lasting thermal columns form best in very light winds. Strong winds tend to break up most thermal columns. The turbulence caused by strong winds prevents large reservoirs of warm air from developing over the ground. Instead the turbulence tends to pull broken rough bubbles of rising air off the warm surface. These are extremely hard to work at low levels.

Higher up, the rising air seems to merge into larger volumes of lift and near cloudbase the soaring becomes easier. A big cumulus moving quickly downwind seldom has long lasting roots reaching right down to the ground. However, strong winds often produce cloud streets which have a different and longer-lasting helical circulation under them. ❖

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ACCIDENTS AND INCIDENTS 1996 ANALYSIS

George Eckschmiedt

The ideas and opinions expressed in this report are mine and do not necessarily reflect the position of SAC or the Flight Training & Safety committee.

Sadly, this year we have to start our evaluation by paying our respects to the victims of our beloved sport; pilots who paid the ultimate price for soaring — their life. Keith Pritchard and André Dumestre will be missed by many. Let us find something use-

ful in this tragedy, let us learn so that none of us will have to pay the same price. We also had some serious injuries that could have resulted in loss of life. Again the wise among us will try to discover everything they can about the events and try to make sure they are not repeated. The data for this report was obtained from the SAC office, CFI and Safety Officer's notes, and personal notes given or mailed to me. This year I have again taken the liberty to include any information sent directly to me as reported to SAC. The office forwards all event reports and, I believe, all accident claim reports and I match and report them accordingly.

In 1996, the number of reports I received was almost as low as the very first year's analysis in 1988. This only proves one thing: pilots are reluctant to share their experiences. This is discouraging. The Association's membership and the number of gliders we have are reasonably constant, but the reports received vary widely. The year

with the lowest SAC membership, 1994, had the most reports and the most gliders damaged. The main concern of the FT&S committee is to do everything possible to improve our safety culture. Yes, safety is a culture issue — looking at these reports for the last eight years keep verifying this (more on this later).

I looked at some insurance claim data but I have no connection to the SAC insurance scheme. Perhaps there could be better cooperation and sharing of data with the underwriters, but I wonder if the independence and objectivity could be maintained that way? As in previous years, I would like to thank those who sent me personal notes along with the reports. I feel privileged by their notes of encouragement, and I hope that the reports they are sending me and the SAC office are also evaluated and acted upon in their own clubs. The table lists last year's known events.

These are the number of accidents reported over the last eight years:

'96	'95	'94	'93	'92	'91	'90	'89
18	24	33	34	23	22	29	29

For many of the events above, the immortal words of Eric Newsome are still applicable:

PEOPLE ARE SUBSTITUTING
CONVENIENCE FOR SAFETY.

The character of the nonflying events remain the same year after year: aircraft and trailers inadequately secured, and gliders and trailers damaged in transit and while being pushed around. Personally, when I look at the supporting equipment used with the "multi-kilo-buck" machinery we use, I often wonder about lessons of false economy. We have many good books about flying training, many single articles about trailering, but I am not aware of a comprehensive manual on trailering, ground handling gliders, and maintaining gliders, with guides and consideration for older machinery. Not all glider pilots are engineers or even just technically oriented, but the school of hard knocks can be very expensive.

Of the 23 flying events in 1996, 13 were landing related. Groundloops are not as prominent, but we keep having them. Those long, low wings do have a propensity to catch grass, which almost certainly results in damage.

Once again the reported data reconfirms inadequate preparation for landing from pilots of 1000 kilometre capability to students. The problem starts by making landing decisions too late, then there is no time left for the checks, leaving no allowance for the unforeseen, and we have an accident. Some day it will register on pilots — on local flights the landing begins right after the release. If the circuit is flown properly, the landing should not be a problem. Most landing problems start with a bad circuit.

Again, year after year, at least one event is reported where the pilot mixes up the flaps

Accident Summary – 1996

Age	Non-flying accidents	P1 time
N/A	Small car pulling big trailer, trailer shimmied and passed the car!	N/A
N/A	Glider pushed backward, tailskid caught in a hole in hangar floor, tearing out bulkhead.	N/A
N/A	While pushing glider, it rolled into wall. Elevator damaged.	N/A
N/A	Blanik pushed over the dolly, damaging fuselage.	N/A
Aviation accidents not reported to SAC		
N/A	Unattended 1-26 blew over after an off-field landing in high winds.	N/A
Aviation accidents reported to SAC		
26-49	Landing glider weathercocked, drifted into runway marker.	<100
26-49	Too low on final, glider caught by the trees.	<100
26-49	Low-time instructor mixed up spoilers for flaps, flew through fence. Glider a write off.	<100
26-49	Too low on final, landed short, groundlooped, caught barbed wire.	<100
26-49	Left wing caught uncut grass, glider groundlooped. Was concerned about aircraft on runway at right.	101-300
26-49	Motorglider wooden propeller disintegrated in air.	301-800
26-49	After landing and opening rear hinged canopy, it separated.	>800
50-59	Wing caught grass, yawed, partial groundloop, gear damage.	101-300
50-59	Elevator flutter resulting from loose, peeled off tape.	>800
60-up	Spun in on rope break practise.	101-300
Aviation accidents not reported to SAC		
26-49	Final glide too low, plan change to land off-field, spun into ground. Severe injuries and damage.	>800
60-up	Wing failed on second flight of homebuilt motorglider. Fatal	N/A
N/A	Off-field landing, glider hit wires then fell on road. Fatal.	N/A
Aviation incidents		
26-49	First-solo pilot kited up on takeoff, pulling towplane tail up. Towplane released, escaped, glider landed straight.	<100
26-49	Pilot kited on takeoff, pulling towplane tail up. Towplane released and escaped, glider landed straight	<100
26-49	Prudent DI by an Air Cadet discovered unsafetied wing bolt; also the bolt was not the correct size!	>800
26-49	Gear-up landing	101-300
26-49	Gear-up landing	101-300
50-59	Gear-up landing. Pilot flew with gear down, raised gear during landing check, ignored gear warning.	>800
50-59	Loss of separation between tug&glider and another closing glider.	>800
N/A	Unplanned off-field landing	N/A
N/A	Solo student landing, weathercocked, exited runway	N/A
N/A	Radio equipped glider and tug on collision course, tug had to take evasive action.	N/A

with the dive brakes. The owners still did not take the trouble to make sure that the feel of those controls is different. Also, do they teach pilots to look at the control surfaces when possible? I do not recall a glider in which an open dive brake could not be seen from the cockpit.

It's worth repeating that in 1995 two Blaniks spun in after release from a tow that could not climb for whatever reason. Last year a Blanik spun in from a practise rope-break. In my not so humble opinion, most Blanik pilots underestimate the Blanik. It is perhaps the most honest glider ever produced, with very good performance, especially when compared to other North American trainers. However, this is where the problems originate. The Blanik is not a "trainer", it is a much more complex and much higher performing glider than the Schweizer and perhaps we forget this. One cannot blame the spring return spoilers and say that the students are used to it, because even pilots trained on the Blaniks take off with open brakes. Blessed is the club that has powerful enough towplanes that can still climb with those barn doors exposed to the air, *and* have working radios, *and* know the rudder wag signal, for they can prevent an accident about to happen.

The first fatal accident in a Blanik in Canada keeps popping up in my mind. It was in the 60s and according to the stories, it spun in while turning final, with the young (and perhaps light) student in the front seat. He did not survive, but the instructor did. I do not know the details but they aren't hard to imagine. A Vancouver member was among the first in Canada to import his own Blanik and he also spun in from low altitude, for whatever reasons, right at the airport.

So, when the VSA bought our first Blaniks, we had enough examples to see that this glider demands respect. Now, my club just repeated the above scenario, and we should have known better. The front seat pilot was seriously injured.

Amazingly there was only one unplanned off-field landing. Or was it that others were just not reported?

Throughout the years we have been warning everyone on the dangers of towplane upset. We did not have reports on this for several years, only to have them come up again. Hopefully the reports should scare us enough to keep in mind to watch out during takeoffs. The other scary item is the near collision. Only one report arrived, but I am convinced we had a lot more "opportunities" for these.

Onward to mechanical difficulties; they keep showing up. In 1994 a Libelle lost the rudder connection in flight. In 1995 it was a Lark. This year elevator flutter damaged a stabilizer's hinges, and a prop disintegrated. (Was this prop just old, or was it not secured adequately after ground adjustment?) Most of our fleet now consists of old gliders, but their placards were applicable when

they were new. Are we taking this into consideration? Metal will fatigue, fibreglass ages, wood rots, glue joints fail — we must remember this. Many clunkers will continue to serve us safely if we do not overstress them. Do it once, and you pay the price. The placard may say V_{max} is 135 knots, but that was 25 years ago! Leave that placard in there, it serves the engineer and the law, but we should know better than try to make "poor old Betsy" live up to it.

The classics keep coming back. Canopy damage, gear-up landings, and gear collapse are old friends to us. Overenthusiastic, (or tired, bored, inattentive, or in a hurry) groundcrews keep making their mark on gliders. Literally.

One non-aviation accident is particularly worth noting and learning from — trailing accidents. The driver/pilot wrote it up well, it was published and a lot can be learned from his experiences. (It brought back painful personal memories too!) Very few of us realize how important some seemingly trivial items are when trailing a glider. The knowledge is there, now someone needs to compile it all!

We are doing well on towplane fuel management. We haven't had a report of fuel starvation for several years.

ACCIDENT/INCIDENT CODING

The object of the SAC accident/incident coding sheet form is to identify the factors in the event. Items that could have caused the event, the reason, the result, the damaged component, or anything that was directly involved. Simply, only the FACTORS. This section is almost a repeat of last year's. The previous eight year's data is given, and I hope that readers will make some comparisons, as the numbers are self-evident.

The coding sheets are processed by first examining the reported codes. If they make sense, an entry is placed in the corresponding place in this analysis. Then each and every report, even if it is only a one liner from the insurer, is mentally recreated and examined for possible factors. A painful process, visualizing all the mistakes and damage to our friends and their equipment.

Some reports were very well described and I hope the clubs make good use of them. Some would make excellent reading in *free flight*, leaving little for assumptions, but I have to leave that to the authors to submit them to Tony. On others, some assumptions had to be made, or simply lent themselves to assumption. A new calculation is accidents per 100 gliders. I picked this figure from some statistics on the Internet, and it is frightening. Having seen some glider operations in Germany, I thought we were far safer, but just look at the data! It would be useful to have similar accident data for different nations — something for the IGC to consider instead of spending time on how to prevent cheating in competitions.

	96	95	94	93	92	91	90	89
Number of events	28	69	87	45	37	37	40	47
Flying events	23	66	81	41	30	-	-	-
Type of event								
1.1 Heavy landing	0	8	12	10	4	6	5	5
1.2 Undershoot	6	9	10	8	6	2	6	18
1.3 Overshoot	1	2	6	3	1	0	1	1
1.4 Groundloop	3	12	9	8	6	5	4	4
1.5 Collision (ground)	1	3	10	7	0	0	0	4
1.6 Collision (air)	0	0	1	0	0	0	0	0
1.7 Stall	0	1	2	2	0	0	2	0
1.8 Spin	2	2	2	4	3	1	2	0
1.9 Structural failure	3	2	3	1	1	3	2	1
1.10 Blown/flip over	1	2	0	0	0	0	3	2
1.11 Gear-up landing	3	2	2	3	0	2	0	2
1.12 Gear collapse	0	2	3	1	1	0	1	1
1.13 Takeoff	3	5	21	4	6	5	4	2
Near collision	1	5	8					
1.14 Other	5	9	19	11	13	16	15	14
Aircraft damage								
2.1 None	10	45	50	11	15	14	13	17
2.2 Minor	6	9	15	13	6	17	10	13
2.3 Substantial	5	11	19	16	13	3	9	11
2.4 Destroyed	7	4	3	5	3	2	5	4
Injury								
3.1 None	22	66	83	40	33	29	24	43
3.2 Minor	2	3	3	4	1	0	4	1
3.3 Serious	2	0	1	1	1	0	0	3
3.4 Fatality	2	0	0	0	2	1	4	0
Airframe failure or damage								
a In-flight failure	2	1	5	1	5	5	-	-
b Accident damage	10	20	32	27	14	14	-	-
c Handling damage	6	4	5	6	7	7	-	-
(More than one aircraft damaged at one event)								
4.1 Flight Controls	3	1	1	4	2	2	3	2
4.2 Elevator	4	1	3	8	4	4	5	3
4.3 Rudder	7	2	6	5	5	3	6	2
4.4 Ailerons	3	2	3	5	3	2	5	1
4.5 Flaps	3	3	1	3	1	3	2	1
4.6 Wings	12	9	14	17	8	5	10	6
4.7 Spoilers/divebrakes	3	4	1	4	0	1	1	2
4.8 Undercarriage	5	6	9	12	4	5	6	1
4.9 Canopy/doors	5	8	5	10	5	6	6	7
4.10 Fuselage	10	12	13	23	9	7	5	13
4.11 Release	0	1	1	0	1	2	-	-
4.12 Instruments/engine	2	2	3	0	3	0	1	-
Towing								
5.1 Premature release	2	5	4	2	2	3	0	0
5.2 Rope/cable break	1	0	1	0	0	0	0	0
5.3 Winch/tug failed	0	1	5	2	1	0	0	2
5.4 Rope/cable snag	0	1	2	0	1	1	0	2
5.5 Divebrake opened	0	3	5	0	1	0	1	4
5.6 Towplane upset (on ground)	2	0	1	0	0	1	0	0
5.7 Run out of fuel	0	0	1	1	0	1	2	-
5.8 Taxiing mishap	0	2	3	1	3	0	2	-
Pilot factors								
6.1 Misused controls	5	7	20	6	8	4	3	9
6.2 Misused spoilers	1	4	17	5	3	1	2	1
6.3 Misused flaps	1	3	4	1	0	1	1	2
6.4 Misjudged distance	2	5	6	6	3	6	4	8
6.5 Misjudged speed	2	4	5	3	3	2	2	1
6.6 Misjudged altitude	3	14	8	11	4	4	10	13
6.7 Misjudged conditions	4	20	10	11	9	7	8	10
6.8 No wind compensatn	3	2	6	4	4	5	3	8
6.9 Did not see object	5	12	6	2	3	3	2	4
6.10 Did not hold speed	1	1	2	1	4	1	2	1

	96	95	94	93	92	91	90	89
6.11 Overstressed A/C	2	1	2	1	2	1	1	0
6.12 Exceed experience	4	4	4	2	5	4	3	4
6.13 Reckless flying	0	2	2	2	2	2	4	1
6.14 Insufficient training	2	8	7	3	4	1	2	5
6.15 Physical impairment	1	1	0	0	0	1	0	0
6.16 Wrong decision	10	23	23	12	6	5	11	16
6.17 Instructor failed	1	5	8	3	3	3	0	0
6.18 Other/complacent	7	16	18	19	4	7	9	4

Weather								
7.1 Low ceiling	0	0	0	0	0	0	0	0
7.2 Rain	0	2	0	1	0	0	0	0
7.3 Hail	0	0	0	0	0	1	3	0
7.4 Crosswind	2	9	10	5	2	2	3	1
7.5 Severe turbulence	1	3	2	3	0	1	0	0
7.6 Wind gradient	0	7	4	3	1	1	0	1
7.7 Wind shift	0	1	4	0	1	1	0	0
7.8 Thunderstorm	0	0	1	1	0	0	1	0
7.9 Severe sink	0	8	4	3	0	1	1	0
7.10 Line squall	1	2	1	0	1	1	3	0
7.11 Lightning	0	0	0	0	0	0	0	0
7.12 Poor visibility	0	2	2	2	2	0	1	0
7.13 Clear (if factor)	0	0	0	0	0	-	-	-
7.14 Weather not factor	24	42	66	27	30	29	-	-

Reported flying hours distribution/year								
	96	95	94	93	92	91	90	89
0-100 hrs	5	18	25	9	8	7	7	10
101-300 hrs	5	19	25	5	4	7	5	11
301-800 hrs	1	6	8	9	3	6	5	7
801+ hrs	6	16	11	2	1	4	3	2
unreported, n/a	11	10	18					

Hours reported in flying events								
	17of	59of	69of	25of	16of	24of	20of	-
	23	69	81	41	30	30	31	-
% of total	74	86	85	61	53	80	64	-

Reported pilot age distribution								
16-25	0	4	7	2	3	4	3	7
26-49	12	28	32	14	9	9	9	7
50-59	4	13	10	4	2	6	1	6
60+	3	8	8	9	2	3	3	9

Age reported in flying events								
	19of	53of	57of	29of	16of	22of	16of	-
	23	69	81	41	30	30	31	-
% of total	83	78	70	71	53	73	52	-

Accident/Incident summary — Flying accident totals								
reported to SAC	10	16	22	19	6	11	12	17
unreported	3	4	9	11	10	4	7	4

Non-flying accident totals								
reported to SAC	4	3	0	4	2	2	3	5
unreported	1	0	2	0	5	5	7	3

Incident totals								
reported to SAC	10	46	50	11	14	15	11	18

Totals/yr								
total reports	28	69	87	45	37	37	40	47
flying accidents	13	20	31	30	16	15	19	21
% of total	46	29	36	66	43	41	48	45

# of pilots	1261	1292	1257	1291	1319	1416	1390	1433
gliders insured	380	413	417	384	384	370	361	348
accident rate per 100 gliders in Canada:	3.42	4.84	7.43	7.19	4.17	4.05	5.26	6.03
(the accident rate per 100 in Germany in '94 was 2.03)								
accident rate per 100 pilots in Canada:	1.03	1.54	2.47	2.32	1.21	1.06	1.37	1.46

The emphasis on judgement training by the FT&S committee was well warranted. The "wrong decision", "misused controls" (all or specific controls summed) and the "misjudged" sections are showing up in the largest numbers. Complacency is also a form of misjudgement. In spite of all our best efforts, we are doing about as well as in 1995.

The largest number for the type of event in the last two years is landing (in 1994 it was takeoffs). Groundloops, undershoots, and heavy landings still dominate — I suppose they always will be. Groundloops, which are always indicative of excess energy during landing, keep increasing. The only mitigating circumstance would be when the groundloop is initiated intentionally to avoid a more serious outcome such as a beheading. One event this year could have ended like that.

For a sport that depends a lot on the weather, our data shows that we have few problems with it. Outstanding problems are a reflection of our stupidity at times, such as leaving a glider unsecured after landing in high winds — that borders on sacrilege.

The most critical element of a flight? *Landings*. Our information is in line with that collected in the USA and should not be a surprise to anyone involved with soaring for a few years. Eight years of reported data shows that landing related events are almost three times the number of takeoff events. Low to mid-time pilots maintain their high involvement rate, but there is a marked increase in the 800+ hour pilots. All my interpretations are arguable, but as this is an easy target, please offer a better one. If you can find any objective evidence to support any opinion, please let me know. I am trying for nine years and can find only inferences for trends (due to the small data base).

The reports received this year were disappointing. Only two clubs chose to report incidents; even some of the earlier reliably reporting clubs did not send in any. Thanks to the clubs that reported such as York and Gatineau, at least we know you are doing something. I sincerely hope that all clubs go over these reports for their own analysis for observing what to do and what not to do. However, we are still looking for a magic bullet that will eliminate all accidents and incidents. I'm afraid there isn't one, but we could get pretty close if we wanted to.

Soaring culture Earlier I mentioned "culture". The sport does have a culture; in addition, each gliding club has its own unique culture that works for them. Disregard either and I will have more entries to report on. Look at the trends in the society we live in today. We often permit progression without a solid grounding in fundamentals, or we emphasize competition instead of cooperation with fellow pilots. We may practise courtesy to fellow pilots that is based on our experience about courtesy on the highway, but that's a road warrior culture.

Looking back on my four and a half decades in our sport and looking at the people amongst us, I can see a particular culture that is common. When we accept someone new into our sport, I think we must first of all identify and explain our culture along with soaring training. We must tell them that they will be subjected to behavioral and cultural changes that we accept in order to survive, and they must accept these also.

In spite of the appearance that soaring is as free as the birds and we can do anything we want in the air, soar freely and dilly-dally with the clouds, this could not be further from the truth. Soaring requires the acceptance of discipline imposed by the principles of the sport, applied diligently to oneself while accepting the culture demanded by the activity. Soaring has its culture and each club has its micro-culture. What works well in one club may be frowned upon in another. Just think of simple circuit procedure. A wide base leg may be the requirement in one club while it would be totally unacceptable at another. Knowing and complying with the local culture will perhaps save us from accidents.

It has been shown without doubt that when young people join a gliding organization, they have to accept and make their own a new culture. Instead of doing things by rote, they have to use reason, and the reason has to be sound and compliant with the new culture. Then a self-imposed discipline will grow that demands more responsibility towards the self and towards fellow pilots.

Have a safe 1997 season. ❖

George has nine years of accident/incident data on an Excel file. Anyone who is interested in having a copy of it for their own use (making charts, etc.) is welcome. His email is geckschm@direct.ca

AWARE *Aviation Weather, Playing by the Rules.* publisher: Atmospheric Environment Service with the National Search & Rescue Secretariat and Transport Canada. 250 pages, numerous diagrams, photographs, quizzes and exercises. Order from SAC; ask about bulk price.
\$14.95 + \$4 P&H

The aviation weather manual above is an excellent self-teaching manual on meteorology for power and glider pilots and is a good additional text for ground schools. It is well illustrated and written, and each chapter ends with a summary and quiz. SAC is overstocked with this manual and is offering it for sale in bulk at *less than cost*. The price for orders of 5 or more is \$9 each. Clubs — take advantage of this deal.

One flight, lots of lessons

an incident report

Mike Morgulis, SOSA

There comes a time in everyone's life when they reach a point of no return. It seems that this also occurs with flying. I was instructing a near-solo student last summer and we were going to perform an abbreviated circuit, essentially the last exercise this student had to complete prior to solo. I've instructed abbreviated circuits previously and the normal procedure was to enter circuit at 500 feet agl. At the SOSA Gliding Club, we have three runways so the options are fairly open.

On the first flight my student entered the circuit at about 600 feet. I had been a bit conservative and had held the spoilers open, but then relinquished them to the student early. He managed to stretch out a normal pattern, scraped out a final and put the 2-33 down on the landing T just as he would have on a "normal" flight. We discussed this and he eventually understood that by pushing the normal circuit and scraping in he was at a higher risk than had he elected to land on a different runway, or turn base earlier to land on the active runway (36) only slightly farther down its length. I also reiterated that in real life he might encounter heavy sink in the circuit or there may be an obstacle in the runway which would necessitate a modified circuit.

We took another flight to drive the point home. I instructed the student to circle a bit before coming in to join the downwind leg. The circle was in sink. When he got to the "spoilers" part of the checklist, I held them open again, and I also opened the back door to add drag. We were now at 500 feet. I really wanted to prevent him from going all the way around again. This time he really had fewer options. In the front of my mind was the instructors' meeting which I had attended in the morning and the statement, "Let the students hang themselves" was a central focus. Having stated that, let's continue the story.

I asked my student again what he was thinking, he replied that he'd land on the diagonal runway (03). I agreed, it was the best solution. Unfortunately, Murphy's Law put a towplane on a parallel course with us so timing would be critical. In the back of my mind I was ready to tell my student to land behind the tug and be diligent about our rollout to avoid a collision when the tug turned around. If worse came to worse, I would have to take over. The tug saw us very late in the game but he still managed to go around, so the path was clear. My student was not as mentally prepared as I

was and in a matter of seconds had fixated on the towplane situation. At 300 feet he turned 90 degrees onto the east/west runway (10), which I was expecting to be a very short base leg, another turn would then put us on final for the diagonal runway. But the student didn't turn. I waited a second — the words, "let the student hang themselves" ringing loud and clear. It dawned on me that we weren't going to turn at all, the landing was to be on the east/west runway, which was short enough as it was!

We were committed, as a turn to try and put us back onto 03 would now put us into the trees between the runways. Murphy's Law then launched a thermal under us, giving us a tailwind! Runway 10 was looking even shorter, and we weren't even down yet and half of it was already behind us. "Sideslip!" I instructed. "MORE!" followed by "I'm helping you!" As soon as the wheel hit the dirt we pulled the brakes fully out and I overpowered the student to erase his attempt at a gentle rollout and I drove the skid into the ground. At this point reality ceased — my mind showing me a third person view of us actually going into the shrubs and trees at the end of the runway. Reality returned when we came to a stop just shy of the woods. I paced off ten steps to the threshold from the nose of the plane. The skid was hot enough to fry an egg.

I asked him why he didn't land on the "diagonal" runway, to which he said, "But this is the diagonal runway." He'd flown at the club for two years and had never seen the third runway! That prompted a ten second fit of laughter, mostly an emotional release I think, but we both had a good laugh before I went into a thorough discussion about the whole thing. He understood the consequences of his actions and used the best option he thought available at the time. Lessons learned by the student:

- 1 Always plan for the unknown, leave an escape route open, study the field you are landing in carefully.
- 2 Fly the plane first, regardless of interfering traffic. Assume they haven't seen you and fly accordingly. Leave some space for them to maneuver after they roll out.
- 3 Don't panic, turn in when you think it's really the right time, don't stretch out a low circuit.
- 4 Be aware of lift in the circuit, it will tell you if you need to modify your circuit and by how much.
- 5 Your eyes are the most important instrument, always.

As an instructor it was the first time I felt scared. Nothing else to date comes close. I've heard everyone tell stories about students trying to kill them, but I never thought it would happen to me. I let the instructors' meeting overrule my common sense and I let us blunder into a dangerous situation. I removed an option purposely by killing off height. By allowing my student to continue his course when I would have already turned removed the final options. As John Cleese said in *Silverado*, "Today my jurisdiction ends HERE," meaning that as an instructor I failed and let the situation develop on its own. I feel that my actions afterwards saved damage and injury, but it really only proved how much I screwed up by not intervening when I should have. It only took three seconds of my silence to put us there. As an instructor I learned the following:

- 1 Never forget that the student lacks your foresight.
- 2 When in doubt, sacrifice the lesson for safety. You can always fly again.
- 3 When students hang themselves, they may hang you too. Maintain your jurisdiction!
- 4 Silence is as dangerous as a wrong action. When in doubt, talk it out.
- 5 From this day forward, refer to runways by number.

As I expected, the CFI called me later that day. He was concerned for my mental welfare but I assured him it was intact. He reminded me of my wife and two boys and how nice and convenient it would be to return to them every night after flying.

I'm a relatively new instructor with only fifty hours or so. My CFI suggested that maybe I had bitten off more than I could chew. I don't know about that; I'd done modified circuit lessons before, maybe this time I wasn't experienced enough to realize quickly enough that my student was going wrong. Everyone has a flight like this to gain that higher level of experience — now I've had mine. But my superman feeling of invincibility is now finally gone, and it's really for the better. My student learned about modified circuits; I learned about modified instructing. I'm sure all you senior pilots are rolling your eyes by now, but us younger pups have had to experience what you forgot to tell us until it was too late too!

Ironically, when I was gliding back to the field after Day One at the Provincials, I pulled up and prepared for an easy circuit. My energy dissipated quite suddenly at the apogee of the pull up and I was just sort of hanging there in the air. A Libelle was turning final, but I was closer to the runway than him and not as high as I had hoped to be, so I modified my circuit, turned in early and rolled out long to give the pilot behind me more room and time. Everyone who finished pulled up into that same spot of dead air and did the same thing as me. However, the following two days I didn't have to worry about that same problem because I landed out. ❖

various levels of NavCan, in hopes of obtaining a TCA structure that better accommodates everyone's needs. Two relatively recent developments have surfaced that lead to some optimism:

- 1 in various conversations, most recently with staff at the Toronto TCA, it has become apparent that the currently favoured TCA plans all have floors of at least 6000 feet asl (about 5000 feet agl) for those sections extending outside of the current TCA boundaries.
- 2 Mr. Merritt indicated at the AGM that he was not in favour of any expansion of the current Toronto TCA. Possibly the same bureaucratic inertia that is bedevilling other clubs will actually help here.

- In the Ottawa region, the new TCA occupies airspace used by Gatineau and Kars (Rideau Valley Soaring) for local and cross country flying. Club and SAC representatives met with NavCan in November to discuss these changes. NavCan was agreeable to a Class F zone to accommodate training flights at Gatineau's Pendleton airfield, but warned that a similar zone at Kars would interfere with IFR traffic. NavCan also stated that the Ottawa TCA might be upgraded to Class C airspace. Although such an upgrade would be in direct contradiction of the standards established in TC's specifications for TCAs, the mere threat gives an idea of the attitudes that must be confronted when dealing with some regional TCA units. The clubs, with assistance from the Airspace committee, are currently submitting proposals for Class F zones and MOUs. These will hopefully lead to relief for local and cross-country flying consisting of exemption from radio contact requirements and a smaller TCA. Recent contacts suggest that NavCan is redesigning the TCA but as with Calgary it is not obvious that NavCan management will approve any short term solution to the bloated TCA dimensions.

- The TCA at Montreal was established several years ago. Montreal Soaring Council and Aero Club des Outardes have MOUs already in place.

- Quebec Soaring Club had reached a draft agreement with NavCan in the fall for an advisory zone near its base at St-Raymond, but the club membership gave them the winter to discuss the situation further before signing an agreement in the spring with any revised boundaries and conditions. While the regional NavCan management has been reluctant to consider a revised Class F area for this season (citing more extensive user consultation as the delaying factor), they have recently agreed to an MOU that satisfies both parties' concerns for this year.

- Negotiations between Bluenose and the Moncton TCA have been stifled by the indifference of the local NavCan management. At the AGM, both Ms Taylor and Mr. Merritt committed to applying some pressure on

Moncton to re-establish communications. How effective this pressure will be is not apparent at this time.

Relief in sight? Not really ... As already alluded to, the SAC AGM had as its first event a session on airspace. The session featured invited guests Jennifer Taylor and David Merritt. It was chaired by Pierre Pepin with the "head table" being rounded out by two Airspace committee members, chairman Bill Green and Scott McMaster. The session was very well attended, especially considering the 8:30 am start, with about 80-90 SAC members in the audience enthusiastically representing every region.

In her presentation, Ms Taylor discussed a number of issues including the history of AIC 2/95 recounted before. She indicated her willingness to approve any TCA revisions that came to her as long as safety was not compromised. The responsibility for presenting proposals to TC falls to Mr. Merritt who spoke next. He limited most of his discussion to NavCan history and policies.

After the presentations a question and answer session ensued. What follows is an overview of the information that came to light in that session.

First, all of the problem TCAs across the country are to be "revisited" in 1997 with the object of scaling them back. Mr. Merritt was emphatic in his desire for smaller TCAs. The heart of this revisitation program is a standard way of identifying all stakeholders (CSA Q850 for the fastidious among you), getting them into the process early, and then working with them to build consensus. I believe SAC has succeeded in proclaiming itself "a stakeholder". While this process sounds inclusive and responsive to our needs it will take a while. The scope is large enough that it seems unlikely we will see results in less than two years.

Another more ominous point that came to light has been previously mentioned: individual Region agreements will be approved by Mr. Merritt and passed to TC for approval *only* if they meet the consultation and study requirements of NavCan (a formal process called an "aeronautical study"). We could not persuade him to consider accepting short term mutually acceptable solutions reached between the local NavCan people and any interested parties if they are missing some of the details of such a study. For example, we were told that a Western Region proposal to resize the Calgary TCA back to 20 nm had been turned down because it did not measure up to the consultative standards deemed necessary. Although there were no specifics available for the required standards, it appears they are not conducive to short term solutions.

I believe this was Mr. Merritt's way of saying that many of the short term agreements that we have been working towards locally are not going to receive approval from him. This would be of the most impact in Calgary, Ottawa, Edmonton, Quebec City, and

Halifax. It may even put the agreements that Montreal Centre has had with MSC and l'Aeroclub des Outardes for the last two years in jeopardy (these only came to Mr. Merritt's attention in the last couple of weeks and he is apparently not pleased with them).

Another TC initiative that was announced is an intention to improve the information available on the Internet and to increase the content of the Airspace Letter (that licensed pilots receive with their AIP updates) in an attempt to keep average pilots more up to date on the airspace issue.

What does it all mean? All of the following is just opinion, derived from many discussions over the past months.

- I believe TC would like to see an immediate solution to the TCA problems we are having even if it means a short term fix that will be modified later. NavCan seems more committed to a longer term consultative process as the only solution, apparently wanting to get it right the first time. Unfortunately this considerably reduces the scope for short term solutions.

- Local agreements may be in some jeopardy regardless of the good will of the local NavCan offices. Nav Canada head office appears quite insistent on scrupulous due process, even for temporary agreements.

- Although not directly an airspace issue, it has become apparent that NavCan will be attempting to charge glider pilots for the "privilege" of using NavCan services. NavCan is a large corporation by Canadian standards. Their operating costs are about \$1 billion a year. They have been billing about \$150 million a year from foreign overflights since 1995. They really do see end users as customers and are trying to deal with them as such, in itself not a bad change from the old days. The problem is that they see us (glider pilots) as customers whether we want to be or not. Unfortunately we would be very small customers, well down on the corporate food chain, so it is doubtful our fees would confer any negotiating advantage.

When the attempt to bill us comes it will probably be in the form of a yearly flat fee as allowed for in Bill C-20. While the size of this fee has not been disclosed, the value of the "services" being forced on soaring seems insufficient to justify any charge at all.

The Future So where do we go after the immediate problems are resolved? The projected growth in air traffic is likely to result in continued encroachment on airspace that soaring has traditionally enjoyed. Our short term proposals for Class F advisory areas do little for cross-country and contest flying. In the longer term there is a need to develop proposals for reconciling the needs of commercial traffic and cross-country flying, hopefully the proposed TCA revisitation will help in this respect. To aid in this we are attempting to enlist the help of other interested agencies.

Although groups such as the Canadian Owners and Pilots Association (COPA), Aerobatics Canada, and the Canadian Sports Parachute Association do not have identical concerns, efforts to liaise with such groups are continuing. Gliders represent only 3% of the recreational aviation fleet in Canada of about 21,000 aircraft, so the support of other groups greatly helps our case. COPA has recently responded to our request for support after an initial period of disinterest, and some interest has also been expressed by Aerobatics Canada. Hopefully more groups will realize the importance of this issue as the summer flying starts and it becomes obvious to their members how the TCA expansion will affect them.

There is also an international dimension to this problem. The Airspace committee has contacted the Soaring Society of America, the Australian Gliding Federation, the British Gliding Association, and the New Zealand Gliding Association. The gliding movements in each of these countries are experiencing similar pressures on airspace from increasing commercial air traffic and increased volumes of controlled airspace, removal of former access, increased requirement for radio contact with air traffic control, requirements for transponders, and restrictive glider flying areas.

Despite these developments, practises in other countries suggest that the TCAs in

Canada could be considerably relaxed. The similarity of experience in several countries suggests that airspace should be raised as an issue with the FAI/IGC. The benefits of such international collaboration include the exchange of information and policies of different countries, lobbying national and international air traffic control organizations and coordinating design of low cost "recreational aircraft" transponder equipment as an alternative to the expensive, unsuitable units available now.

That's all for now. I apologize for such a long-winded article, but a lot has been happening and the situation continues to change. ❖

What are they doing...? fm page 4

because our delegates, who are all glider pilots, include two professional engineers, a retired airline pilot and an air traffic controller.

Our representative group has pointed out that the proposed Standard Dimension changes will increase the volume of controlled airspace by leaps and bounds, and that these structures are much bigger than are really necessary for the safe and effective control of traffic. There is also a standard 3° approach slope into affected airports, which results in a 300 foot descent per nautical mile. TC and NavCan plan to restrict access by dropping the floors under these approach paths to heights much lower than really needed. In that case, your airfield might as well become a golf course.

Airspace access problems and solutions are not peculiar to Canada. In the USA, there are airports handling much larger traffic volumes in smaller zones and soaring operations coexist peacefully with them. We can work out accommodation of local solutions just as the Americans have, or we can keep quiet and see just how far we get with that.

Private discussions with Canadian air traffic controllers have shown that they are not pleased with the size of Canada's proposed zones because they tie up staff resources with little reason.

Proposed solutions

(Your letter should be formed in your own words around these points, and the ideas presented above.)

- We see the problem as standards vs. sensible local needs and solutions. We support the adoption of sensible local needs and solutions.
- Glider pilots coexist among other aviation interests. We are stakeholders in Canada's airspace. As such, we recognize mutual rights and responsibilities in sharing the sky sensibly with others.
- Airspace is a national resource. It should be reasonably accessible to every citizen. Any restrictions must be justified and scrutinized strictly on the basis of safety

requirements. Simply labelling something a "standard" isn't an acceptable justification to deny Canadians access to their own airspace. Unnecessarily large, nonaccessible airspace is counterproductive to administer — and to safety — since it will lead to more uncontrolled incursions.

In practical terms, it is suggested the government:

- Shrink the Terminal Control Areas back to the minimum size required to handle airline traffic safely.
- Raise the affected airspace floors to heights consistent with the 300 foot per nautical mile approach slope. In soaring, height means safety.
- Make outer areas from 12 nm outward Class E airspace for airports with lower traffic volume (for example Ottawa, Quebec City, Calgary, Edmonton)
- Guarantee gliders summary clearance to enter Class B and C airspace outside 12 nm and below 9500 feet, obtained by telephone in the morning, before flight operations begin, and waive radio contact requirement with ATC for Class D airspace. The reasons are quite clear: gliders don't fly that many days in a year, they only fly in good weather, and it's far more important for gliders to be in contact with each other than with a distant ATC unit.
- Direct local Air Traffic Control units to negotiate mutually agreeable local solutions with affected soaring clubs.

Motherhood statements

- Canada has one of the world's greatest aviation heritages. Let's not throw it away.
- Soaring is a competitive international sport. It is on the verge of becoming an Olympic discipline. Soaring will be a featured event at the 1997 World Air Games in Turkey.
- Soaring is an environmentally clean sport since it relies on the sun's energy.
- Soaring is an excellent way for young Canadians to develop confidence and a sense of responsibility.
- Soaring clubs have utilized airspace near major airports, coexisting with others for more than half a century in Canada. There is no compelling reason to stop now.
- Soaring has enriched the lives of thousands of people in this country. Do we

tell today's young people to forget about learning to fly?

- Soaring clubs across the country have built up irreplaceable investments in people, equipment, facilities and good will. By what right do government and a private monopoly (NavCan) deny us access to our own sky?
- Soaring pilots the world over see the sky as a precious resource, a kind of multi-dimensional wilderness that should be preserved. It should be used carefully and not signed over to the highest bidder. Don't NavCan and TC understand that?

Here is a suggested letter outline of important points. Remember, every letter represents a voice that counts. Send it to the Minister of Transport. Send a copy to your local MP, and a copy to NavCan.

The Honourable David Anderson
Minister of Transport
133 East Block
House of Commons
Ottawa K1A 0A6

Navigation Canada
77 Metcalfe St Ottawa Ont K1P 5L6
Kenneth B. Copeland, President and CEO
John Crichton, Chairman of the Board
Gilles Rodrigue, Assistant to the president (responsible for safety and quality issues)
Pierre Proulx, VP Operations

Organizing the letter

Identify yourself as a concerned individual who is affected by this issue. Clearly outline the "Standard Dimensions" issue. The minister will know TC and NavCan through Bill C-20, but might not be in a position to appreciate how the "little guy" is being squeezed here. Include "motherhood" and "stakeholder" statements as indicated above. If you have thought of other issues, include those too. Express your concern that Canada's long history of soaring will simply stop dead if these measures are implemented.

Perhaps the most important point is this: ask *why* Transport Canada and Nav Canada keep saying our activities will not be affected while they move to restrict them? Demand to know why they say one thing and do another! ❖

training & safety

PRIMACY: LEARNING IT RIGHT THE FIRST TIME

Fred Kisil, Flight Training & Safety

In learning complex tasks such as flying sailplanes, the lessons start with the basic elements. They serve as the foundations on which we build more complex maneuvers. In the event that faulty basic skills have been acquired, the task will have to be relearned. However, the "law of primacy" means the first learned skill can become the default mode and may take precedence over the relearned version, particularly when the individual is under stress. Examples that may be traced back to the first lesson include the failure to keep adequate lookouts. Churning the control stick instead of finer control inputs may be another poorly acquired skill as a result of experiences on the first flight. Examining situations occurring during the student's first flight will serve to illustrate how flaws in the learning process can develop.

From the perspective of the student, there is much to learn and one's senses can be quickly overloaded. Moreover, for the novice there is the added distraction of experiencing and dealing with movement in the three axes. The new sensations dominate the student's attention and the introduction of any other topic for instruction during the initial phase of their first few flights can serve to further distract the student.

The solution is simple. The student should not be allowed to follow through on the controls during the launch phase. A hand on the control column becomes the focus of attention at the expense of other objectives, ie. learning to cope with new sensations and keeping a lookout. The student

whose hand is on the control, inadvertently learns that the stick is moved around in large and sometimes abrupt movements. The law of primacy in learning comes into effect and pilots display similar jerky movements long after they are capable of finer control inputs. Moreover, with the attention riveted on the stick the student now is unconsciously involved in 'flying the sailplane on tow'. That lesson comes later in the training program.

The first instructional flight can provide a great opportunity to allow the student to absorb the sensations of flying. The instructor who is flying the sailplane on tow, can help to focus the student's attention on the changing perspectives and point out what it looks like when they reach an altitude of 1000 feet agl. The student may even glance at the altimeter to confirm the fact. While on tow, the instructor asks the student to help scan the sky for clear airspace. (Of course, the student was properly instructed prior to the flight on the proper method for scanning?) The student has been primed to look outside the aircraft and this exercise is repeated every time before the sailplane is banked into a turn. The student pilot is beginning to form the habit of keeping a good lookout. Soon release altitude has been reached. What a great opportunity for the student to help visually check the airspace before the release. The habit to look out is being reinforced and will be repeated on each succeeding flight until the student no longer needs to be prompted.

Off tow. We are ready to begin the air lessons on the stability of the sailplane and the primary effects of the controls. Now the student will acquire some hands-on experience on the controls. Once the lessons are over and we are headed into the circuit, it's

hands off for the student who will again focus on the changing perspectives and take the opportunity to practise checking for clear airspace before making the turns onto base and final. It may be necessary to remind the student to look out on each and every occasion the need occurs. With positive reinforcement on succeeding flights, the student should be well on the way to developing good basic skills.

SO, THEY'VE ASKED YOU TO BE CFI!

Roger Neaves

from *Sailplane & Gliding*, Aug/Sept 1971

What should being CFI really mean? To start with we can remove some of the things it doesn't mean. Just because you have been elected by a committee doesn't mean you're God. Only a temporary one. Remember, people you are beastly to on the way up will still be around to grease the slippery pole on your way back again. Another thing: election as CFI doesn't mean you have the right to alter the principles of flight or the laws of gravity. Keep your high-flown theories to yourself until you have had a chance to pick the brains of older and wiser heads. Most of what you have to do has been done before. Most of the mistakes have been made. Ask and find out. You will not lower yourself or appear weak by approaching people with a good deal more experience than you. They'll be only too glad to pass on their hard-earned store of knowledge. After all, you're all in the same business.

The next bit of advice is to put on your wall a large sign saying "WHY NOT LEAVE IT AS IT IS?" If you go around changing everything as soon as you get into power you will achieve a confusion such as has not been seen since the tower of Babel. Confusion is dangerous and if you don't know what you're doing, you'll have someone killed. Breaking the news to a new widow is not the way to spend a Sunday evening.

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Your job as CFI is to provide maximum member enjoyment, which means a lot of lovely safe flying in a controlled but relaxed atmosphere. Remember, people are doing it for fun, but at the same time you are responsible for seeing that they have their fun safely. The title Chief Flying Instructor means exactly what it says: you run the instructors and through them all, repeat *all*, the flying in the club. The club executive looks after club management and administration, and the purpose of that is to provide you with the environment in which to get on with your job. And you really are responsible. It's not the executive who has to get up in the coroners court, it's YOU. Innocent members of the public join to learn to fly. They pay. They deserve the best in instruction and supervision that you can offer. And where human lives are at stake, the best is nothing short of perfection.

Having agreed that safe flying is the name of the game, how can you, as CFI, aim for the degree of perfection required? You supervise. You supervise the instructors. You supervise them supervising pilots. You select the best instructors available. You select potential instructors and train them or have them trained. In the latter case, you prepare them for their instructors course so that they can get the maximum benefit from it. You fly with your instructors and fly with their pupils to check their results. Above all you cut out the deadwood, the fine weather boys, the one launch a month types, the showoffs and the braggarts. The reason for instructing is that one genuinely wants to pass on one's own enjoyment of the sport to others. It is not an excuse to show off to the ladies or to prop up the bar surrounded by admirers.

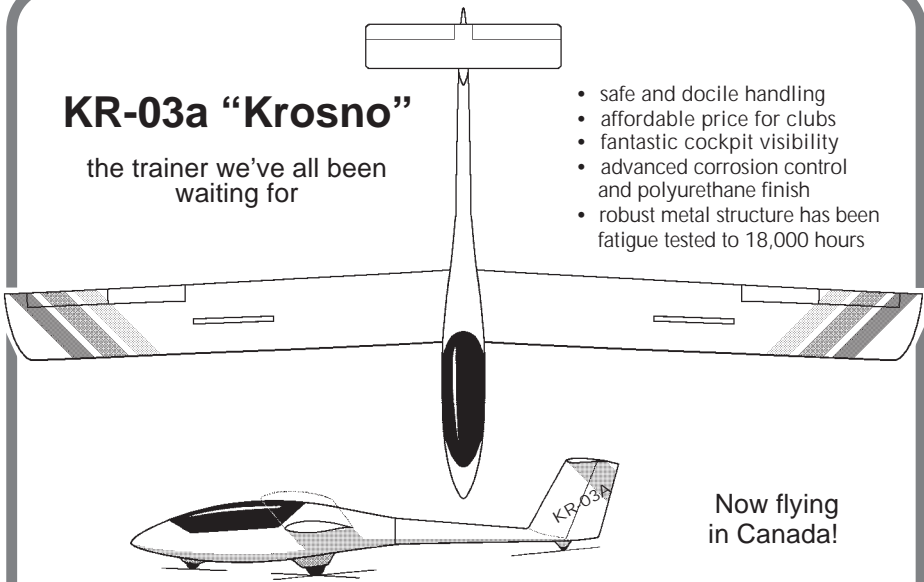
When you think you are beginning to get the organization the way you want it, start delegating authority. This will be an eye-opener, but don't interfere with the others unless safety is jeopardized. Keep quiet and calmly make your judgements about who will be reliable and loyal to you and who won't. Don't worry about losing instructors. If they take offence they're not much use to you anyway. It's surprising what can be done with a good pilot and an instructors course. Once you can delegate, get in as much solo flying as you can. Keep up the badge hunt. A CFI with a Silver is at somewhat of a disadvantage in a club full of Diamonds. Do enough pure instructing to keep current and to check the way instruction is being given. Do a bit of towing if you are also a power pilot. If you can keep flexible in your flying activities you won't fall into the trap of becoming that worst of all type of CFI, the circuit-basher.

To be a really effective CFI you must communicate. Some things: syllabuses, flying rules, etc. must be written down in such a way that there can be no argument. In addition you should write newsletters, reminding the older hands of things they may have forgotten and giving the newer chaps food for thought. Have instructors meetings fairly regularly. They provide an opportunity for

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instructors to let their hair down and talk shop in an uninhibited atmosphere. You will also find out more about them — not all of it good. Your main aim is standardization. Pupils must perform fly with many different instructors. You owe it to them to see that they get taught in substantially the same way, so find out who is teaching them that the elevator and rudder change functions in a steep turn!

I know that there are things I have not covered here, but I've tried to get at the basics. I hope I've made at least one CFI have one thought, even if it's anti. To sum up, try these hints for success:

- DON'T think you're God's gift to aviation.
- DON'T indulge in flashy flying (they know you're good).
- DON'T think only you can teach people to fly. You mustn't start a hero worship cult in the pupils.
- DON'T hesitate to jettison substandard instructors.
- DO enough instructing to keep your hand in, and check your instructors results.
- DO fly with your instructors as often as possible.
- LISTEN to pupils' whines and don't let them know you've heard it all before.
- COMMUNICATE & SUPERVISE. ❖

Susan Maskell



Here are a couple of characters normally seen at the field. These ceramic masks by Norm Taylor are usually hanging on the wall of the Winnipeg Gliding Club.

hangar flying

GO SOUTH YOUNG MAN: USING THE COMPASS IN AN EMERGENCY IFR SITUATION

In the October, 1996 issue of SOARING, Ted Branczeisz wrote an excellent letter on techniques to make an emergency descent through clouds without gyro instruments. However, in this situation there is some additional information available from the magnetic compass that few people know about. Years ago, when I was an Instrument Instructor in the US Navy's All-Weather Flight School, we taught a technique for using the magnetic compass to keep the wings level after a total gyro failure. Keep in mind that I am mentioning this only as a supplement to Branczeisz's method, not as a substitute for it.

Most people think of the magnetic compass as useless when maneuvering in the clouds, since it waves around wildly as the airplane rolls and pitches. There is a definite logic to these movements though, if you take the time to figure out what is happening.

If all your flying were done on the Equator the compass would indicate the correct heading through all normal maneuvers. Down there, the earth's magnetic field is parallel to the earth's surface and there are no errors due to pitch or roll. Away from the Equator though, the angle between the magnetic field and the earth's surface causes pitch and roll errors — always nearly equal to the latitude of your location in degrees. The word "nearly" would be "exactly" if the earth's magnetic and geographic poles were in the same place.

Where I live, the latitude is about 30° so, on a local flight, I could show you the following things that the magnetic compass would do:

1 On a heading of **E** or **W**, the compass will indicate correctly in a turn (in either direction), ie. no error due to roll, but there are errors due to pitch. Pitching the nose up and/or decreasing airspeed will cause an apparent turn to the south, up to thirty degrees if the pitch is steep enough. Pitching down and/or increasing airspeed will cause the compass to show a turn to the north. In any combination, the total error cannot exceed the latitude, 30° in this case.

2 On a heading of **N** or **S**, there are no errors due to pitch or airspeed changes, but there are turning errors due to roll. When heading north, the roll necessary to start a turn will cause the compass to show a turn in the opposite direction, ie. banking right will cause the compass to swing left, up to 30°. When heading south, the error due to roll is in the same direction as the turn, so the compass leads the actual turn.

This may seem to be complicated, but the only thing you really have to remember is, *SOUTH*. On a heading of south, the compass has no pitch errors, and responds to both roll and yaw by showing a turn in the correct direction. *Therefore, if you go into cloud without gyros on a southerly heading, coordinated control movements to keep the compass pointing south will guarantee a wings-level descent.* The rest of this explanation was to show why it will work, and also to point out that south is the only direction that can be used.

John Jenista, Fort Worth, Texas

RECORD FLYING A GO

When you read Dave Hennigar's report in the AGM insert in this issue, you will see that there has been precious little record flying in Canada recently. The \$50 fee for an FAI Sporting Licence for the privilege of attempting a record was a considerable disincentive. The Sporting committee made a recommendation to the SAC Board that Canadian record attempts flown within Canada not require a Sporting Licence. This was accepted by the Board. On the same weekend, the IGC meeting in Brussels also made the decision to divorce itself from national records — a delicious coincidence.

I have preached before in this magazine and in soaring seminars about the importance of having goals in this sport to keep interest and excellence at a high pitch. Now you have no monetary impediment to record attempts at least, so get out there and try something this season. Make a club effort to improve on an achievable two-seat record (how many clubs have two badge-rated women pilots? — the feminine record category contents are pitifully sparse). Does your club single seater give priority to badge seekers? Most weekends you will not know in the morning if the afternoon weather is going to be merely good or simply great — so declare a record course and see what happens!

Tony Burton

PW5 FLIES 500 / PW6 COMING

Flying out of Horsham, South Australia, Keith Willis completed on February 5, what is thought to be the world's first 500 kilometre FAI triangle flown in a PW5 at a speed of 81 km/h. A very creditable effort.

A Warsaw University design group have completed their work on the PW6, a 16m two-seater with a minimum sink of 150 ft/min at 48 knots and a max L/D of 34:1.

The trainer will feature a front cockpit which is identical to the PW5 for ease of transi-

tion. The Swidnick factory which is producing the PW6 is expected to have a prototype flying sometime in 1997.

from *NZ Gliding Kiwi*

YOU NEED PERMISSION TO FLY A HOMEBUILT IN THE USA

A "Special Flight Authorization" form is required from the FAA in order to fly a Canadian registered homebuilt aircraft in the United States. Don't get caught out by the Feds when you show up in the USA for a wave camp or a competition without it. This is a bilateral agreement which has been in effect between the FAA and Transport Canada for some years now. The SFA document must be carried in the aircraft while you are in the USA.

It's easy to get, all you need to do is phone or fax the FAA for the application form and fax or mail the completed form back to them. (The form is designed for powered aircraft so a lot of the info asked for is not applicable to sailplanes — just make it plain that you have no engine.)

Send the information in good time for normal processing delays, although if the info is faxed, the turnaround time is only a few days in my experience. For those of you who have done this in the past, note that the address and phone/fax numbers have changed. The manager in charge also noted that once you have been given an SFA you are on file; subsequent requests need only give current info such as the new itinerary. The address is:

Federal Aviation Administration
ANE-MIDO-46
Manufacturing Inspection District Office
7150 Republic Airport, Suite 236
Farmingdale, NY 11735-1585
tel (516) 694-8420 fax (516) 694-8424

MILLENNIUM GPS CRASH?

I was reading in a recent *Defense Weekly* that the US Department of Defense is planning now for the Solar [sunspot] Maximum around the turn of the century. One problem is the disruption of GPS. The result is larger than usual errors or even total failure of the system for short periods of time.

Are there any plans by the soaring community to prepare for this considering the increasing dependence on GPS for navigation and contest scoring?

Jeff Chiles

• • • •

Hey — I plan to buy a map! But the concern is valid — a lot of our gee-whiz computer devices that exist now haven't been through a real maximum solar cycle yet as we haven't had one for some years now. Could be quite a shock to a lot of the silicon out there.

Richard Glover

club news

✿* SPRING FEVER

*Oh, what a glorious day!
to be tending my garden this May.*

*Little bird's harmonizing
bumblebees bumble-izing
for what could a mere mortal pray?*

A sudden gust... what's this... a thermal?

*What am I doing in this stinking
weed patch when I could be soaring?*

Jack Olson

WINTER IN WINNIPEG

Our season wrapped up officially on the weekend of October 26-27 and with it came the prospect of another cold, snowy Manitoba winter. We were not to be let down!

The snows came on 1 November and as I write we have had over 190 cm of snow, most of which was piled up on my front lawn. But at least it is sunny and we are prepared for snow removal, unlike our Vancouver cousins who also suffered through a very tough winter. But we survive and look forward to the day when we can break out of our snowbound residences and smell the spring air and view the world from above while enjoying all that Mother Nature has in store for us, (mosquitoes, tornados, hail, floods, etc. etc!)

We have not been entirely shut down however. Many activities continued throughout the winter such as our annual Open House in early February followed by the start of ground school. In addition, we have scheduled a Pilot Decision Making course with Transport Canada (a free service for flying schools) and are looking into a high altitude indoctrination course with the Canadian Armed Forces here in Winnipeg. The high altitude chamber arrived from the military base in Edmonton, and on initial discussions is open for use by civilians, (for a fee I might add). Anyone interested in attending can call the club at (204) 837-8128 for updates on times and dates.

Our club is also planning on attending the Cowley summer camp and expect a strong showing this year with several members committing holidays toward the event. As well, a number of private gliders will likely make the trip, hoping to again experience the fine soaring associated with the camp. So order us up some please!

One item to report from the summer of flying in 1996 was the practise implemented by our safety officer, Larry Morrow, of hav-

ing pilots actually plan and commit to an off-field landing. A fallow field, adjacent to a crop duster strip one mile south of our gliderport was the area for the practise. A pilot was taken up and released at 2000 feet overhead the field, and then allowed to make all the decisions required to safely put down in the stubble. A very thorough critique by Larry pointed out the good and bad of the decision making process. Several pilots remarked that this was a good first step for getting the confidence needed for their first cross-country flight attempts. This exercise will be repeated again in 1997 and may become standard cross-country training prior to pilots being approved for cross country flying.

Mike Maskell

EAST KOOTENAY SOARING MOVES TO INVERMERE

Beginning mid-April, the East Kootenay Soaring Club will be operating out of Invermere, BC. Tow/glider pilot and AME Blaine Moore has completely overhauled a 165 hp Stinson with a new and larger oil cooler and a seaplane prop and it will be towing full time. The club also has made arrangement to have a Citabria available daily. The on-site FBO, Babin Air, offers camping and tie-downs on the airport each for \$5/night or \$25/month, and his new office will offer coin operated showers. The club can offer its 2-33 for checkflights, and CFI Trevor Florence (who gave the mountain soaring seminar at the SAC AGM) is willing to show anyone the great experience mountain soaring has to offer!

The Invermere airport is a 3000 foot paved strip which has been the home for Vancouver Soaring Association's mountain soaring safaris. There is little power traffic, and being situated in the centre of the Columbia/Kootenay valley, Invermere offers some of western Canada's best soaring. The airport is right at the base of the mountain chain making local soaring and reaching the first thermal easy — you don't have to be an experienced mountain pilot to fly here.

This is a great place for the crews as well as pilots — Invermere is a pretty little resort town on Windermere Lake with good motels, restaurants and a great lakeside pub. Call Mike Cook at 604-427-5471 if you want more information.

Although the commercial operation at Golden has closed, Uwe Kleinhempel will still make tows available to private owners.

TORONTO AREA GLIDER PILOT GROUND SCHOOL!

The spring 1997 session starts April 16, so by the time you read this in free flight, a couple of the first lectures may have passed. You can still sign up though, so call.

York Soaring will be hosting a Glider Pilot Ground School directed at beginning pilots

to prepare them both for basic flight training and the Transport Canada examination.

The course will be conducted starting Wednesday April 16th at the University of Toronto's Erindale Campus in Mississauga. The eight session ground school will be held on Wednesday evenings from 7-10 pm.

The Basic course meets TC's licensing requirement for 15 hours of ground school and to prepare the student to write the Glider Pilot examination. However, other aspects of soaring of a more general nature will be covered as well. The material will be presented in a lecture format supported by videos. A sample examination in the Transport Canada format will be given near the end of the course.

Erindale College is on the east side of Mississauga Road just north of Dundas Street in Mississauga. For registration information or if you have any questions on the course itself, please contact Ulf Boehlau: days, (416) 410-3883; evenings, (905) 884-3166; or email ulf@problem.tantech.com cm855@torfree.net

6th INVERMERE SUMMER SOARING VACATION

Held from 5-27 July and hosted by the Vancouver Soaring Association. Come join us to experience the fabulous BC mountain soaring and cross-country conditions. A Grob 103 Acro is available for area check outs for visiting pilots.

The camp fee is \$75/week or \$15/day which includes a portion of the towplane ferrying costs, an airport facilities user charge, the daily tie down charge, and daily VSA membership. Tows are \$27 to 2000 feet plus \$7 per additional 1000 feet. For more information contact Hans Baeggli: (604) 434-2125 (H), (604) 231-2026 (B), fax (604) 278-2533, email hbb@mda.ca

† Robert Cheston

On 26 February, we lost one of our pioneers from a heart attack. Bob was an avid glider pilot and member of the Regina club from its beginnings in 1954. He was among the early group of pilots who explored the Cowley wave starting the same year. In 1956 he won SAC's BAIC trophy for the best flight in Canada, a 188 mile trip from Regina south to Aurelia, North Dakota. He made a flight to over 19,000 feet in June 1957 in his Fauvel AV-36 to achieve the third Canadian gain of height record of 4067 metres.

In order to support the club he purchased a Grunau Baby and leased it to the Regina group for a nominal fee. In 1982 he was awarded life membership in the club and was active in flying until a few years ago and continued his interest to the end.

Harold Eley

WERNEBURG & ROBINSON LEAVE THE BOARD

I want to recognize the work that Karl Robinson and Hal Werneburg did while they served on your Board of Directors. It was their suggestion that we should not fill the director-at-large positions and leave the Atlantic Zone seat unfilled for the time being. We will miss their contribution.

Their departure exemplifies the negative side of restructuring. Fortunately Hal has agreed to stay on as our representative on the International Gliding Commission. Karl will continue as the Board's representative on the Flight Training & Safety committee. We are fortunate to be able to benefit from their wisdom and talent.

Pierre Pepin

INTERNATIONAL GLIDING COMMISSION MEETING

Hal Werneburg
SAC IGC delegate

The following is a compilation of some of the more important issues which were discussed at the March meeting in Brussels.

World records The major item which is not mentioned here regards the restructuring of the world record categories. This has been a complicated and thorny issue which requires review of the official meeting minutes before the changes can be publicized.

GNNS The GFAC subcommittee of the IGC will accept applications from FR manufacturers to have their flight recorders approved for use with discrete, cable-connected GPS/GLONASS receivers. Once approved, these specific combinations of FR and GNNS engines can then be used for badge flights up to and including all Diamond badges. *[There has been world-wide dissatisfaction with the effort GNNS manufacturers were taking to solve the perceived record flight security problem through expensive technology-in-a-box. In the future, pilots will be able to use IGC specified combinations of existing GPS receivers plus cable-connected recorders for badge flying. editor]*

Radio It appears that new radio frequency requirements are coming, especially in Europe. It will involve replacing aircraft sets with units having a reduced channel separation of 8.33 MHz (= increase in number of channels). The US aviation community is fighting this proposal by ICAO since work is progressing in the USA on digital radio which would provide an almost unlimited number of radio channels but implementation lies many years in the future.

Sporting Code A subcommittee has been created to condense the SC into a more user friendly document. At the same time this committee has been tasked to produce a "How to" handbook along the lines of the SAC *Badge and Record Flying* guide. Ross McIntyre of New Zealand is heading this group and he is looking for e-mail connected helpers at this time.

Paragraph 1.8.7 of the SC was removed in order to clarify distance calculations for closed course records.

Any references to national requirements (including Sporting Licences!) in the SC are to be removed.

The predeclared turnpoint list for free O&R record attempts has been eliminated. Turn point evidence from approved GNNS equipment is acceptable, otherwise photographic evidence must show a clearly identifiable ground feature.

World gliding contests

South Africa has been awarded the WGC for 2001 The line-up at this time :

1997 : France, St.Auban
1999 : Germany, Bayreuth
2001 : South Africa, Mmabatho (Mafeking)
2003 : USA (preliminary bid only)

In addition, many other contests are being staged around the world. Competition seems to be alive and well. Here is a partial listing of gliding championships: European, Women's, Junior, Club Class, Motor Gliding, Masters, World Class (at the WAG) and others.

Mandatory drug testing has been introduced at all IGC sanctioned events as required by the FAI.

Airspace Airspace issues were discussed at length by several delegates including yours truly. The IGC is greatly concerned with these problems and has asked the president of the EGU (European Gliding Union; a political body involved in regulatory issues at government level) to continue his good work in preserving airspace for gliders. The SAC Airspace committee has been given the opportunity to work with the EGU on this side of the Atlantic.

There is no magic cure for our airspace problems; it was pointed out that close liaison with ICAO (where most if not all these issues originate) and the national transport ministries/departments is imperative in being aware of what is being proposed down the road.

Membership Declining membership is a fact in many countries. Luckily it appears that the countries with large memberships such as Germany, England, France are not affected by this malaise as much as the smaller ones including Canada. Apparently once a critical mass has been reached, membership numbers become selfsustaining. How to achieve that in Canada is the question. Many delegates gave input but no sure

16-19 May **Saskatchewan Provincial Contest**, Regina GSC, Keith Bjorndahl, (306) 543-6043.

7-15 June **Sask XC Soaring Clinic**, Birch Hills, SK, contact Keith Andrews, (306) 249-1859.

22-28 June **SAC Eastern Instructors Course**, York Soaring. Director is Paul Moggach. Pilots interested are to contact their club CFI.

6-17 July **Canadian Nationals**, Rockton, ON. Contact Dave Springford, springford-d@mmc.ca (613) 634-2056, or Al Wood akwood@interlog.com (905) 793-9849. There will be a Nationals Homepage starting up soon on the SOSA home page at: <http://psych.utoronto.ca/~sosa/>

13-19 July **SAC Western Instructors Course**, Chipman, AB. Director is Terry Southwood (403) 255-4667. Interested? Contact your club CFI.

26 Jul - 4 Aug **25th Cowley Summer Camp**. Celebrate the special occasion - there will be many events besides the fun and great soaring. Interested pilots are requested to call a month in advance this time so that the Alberta Soaring Council can organize for the numbers. Contact: Tony Burton (403) 625-4563 - free-flt@agt.net

30 Aug - 1 Sep **Ontario Provincial contest**. Hawkesbury.

fire way became evident. Hard recruiting work by all members, clubs and associations leads to some success. A list of attack points was produced which may be of some help in identifying targets for membership. A more complete report will follow once the official meeting minutes have been received. ❖

TWO NEW CAMPAIGNS ON TAP

SAC Marketing/Recruitment Campaign

The SAC Board has decided to start a modest initiative to try and help clubs prepare and carry out recruitment campaigns. As a starting point, all clubs should make sure they have someone responsible for recruitment and some kind of plan in place. SAC will look at ways of assisting, from providing modest collateral, to acting as a focal point for the sharing of marketing ideas. The Internet will likely play a role. More info will be posted on the SAC Forum.

SAC Fund Raising Campaign

The Pioneer fund does now, and will continue in the future, play a major role in funding ongoing SAC operations. This fund, if enhanced, would go a long way to providing for the level of professional staff we need to look out for our interests. The SAC Board will be reviewing this area to see how we might increase the overall contribution levels.

More information on both of these new programs will be coming in future *free flight* articles, and soon on the SAC web page.

John Broomhall, SAC director

CURRENT CANADIAN RECORDS (1996)

C indicates a record by a Canadian citizen originating outside the country.

T indicates the corresponding record set within Canada. (These are noted only when a greater "C" record exists.)

RECORD TYPE	OPEN	FEMININE	MULTIPLACE (OPEN)	MULTIPLACE (FEM)
DISTANCE (km)				
3.2.3.1 Straight distance	Marsden/Apps 1093 1984	U Wiese 607.0 1986	C Zwarych (R Adam) 495 1986	not claimed
3.2.3.2 Distance to goal	Marsden/Apps 707 1984	A Williams 305.0 C 1975	Zwarych (McColeman) 310 T 1984 Proudfoot (G Fitzhugh) 304 C 1981 D Marsden (E Dumas) 421.5 1979	A Williams (E Bell) 76.2 1979
3.2.3.3. Out & return	T Burton 652.3 T 1993 W Weir 1032.1 C 1993	U Wiese 328.0 1984		not claimed
3.2.3.4 Triangle distance	H Werneburg 803.7 T 1982 P Masak 1007.0 C 1987	J Midwinter 317.6 1988	John Firth (D Webber) 510.4 T 1986 C Yeates (K Yeates) 510.2 C 1989	not claimed
3.2.3.5 Free distance	B Milner 1394.0 C 1993	S Eaves 508.7 1995	not claimed	not claimed
3.2.3.6 Free out & return	W Weir 519.4 C 1995	not claimed	not claimed	not claimed
SPEED, Δ (km/h)				
3.2.3.7 100 km	K Bennett 131.1 T 1989 P Masak 141.4 C 1985	A Williams 54.5 C 1976	D Marsden (M Jones) 98.1 1975	Czervenka (M Stone) 31.0 C 1970
not FAI 200 km	J Firth 110.6 T 1984 C Yeates 116.3 C 1994	M Barritt 68.7 C 1970	L Bungey (T Burton) 76.0 T 1983 C Yeates (K Yeates) 79.5 C 1987 D Marsden (E Dumas) 69.9 T 1975 I Spence (J-R. Faliu) 128.5 C 1991	not claimed
3.2.3.7 300 km	K Bennett 113.1 T 1988 P Masak 148.9 C 1985	U Wiese 55.6 1983		not claimed
not FAI 400 km	J Firth 99.0 T 1987 C Yeates 119.7 C 1994	not claimed		not claimed
3.2.3.7 500 km	W Weir 105.7 T 1991 P Masak 151.2 C 1985	not claimed	J Firth (D Webber) 88.8 1986	not claimed
3.2.3.7 750 km	W Krug 108.8 1982	not claimed	not claimed	not claimed
3.2.3.7 1000 km	P Masak 106.5 C 1987	not claimed	not claimed	not claimed
ALTITUDE (m)				
3.2.3.8 Gain of height	D Mercer 8458 1995	D Duffy 6575 1991	Shirley (Campbell) 7102 1961	Czervenka (Kossuth) 2987 C 1970
3.2.3.9 Absolute altitude	B Hea 10485 T 1981 W Chmela 12449 C 1974	D Duffy 8986 T 1991 A Czervenka 9772 C 1969	Shirley (Campbell) 9083 T 1961 Chmela (VanMaurik) 10390 C 1975	Czervenka (Kossuth) 4216 C 1970
SPEED, O & R (km/h)				
3.2.3.10 300 km	H Werneburg 115.2 T 1983 W Weir 191.3 C 1989	U Wiese 59.6 1984	Chmela (Rominger) 65.0 C 1976	not claimed
3.2.3.10 500 km	K Bennett 126.3 T 1992 W Weir 150.9 C 1996	not claimed	not claimed	not claimed
3.2.3.10 750 km	W Weir 145.0 C 1994	not claimed	not claimed	not claimed
3.2.3.10 1000 km	W Weir 142.6 C 1993	not claimed	not claimed	not claimed
SPEED, GOAL (km/h)				
not FAI 100 km	K Bennett 118.7 T 1985 W Weir 147.7 C 1992	not claimed	W Chmela (R Zimm) 47.0 1971	not claimed
not FAI 200 km	K Bennett 125.9 T 1992 W Weir 143.0 C 1995	not claimed	not claimed	not claimed
not FAI 300 km	W Mix 108.6 T 1966 W Weir 145.9 C 1994	not claimed	Proudfoot (Fitzhugh) 70.2 C 1981	not claimed
not FAI 400 km	T Burton 81.5 1990	not claimed	not claimed	not claimed
not FAI 500 km	D Marsden 97.1 T 1970 W Weir 138.4 C 1993	not claimed	not claimed	not claimed

PETER CORLEY MEMORIAL SCHOLARSHIP ESTABLISHED

The Soaring Association of Canada is pleased to announce the Peter Corley Memorial Scholarship. The scholarship has an annual value of at least \$2,300 and is intended to assist a young SAC member to finance academic pursuits at a post-secondary institution, particularly in their freshman year. Application forms for the scholarship are available from the SAC office.

Peter Corley learned to fly at SOSA when he was 15. He was killed twelve years later when the ultralight he was flying suffered a structural failure. These scholarships honour Peter's memory, and are funded by his family and friends.

Compte rendu de livre — par Nick Bonnière

Titre **Le vol à voile - Connaissance et technique**
Auteur Gil Roy
Editeur Editions Denoël ISBN 2-207-24384-2

L'ouvrage est divisé en sept chapitres, chacun traitant en détail d'un aspect du vol à voile, depuis le premier vol, jusqu'à la voltige, en passant par la compétition et l'aérodynamique. Le premier chapitre, intitulé «Histoire», a un côté français qui est très rafraichissant, car il ne parle pas seulement d'Otto Lilienthal, mais aussi des exploits de Jean-Marie Le Bris et Joseph Thoret, par exemple.

Les superbes illustrations du chapitre sur le pilotage faciliteront la tâche des instructeurs qui se serviront de cet ouvrage. Je n'ai relevé que quelques erreurs, la plus importante étant le tracé de l'atterrissage d'un planeur, qui est mal indiqué sur deux schémas. L'auteur écrit à propos de water-ballast qu'il «permet de meilleures accélérations». D'après moi, le ballast améliore la vitesse et non l'accélération. Ces erreurs n'enlèvent cependant rien à la qualité générale de l'ouvrage.

Le livre s'adresse à tous. Pour ceux qui ne connaissent rien au vol à voile, les premiers chapitres en donnent un bon aperçu. Les chapitres suivants deviennent de plus en plus substantiels, et portent sur l'instruction de base, puis l'introduction au vol voyage, ensuite la compétition et enfin la voltige. Le dernier chapitre, «Vol à voile passion», laisse de côté la compétition et les records pour se concentrer sur le plaisir de voler. Le vol à voile est à la portée de tous.

Je suis convaincu que le livre a sa place dans un club de vol à voile, car tous les aspects du sport y sont décrits. C'est un outil sans pareil qui offre au pilote la possibilité de progresser quel que soit son niveau. C'est aussi un guide pour mieux vivre sa passion. L'ouvrage est disponible à l'Association canadienne de vol à voile (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

Ad will run 3 times unless you renew. Please tell me if your item has been sold sooner. Maximum length is 6 lines, ads subject to some editing as necessary.

single seat

Wanted, 1-26, late model preferred. Terk Bayly (519) 53804262 or fax (519) 599-3664.

1-26, two for sale with open trailers. One needs fuselage fabric, \$5750. Second for parts or made airworthy by replacing corroded tubing and re-covering fuselage, \$3750. \$9000 for both as is. Glenn Lockhard (613) 692-3622.

L-Spatz, C-FUJZ, 1966, recent fabric and overhaul, basic instrmts, radio, Varicalc, open or closed trailer avail. \$7000 obo. Winnipeg Gliding Club (204) 837-8128 or wgc-info@lark.magic.mb.ca

BG-12A, CF-RCU, 350 h, one piece canopy, re-conditioned in 1995, glass trailer, Security 150 chute, portable radio, wing covers. \$6000. Norm Wagner (250) 344-6685.

Ka6E, C-FYGS, 1015 h. Condition impeccable, instrumentation complete incl. vario électrique, vario l'échelle 0 à 1 m/s max, Radair 10 et autre. Pas de roulotte. \$10,000: faite votre offre. Pierre Brousseau (418)627-2025 rés, (418) 563-0248 tr.

Ka6E, 803 h, \$11,000. Uwe Kleinhempel (250) 344-6620.

Duster, C-GHEU, 226h, excellent condition, Genave 100 radio, 2 mech varios, 10ah gelcel batt, Garmin 55 GPS & database, encl metal trailer. \$6500. Harold Weidemann (403) 474-0139.

HP-11, CF-CMZ, a lovely ship to fly and great for XC. Std Class performer for half price. Full panel incl Varicalc computer, encl metal trailer. \$12,000 obo. Mike Apps, (403) 436-9003 (H), (403) 435-7305 (W), mapps@nofc.forestry.ca

HP-14 mod, C-FXFP. Self-launching, trailer, chute, many extras. Not enough time to fully use this good XC performer. Sell, or share and relocate to any central or southern Ontario club. Make offer. Ron (705) 689-5528, fax 329-2108.

Jantar Std, C-GUJF, 850h, Sage vario, Varicalc computer, radio, O2, Chair chute, enclosed trailer, Bendix King KX99 handheld radio with long range ground antenna, baro, camera. \$27,000. Claude Gosselin (514) 444-3450, c.gosselin@lantar.net

Jantar Std 2, C-GHDR, 1/2 share at SOSA, excellent cond, 650 h, Imron paint, Dittel 720C radio, ILEC SC7 vario/TE, PZL vario, O2, covers, chute, etc. XC & contest ready. \$15,000. Tim O'Hanlon (905) 332-1930, ohanlont@bailey.ca

Jantar Std 2B, #1207, less than 400h, immaculate, no damage, refinished in '93, Avionic 720 radio/mike, Rico electronic vario with electronic TE, O2 panel mount, T&B, PZL vario, dust covers, HD battery, alum trailer. Asking US\$26,900. Paul Yardy (905) 863-5728 (W) or Paul.Yardy@nt.com

RS-15, C-FWSE, 873h TT, basic instruments, RICO vario/audio, encl metal trailer, O2 system with A14 regulator. Contact Harold Yardy (705) 654-3205.

Std Cirrus, CF-DMW, 660 h, never bent, excellent cond. Radair 360, A14A O2, 3 varios, gear warning, metal trailer. **'77 Ford Club wagon**, 3/4T 460CID, low miles, A/C, towing package, wired for ground mobile radio. Peravia and Winter baros, Radair 10s, Security 150 chute, etc, all unused for past 7 years. Prefer to sell as complete package. Monty Williams (604) 929-1749.

ASK-14 motorglider, damaged fuselage and canopy - wing/tail/trailer all in good cond. Either **sell above or buy a good fuselage/canopy**. Motor not required. Theo Hudec, ph/fx (250) 479-6991.

ASW-15, 1500 h, very nice to fly (did 500 km in 4:50 hours). ADs done, current annual to Aug 97, good cond, flight ready, complete instrumentation, audio vario, radio, TP camera, encl trailer, spare canopy. \$19,500 (US\$14,500). Tillmann Steckner, (519) 471-3203, (519) 425-1679, e-mail cp342@oxford.net

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.

DG 202/17, 575h, like new, tinted canopy, Sage vario, M-Nav computer, Terra 720 radio, Security 250 chute, O2, water, Komet trailer. US\$32,000. Francisco Diaz (514) 355-6081 evenings.

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\$43,000. Hal Werneburg at (403) 686-6620, westechc@cadvision.com or Rick Zabrodski (403) 271-5123, rzabrods@acs.ualgary.ca

Nimbus 2, C-GAJM, 860h. Excellent condition. This is a super performer which loves to be taken cross-country. Factory trailer, full panel including radio, 2 varios, Cambridge computer, Mylar seals, wing and fuselage covers. \$35,000 obo. Mike Apps, (403) 436-9003 (H), (403) 435-7305 (W), email mapps@nofc.forestry.ca

towplane

Bellanca Scout 8GCBC, 1977, 1455 hours tsn, constant speed prop, tow gear original equipment Condition: 6/10 internal, 5/10 external. \$40,000. Doug Moore (250) 723-9385.

Pawnee 235, 1200 h, \$30,000. Uwe Kleinhempel at (250) 344-6620.

Solaire Canada

Ed Hollestelle (519) 461-1464 p & fx

LX-20 The new IGC-approved GPS flight data recorder \$1995

LX-100 Basic audio vario with averager \$495

ATR720A 760 chan VHF with mounting tray and wiring harness \$7695

SHM1010 Boom mike and wiring (as installed by most glider manufacturers) \$150

LX-4000E S-RAM final glide computer or connects to any GPS (with NMEA output) or connects to LX-20 data recorder \$2995

LX-5000 The ultimate GPS/final glide computer system with moving map display and FAI data recorder \$5495

two seat

Lark IS28B2, C-GVLI, 1500 h, 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

miscellaneous

Desperately need to replace a friend's copy of Jane's book of *Gliders and Sailplanes*. Must be in good condition, will pay any reasonable price. Andrew Parker, SOSA (416) 504-9455, fax (416) 504-9456 104170.2154@compuserve.com

Bohli compass (type 46-mk-1) \$200.00
Winter barograph with accessories \$475.00
All in mint condition. Prices non-negotiable and incl shipping in Canada. Rick Zabrodski, (403) 271-5123, fax (403) 225-1276 or email rzabrods@acs.ualgary.ca

Varicalc vario \$375. Gilles Séguin (514) 377-5737.

CVS 50H Vario Cambridge, 10 knot scale with speed ring & ext on/off dual range (0.5/1) switch. A simple elec vario. *Newly overhauled*. \$180. **CPT 50MN Vario** Cambridge, 10 knot scale, triple range (0.5/1/2), dual sensitivity, TE adjust. No flask reqd. \$375. Cambridge **AV 10 Audio** external audio (no tone on down), plugs into either vario above. \$50. Tony Burton (403) 625-4563.

One-person glider assembly aid. No more help or heavy lifting needed. The "Wing Thing", \$600. Doug Girard (902) 462-0600.

Wanted, 1-26b right wing, nose cone, canopy and tail feathers for rebuild project. Contact Randy Blackwell, Cold Lake Soaring Club, (403) 594-2171.

suppliers

REPAIRS & MAINTENANCE

Sunaero Aviation Glider repairs in fibreglass, wood, & metal. Jerry Vesely, Box 1928, Claresholm, AB T0L 0T0 (403) 625-3155 (B), 625-2281 (fax).

Flying High Parachute sales, repairs, repacking, custom containers. Al MacDonald (403) 687-2225.

INSTRUMENTS & OTHER STUFF

Instruments for sale — best prices anywhere. Call for list and prices for vario, altimeter, airspeed, T&B, g-meter, compass, radio, etc. Lee (905) 840-2932 H, evenings only.

MZ Supplies. CONFOR foam, Becker radios, most German soaring instruments. 1450 Goth Ave, Gloucester, ON K1T 1E4 tel/fax (613) 523-2581.

Variometer / Calculator. Versatile pressure transducer and microprocessor based vario and final glide calculator. Canadian designed and produced. Skytronics, 24 Robina Ave, Nepean ON K2H 9P9. (613) 820-3751 or (613) 596-1024.

SAILPLANE DEALERS

Glaser-Dirks. DG300, 500, 500/22, 600, 800. Vankleek Sailplanes Ltd. Wolfgang Thiele, 5971 Dwyer Hill Road, Ashton, ON K0A 1B0 (613) 838-4902, fax (613) 829-4219.

Schempp-Hirth. Nimbus, Janus, Ventus, Discus. Al Schreiter, 3298 Lonefeather Cres, Mississauga, ON L4Y 3G5 (416) 625-0400 (H), 597-1999 (B).

Schleicher. ASK-21, 23, ASW-22, 24, ASH-25. Ulli Werneburg, 1450 Goth Avenue, Gloucester, ON K1T 1E4 tel/fax (613) 523-2581.

AIRSPACE – NO RELIEF YET

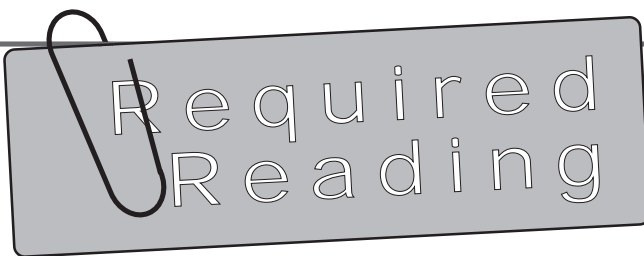
Scott McMaster, SAC Airspace committee

This winter airspace restrictions have dominated the minds of Canadian soaring pilots to an extent unprecedented in the history of the sport in Canada. The near simultaneous implementation of two major initiatives: air traffic services (ATS) privatization, and the revision of terminal control area (TCA) airspace, have left many in the soaring community confused, upset, and looking for answers. In response to the onslaught, SAC reformed its Airspace committee in the early summer of 1996 with the appointment of Bill Green (VSA) to the long vacant committee chair. As the extent of the airspace problem became obvious, two more members were added to assist him: Ian Grant (Gatineau) and Scott McMaster (SOSA). Since then there has been a flurry of activity at both the national and the regional levels. This article is an attempt to bring SAC members up to date on the current situation.

Aeronautical Information Circular (AIC) 2/95

The now infamous AIC 2/95 was our first notification of a major expansion to the TCAs around large Canadian airports. Here the term “large” is applied rather loosely, meaning in this case any airport with more than 100,000 movements a year. AIC 2/95 was superseded by AIC 4/96 last fall but the thrust remained the same: all airports in Canada warranting a TCA will get a version of the standard TCA, which is 45nm in diameter. As stated by Ms Jennifer Taylor (Chief of Airspace Standards, Transport Canada) at the SAC AGM, TC always intended that these TCAs would be individually modified as local circumstances required. In practise, the regional Nav Canada centres had enough on their plate during their recent privatization and it was difficult for them to allocate sufficient resources to modify the imposed TCAs according to the standards required by NavCan. Mr. Dave Merritt (Airspace Manager, Nav-Canada) was also at the SAC AGM and he indicated that many of the regions were submitting proposals to reduce the size of their TCAs (most notably Calgary), but since these proposals did not meet NavCan’s airspace revision process guidelines they were not being considered. Since just about all soaring clubs in Canada lie within 45nm of a major airport, this has caused major concern!

You would be justified in wondering where all of this agony materialized from. In her talk, Ms Taylor gave us the time line from TC’s perspective. The process started with a midair collision in Southern California in the mid 1980s. An airliner hit a small airplane just outside the boundaries of an existing TCA. Both aircraft crashed in a residential neighbourhood, all on board were killed. This accident led TC (paralleling air transportation agencies in numerous other countries) to start the “Midair collision avoidance initiative” in about 1988. For those of you with long memories, it was during this study that the current glider transponder exemption was granted. As a result of this initiative many study groups on various detailed issues were established including a review committee on TCA structure. All the groups had reported their findings by



about 1989. Ms Taylor believes that SAC was invited to participate in a number of these groups but that when we did not respond, TC stopped asking for our input. In any event, our interests ended up being represented by the Royal Canadian Flying Club Association (now the Aero Club of Canada), and Canadian Owners and Pilots Association (COPA).

Completion of these studies allowed the bureaucracy to start working and in 1993 it produced what would become AIC 2/95. It was here that the consultation really broke down (as Ms Taylor readily admitted). TC headquarters sent out the proposed TCA structures to the regions to get “regional input”. Apparently very few regions responded and when TC received no feedback they basically sent out the original proposal as AIC 2/95. When AIC 2/95 first hit glider pilots’ mail boxes it was ignored out of a sense of disbelief that TC could be considering anything that was such blatant overkill. The rest, as they say, is history

The extent of the problem So what is the situation at clubs across Canada? The TCAs defined in AIC 4/96 affect SAC member clubs around Edmonton, Calgary, Winnipeg, Toronto, Ottawa, Montreal, Quebec City, and Halifax. Of these, Cu Nim (Calgary), Kars and Gatineau (Ottawa), Quebec Soaring (Quebec City), and Bluenose (Halifax) are currently experiencing detrimental airspace changes. The immediate priority for SAC has been to help these clubs get some relief for the upcoming season. This has mainly taken the form of technical (and moral) support to the clubs’ negotiating committees as they bargain with their local TCAs to get “Memorandum of Understanding” (MOU) and/or Class F advisory areas established to facilitate their operations this season. Individual clubs’ current situations, as of March 20, 1997, are described below:

- Vancouver area clubs and the Edmonton Soaring Club are far enough from their respective TCAs to be relatively unaffected.
- At Calgary, the new TCA had been cancelled by NOTAM until 28 April. At the AGM, Ms Taylor and Mr. Merritt stated that the NOTAM would be extended to mid-August. However, the following week SAC was informed by Mr. Merritt that a new TC NOTAM on 28 April will reinstate the AIP 30/96 airspace enlargement but designate the airspace Class D rather than C for an indefinite period. Current efforts of regional NavCan staff to obtain a reduced TCA (20 vs 35 nm) are subject to an “aeronautical study” by NavCan HQ which argues against hope of a fast resolution to this problem.
- The Winnipeg Gliding Club has obtained an MOU for a glider flying area that satisfies the club’s needs.
- Around Toronto the “standard” TCA, if implemented, would have a serious impact on several area clubs. Worse, many proposals have been floated that include TCAs with extended low floors and upper areas out as far as 52 nm! The Toronto area clubs (led by SOSA) have had discussions with ➔ p14

return address:

Soaring Association of Canada
Suite 101 – 1090 Ambleside Drive
Ottawa, Ontario K2B 8G7



SAC Clubs

ATLANTIC ZONE

BLUENOSE SOARING CLUB
Ron Van Houten
17 John Brenton Drive
Dartmouth, NS B2X 2V5
(902) 434-1032

QUEBEC ZONE

AERO CLUB DES OUTARDES
Gérard Savy
16 Place Valmont
Loraine, QC J6Z 3X8
(514) 621-4891

ASSOCIATION DE VOL A VOILE CHAMPLAIN
Sylvain Bourque
820 des Grosseilliers
Boucherville, QC J4B 5S2
(514) 641-1766

CLUB DE VOL A VOILE DE QUEBEC
Gilles Boily
12235, Mgr Cooke
Quebec, QC G2M 2M5
(418) 843-8596

MONTREAL SOARING COUNCIL
Box 1082
St-Laurent, QC H4Z 4W6
(613) 632-5438 (airfield)

CLUB DE VOL A VOILE MONT VALIN
3434 Ch. Ste Famille
Chicoutimi, QC G7H 5B1

ONTARIO ZONE

AIR SAILING CLUB
Christopher D. Manning
417 Lakeshore Road East
Oakville, ON L6J 1K1
(905) 849-4596

ARTHUR GLIDING CLUB
10 Courtwood Place
North York, ON M2K 1Z9

BASE BORDEN SOARING
Box 286
Borden, ON L0M 1C0

BEAVER VALLEY SOARING
Doug Munro
187 Chatham Avenue
Toronto, ON M4J 1K8
(416) 466-1046

BONNECHERE SOARING
Iver Theilmann
7 Hoffman Avenue
Petawawa, ON K8H 2J4
(613) 687-6836

CENTRAL ONTARIO SOARING ASSOCIATION
Keith McKenzie
21 Princess Street
Markham, ON L3P 1K4
(905) 294-2148 H
(416) 490-7156 B

ERIN SOARING SOCIETY
Box 36060
9025 Torbram Rd
Bramalea, ON L6S 6A3

GATINEAU GLIDING CLUB
Rick Officer
1085 St. Jovite Ridge
Orleans, ON K1C 1Y6
(613) 824-1174

GUELPH GLIDING & SOARING ASSOCIATION
G. Ritchie
259 Cole Road
Guelph, ON N1G 3K1
(519) 763-7150

LONDON SOARING SOCIETY
Sue & Chris Eaves
11 Pinehurst Drive
Dorchester, ON N0L 1G2

RIDEAU GLIDING CLUB
Box 307
Kingston, ON K7L 4W2
(519) 285-2379

RIDEAU VALLEY SOARING
Box 1164 (served by machine)
Manotick, ON K4M 1A9
(613) 489-2691

SOSA GLIDING CLUB
Pat O'Donnell
74 Lincoln Avenue
Brantford, ON N3T 4S9
(519) 753-9136

TORONTO SOARING CLUB
Stephen Foster
10 Blyth Street
Richmond Hill, ON L4E 2X7
(905) 773-4147

WINDSOR GLIDING CLUB
Eric Durance
785 Bartlett Drive
Windsor, ON N9G 1V3

YORK SOARING ASSOCIATION
10 Courtwood Place
North York, ON M2K 1Z9

PRAIRIE ZONE

PRINCE ALBERT GLIDING & SOARING CLUB
Keith Andrews
219 Scissons Court
Saskatoon, SK S7S 1B7
(306) 249-1859 H
(306) 933-7498 B

REGINA GLIDING & SOARING CLUB
Bryana Florence, Box 4093
Regina, SK S4P 3W5
(306) 536-4119 or 545-3366

SASKATOON SOARING CLUB
John Toles
45 Churchill Court
Saskatoon, SK S7K 3W9
(306) 652-7909

LAKEHEAD GLIDING CLUB
Hans Schulz
98 Vera Avenue
Thunder Bay, ON P7A 6T6

WESTMAN SOARING CLUB
2615 Rosser Avenue
Brandon, MB R7B 0G1

WHEATBELT SOARING CLUB
Douglas Campbell
Box 101
Sovereign, SK S0L 3A0
(306) 882-3738

WINNIPEG GLIDING CLUB
Susan or Mike Maskell
489 Lodge Avenue
Winnipeg, MB R3J 0S5
(204) 831-8746

SWAN VALLEY SOARING ASSN
Sam Namaka
Box 1827
Swan River, MB R0L 1Z0
(204) 734-3404

ALBERTA ZONE

CENTRAL ALBERTA GLIDING CLUB
Jerry Mulder
4309 Grandview Boulevard
Red Deer, AB T4N 3E7
(403) 343-6924

COLD LAKE SOARING CLUB
Randy Blackwell
Box 5108, Stn Forces,
Cold Lake, AB T9M 2C3
(403) 594-SOAR

CU NIM GLIDING CLUB
Keith Hay
7 Scenic Glen Gate NW
Calgary, AB T3L 1K5
(403) 239-5179

EDMONTON SOARING CLUB
John Broomhall
1040 - 107 Street
Edmonton, AB T6J 6H2
(403) 438-3268

GRANDE PRAIRIE SOARING SOCIETY
Box 22044
Grande Prairie, AB T8V 6X1
(403) 539-6991

PACIFIC ZONE

ALBERNI VALLEY SOARING ASSN
Doug Moore
RR3 Site 310 C6
Port Alberni, BC V9Y 7L7
(250) 723-9385

ASTRA
Christine Timm
9280 - 168 Street
Surrey, BC V4N 3G3
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(604) 574-4141 B

BULKLEY VALLEY SOARING
Ted Schmidt
Box 474, Smithers, BC V0J 2N0
(250) 847-3585
(250) 847-2231

EAST KOOTENAY SOARING CLUB
Mike Cook
509 - 5 Avenue
Kimberley, BC V1A 2S8
(250) 427-5471 H
(250) 427-5563 F

PEMBERTON SOARING
Box 725,
Pemberton, BC V0N 2L0
Peter Timm (604) 589-0653
Rudy Rozsypalek (604) 894-5727

VANCOUVER SOARING ASSN
Hans Baeggli
Box 3251
Vancouver, BC V6B 3X9
(604) 434-2125 H
(604) 278-2533 F