3/06
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free flight • vol libre

Priorities

John Toles SAC president

Phil Stade served as Alberta Zone Director the past four years and SAC president the past two. He has accepted a position closer to home and is now Executive Director of the Alberta Soaring Council. John Mulder, of the Central Alberta Gliding Club, is the new Alberta Zone director. Kevin Bennett recently announced he is stepping aside and, as I write, the Pacific Zone clubs are in the process of selecting a new representative. Sylvain Bourque, the Eastern Zone Director, has taken on the responsibilities of vice-president. Doug Scott continues as Ontario Zone Director, while I am looking forward to thyechallenges of being SAC's president and representing the Prairie Zone.

On behalf of the SAC board and membership, thanks Phil and Kevin for your past contributions and your continuing service on SAC committees. It is a pleasure working with the current Directors, committees, and with Jim McCollum. His dedication, financial background, and understanding of a wide range of issues have contributed to a strong national organization.

A series of Safety Management System workshops across the country has now been completed. Feedback has been very positive. The membership of SAC asked the directors to address the problems of high accident rates and resulting high insurance costs (AGM, Calgary 2004). The issue was raised again at the 2005 AGM in Ottawa. The response of the board was to empower the FT&SC to proceed with a Safety Management System program similar to what Transport Canada has outlined for commercial operators and in line with accepted industry standards. The result, developed in less than a year, is a set of documents that individual clubs may use to identify and address safety concerns. The SAC board fully supports this initiative. The SMS model provides the tools. It is up to the individual clubs and members to determine how these can be utilized to improve safety.

SAC was founded more than sixty years ago by a group of far-sighted glider pilots who recognized that it was essential to have a strong national organization if our sport was to survive and grow. Since then, many dedicated volunteers have contributed to the growth and development of SAC. I hope to continue this tradition. I accept change as necessary for growth. Possible supportive joint programs with sister organizations such as COPA will be investigated. A motion to this effect was presented to the Vancouver AGM. While recognizing that there is room for improvement in our organization, I am committed to retaining SAC as the best way of representing the interests of Canadian glider pilots. I look forward to your continuing support. ❖

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Cover
The now rare and still beautiful Minimoa on display at Aventoft (a glider club in the northeast of Germany close to the Danish border), 1 June 1996. Jan Scott sold it to Gerd Allerdissen in 1996. The original German registration number that it had when Wolf Hirth owned it was again applied. Gerd is the current president of the German Aero Club.
photo: Peter Seliger

Questions of club culture

and the fear of reporting

by anon.

GLIDING HAS INHERENT RISK — we are always a lot higher than we are willing to fall. We do try to minimize that risk through awareness, training, experience and, yes, some policing. But ultimately, flying at the recreational level will involve some degree of risk. There are just too many variables, the most significant being the pilot. Commercial aviation tries to minimize those risks, and does a good job — by invoking rules, technology, more training, multiple individuals using decision-making management techniques, and teams of other individuals to monitor the pilots. There has been talk of eliminating the pilots entirely with the use of technology — you all have heard the old joke about the pilots and the dog in the cockpit. The dog is there to bite the pilots if they touch a control (and the pilot's job is to feed the dog).

I believe much of recreational flying would lose appeal if it did not contain an element of risk. There is a subset of humankind that enjoys the challenge of confronting their mortality in sports such as flying, climbing, paragliding, kayaking, back-country skiing, etc. Sure, we all try to use skills, experience and technology to minimize the possibility that you will confront your Maker during a flight, but in the end, removing all risk would remove the challenge. Read a bit of sports psychology if you don't believe this is true. Secondly, individuals do make mistakes and they will continue to do so. And in recreational flying, it is the *individual* who must guard against future mistakes of the same sort. Not the system. Those who fail to gain experience end up paying the price (which can cost their club dearly also). There are two ways of gaining experience: personal experience or learning from the mistakes of others.

A recent event at my club generated a good incident report from the affected pilot. The key thought here is that individuals must feel their incident will be used in a positive fashion to improve the overall experience level of all pilots rather than as a stick to beat the individual submitting the report. As a club we must encourage the sharing of experiences as a learning tool rather than as a vehicle to police individuals. There have been past instances where pilots who tried to share their experiences were then sanctioned by some senior pilots rather than thanked for sharing their mistakes. This tends to inhibit their growth as better pilots and in some cases caused them to leave the sport entirely.

One thing that has struck me during my time with my club is that we expect too much from our students and early stage licensed pilots. We seem to expect them to be perfect. Of course they can't be. They are still learning and one hopes they will continue to learn throughout their flying careers. By its very nature, learning new skills may result in "incidents" and if the student/new pilot survives these incidents then they can add that to their store of experience and develop wisdom. Criticizing any mistake has a number of drawbacks:

- It slows student development. The best instructor one can hope for is someone who is willing to sit there and let the student or licensed pilot make mistakes and then guide them to understand how to correct the error without destroying their growing sense of confidence and accomplishment.
- Student licensing is delayed thus turning them off the sport. The "wait time" is too long and they go to another club or leave the sport entirely.
- The culture actually inhibits the development of safe pilots who admit mistakes, learn from them and pass their knowledge along to others in the hope others will not repeat their mistakes.

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 com-posed of national aero clubs. The ACC delegates to SAC the supervision of FAI related soaring activities such as competition sanctions, processing FAI badge and record claims, and the selection of Canadian team pilots for world soaring championships.

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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. An e-mail in any common word processing format is welcome (preferably as a text file). All material is subject to editing to the space requirements and the quality standards of the magazine.

Images may be sent as photo prints or as hi-resolution greyscale/colour .jpg or .tif files. Prints returned on request.

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 Zone Director.

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Deadline for contributions:

5 **January, March**
May, July
September, November

L'ASSOCIATION CANADIENNE DE VOL À VOILE

est une organisation à but non lucratif formée d'enthousiastes et vouée à l'essor de cette activité sous toutes ses formes, sur le plan national et international. L'association est membre de l'Aéro-Club du Canada (ACC), qui représente le Canada au sein de la Fédération Aéronautique Internationale (FAI), laquelle est responsable des sports aériens à l'échelle mondiale et formée des aéroclubs nationaux. L'ACC a confié à l'ACVV la supervision des activités vélivoles aux normes de la FAI, telles les tentatives de record, la sanction des compétitions, la délivrance des insignes, et la sélection des membres de l'équipe nationale aux compétitions mondiales.

vol libre est le journal officiel de l'ACVV.

Les articles publiés dans *vol libre* proviennent d'individus ou de groupes de vélivoles bienveillants. Leur contenu n'engage que leurs auteurs. Aucune rémunération n'est versée pour ces articles. Tous sont invités à participer à la réalisation du magazine, soit par des reportages, des échanges d'idées, des nouvelles des clubs, des photos pertinentes, etc. L'idéal est de soumettre ces articles par courrier électronique, bien que d'autres moyens soient acceptés. Ils seront publiés selon l'espace disponible, leur intérêt et leur respect des normes de qualité du magazine.

Des photos, des fichiers .jpg ou .tif haute définition et niveaux de gris peuvent servir d'illustrations. Les photos vous seront retournées sur demande.

vol libre sert aussi de forum et on y publiera les lettres des lecteurs selon l'espace disponible. Leur contenu ne saurait engager la responsabilité du magazine, ni celle de l'association. Toute personne qui désire faire des représentations sur un sujet précis auprès de l'ACVV devra s'adresser au directeur régional.

Les articles de *vol libre* peuvent être reproduits librement, mais le nom du magazine et celui de l'auteur doivent être mentionnés.

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Again I feel strongly that it is the *individual* who must create a personal culture of safety for their flying. The only way to do this is through skills development and continual self-awareness. This is severely impeded if the club culture is not supportive. Even those students who may be low on self-awareness can be mentored and guided.

Incidents are not accidents. Incidents are good learning tools both for the pilot who is brave enough to admit they really aren't perfect pilots, and for the other club members here and elsewhere. Again, incidents are *good*. The pilot survived, no one got hurt, experience is gained and shared. Wisdom develops. A better pilot results. Applause is heard when the pilot describes the event.

Read some aviation history of Canada's early days (or still today) in the sparsely settled areas. Some of the best pilots we have alive today, now flying 747s, came from surviving crashes, mishaps, pilot errors, equipment failures, and poor decisions about the weather. They developed really good decision-making skills and passed the knowledge along to us.

Another analysis from the same club by anon. #2

It is generally understood that flying involves too many judgement calls in an uncertain environment for anyone to remain absolutely safe. Therefore the only option is to create a safety margin by flying prudently. It is the occurrence of incidents that lets us know that we have left the prudent zone, and so are reducing that margin. The only way to stay in the prudent zone is to be extremely conservative. However this means that rather than improving our skills, we are letting them degenerate by staying away from any circumstance that may challenge us. Eventually even this strategy will fail, as degenerating skills will steadily erode the safety margin until incidents again start to occur.

The only conclusion one can draw is that incidents are *inevitable* for any active pilot. Incidents are bad only if they are: not recognized, or not acknowledged, or not used as learning experiences, or repeated (by the individual or group). Some of this happens at our club — there is a reluctance to report incidents within a significant segment of our membership, so our situation regarding incident reporting is a significant safety issue. This reluctance is in itself an incident, a repeating incident which is handicapping the safety process. An informal survey revealed the following two reasons (there may be more):

- A concern that incidents will be used as cause for discipline via reprimand, sanction, etc. This could happen either at the time, or at the end of the year as part of a trend analysis.
- The perception that an incident report is an acknowledgement that something was done "wrong".

How can this reluctance to report be minimized? First, the club (or Safety committee) makes it clear that incident reports *submitted* by a pilot will *not* be used as the basis for reprimand or sanction of that pilot. Second, the club (or the Safety committee) makes it clear to everyone that an incident report is *not* an admission of fault or error, but rather a retrospective analysis of how a given flight could have been made safer, without sacrificing the objectives of the sport.

Of course, it is understood that there are rare occasions when preventative action (ie. discipline), regarding an individual pilot is necessary. It must be clear that this will, on the unanimous decision of the entire Safety committee, be based on a pilot's lack of recognition of or response to incidents (repeatedly taking unnecessary risks, or inability/unwillingness to recognize involvement in incidents, for example), not on incident reporting as such.

On the concern that incident reports will be used to sanction pilots
This is a real concern. Claiming that is not justified will not make it go away. Although an incident report is "anonymous", the identity of those involved is usually known. Therefore any possibility that it can be mis-used is real and a disincentive to report. The misuse of incident reports, or inappropriate reaction to incidents, should be recognized as an incident in itself because this behaviour reduces the safety of the club.

⇨ **p20**

Weather *does* influence flying!

Tony Rywak, SOSA

a look at various factors at SOSA

SOARING, LIKE MANY OUTDOOR SPORTS, is very dependent on weather. So, it may be an obvious statement that "weather affects gliding club flying activity". While this may be generally accepted as an obvious assumption, it's important to understand quantitatively how weather influences this activity. For instance, many clubs hold promotional events (mall displays, exhibits at shows promoting outdoor sporting activities, etc.) in an effort to recruit new members and increase club flight numbers. However, to use the number of flights per year as a measure of success for these promotional efforts without taking into account the impact of weather on the soaring season may lead to erroneous conclusions. Since our club has recorded annual flight statistics for many years, it should be possible to put the theory to the test — that the number of annual flights at SOSA Gliding Club is quantitatively dependent on regional weather.

Location SOSA is located in southern Ontario, between Hamilton and Cambridge, and near the town of Rockton. The club falls within the *Great Lakes/St. Lawrence* climatological region, as defined by the Meteorological Service of Environment Canada, the national weather bureau of the Canadian government. The Meteorological Service publishes annual temperature and precipitation departure data for Canada's climate regions from 1948 to the present. This data may be found at their web site: <*www.mscsmc.ec.gc.ca/ccrm/bulletin/archive_e.cfm*>.

The influence of temperature Figure 1 presents a graph of the number of flights made per year at SOSA versus the annual temperature departure for the climate region in which the club is located. This data is for the period from 1991 to 2005. Positive temperature departure indicates above average (warmer) annual conditions, and negative temperature departure the opposite. The graph would indicate that warmer annual conditions correspond to years of higher flight activity, and vice versa. One might expect this trend as below average temperature conditions would likely result in a late start and an early end to a flying season. It's interesting to note that for the 15 years presented in this study, 10 had temperatures at or above the 58-year average.

Annual temperature variations do not always occur at random. For example, the second largest volcanic eruption of the twentieth century occurred in 1991 when Mt. Pinatubo on Luzon Island in the Philippines exploded. The cloud of ash and volcanic gas that was injected into the atmosphere by this eruption impacted global temperatures for the next two years. In 1992 and 1993 a global cooling of approximately 0.3°C was noted. This cooling effect was more pronounced in the northern hemisphere, which experienced an average temperature reduction of 0.5–0.6°C during this period. Furthermore, this temperature reduction was particularly strong in the summer of 1992, with cooling of more than 3°C in the northern USA and southern Canada *(1,2)*. Not surprisingly, since 1991, the two years with the fewest number of flights at SOSA were 1992 (2386 flights) and 1993 (2552 flights).

The influence of precipitation Figure 2 presents a graph of number of flights made per year at SOSA versus annual precipitation departure. Positive precipitation departure corresponds to a wetter year, and negative departure indicates a dryer year. Although the correlation of number of flights to precipitation departure does not appear to be as strong as that shown in the flights versus temperature data, a line of best fit indicates that, as expected, years with below average precipitation correspond to years of higher flight activity and vice versa.

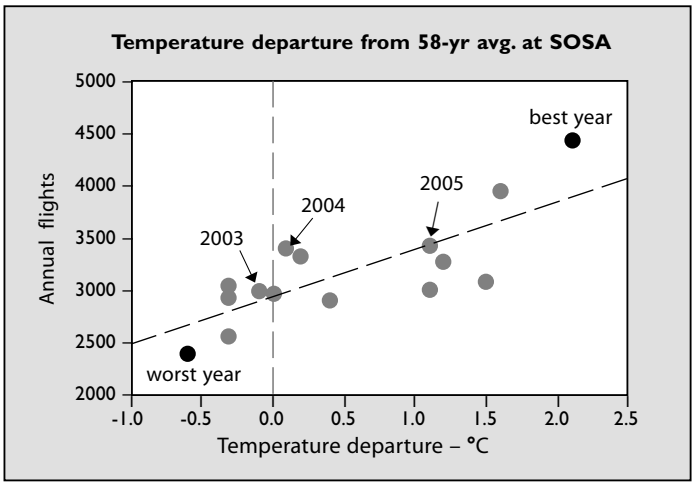


Figure 1 The annual flights at SOSA (1991-2005) versus annual temperature departure from the 58-year average for the climate region in which SOSA is located.

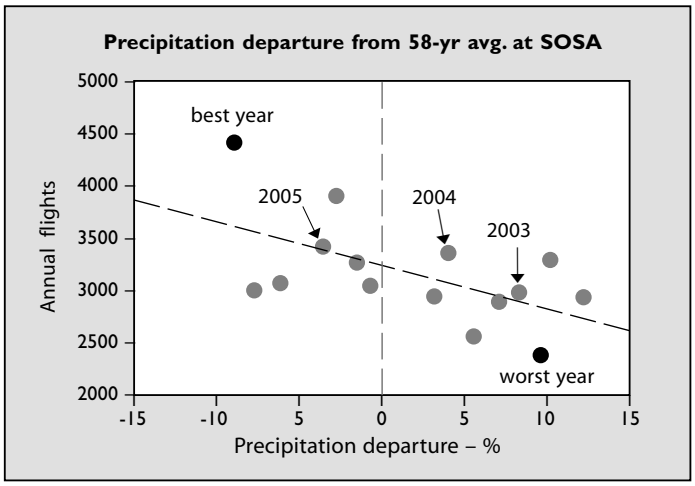


Figure 2 The annual flights at SOSA (1991–2005) versus annual precipitation departure from the 58-year average for the climate region in which SOSA is located.

Precipitation/temperature departure relationship The data presented in Figure 3 appears to explain why flight activity at SOSA may be correlated to both temperature departure and precipitation departure. The graph indicates that warmer than average years also tend to be drier than normal, and vice versa. As expected, a warm dry year favours soaring and a cool wet year does not.

Other factors Aside from weather, are there additional factors that might influence flying activity at a gliding club such as SOSA, factors that could possibly account for data scatter in Figures 1 and 2? If weather is the only factor, then the data points in these graphs should fall randomly above or below their corresponding lines of best fit. Although the data scatter appears random, there is a way to examine this further.

Figure 4 presents a graph of difference between actual flights in Figure 1 and their trend line over time. If the weather were the only factor affecting the number of flights, then the data points in Figure 4 would also be random but they are not. The data varies regularly, swinging above and below the trend line. Positive numbers correspond to more flights than expected, and negative numbers indicate the opposite. This is a strong indication that the scatter in Figure 1 is caused by a secondary effect and not just random fluctuations.

A factor affecting the flight activity could be disposable income. So, also indicated in Figure 4 is the approximate strength of the economy over the period. For example, the early 1990s was a time of economic recession, and the mid to late 1990s were years of economic growth. A relationship of economic strength to flight activity might be expected, and this shows. During a good economy, club members may have extra money and time to devote to flying, whereas in poor economic times, some club members may have less disposable income for flying and less time to fly due to greater demands at work.

There are other possible factors but they did not correlate to the data. A comparison of the annual flights at SOSA to the number of flying members was unexpectedly inconclusive. Also, SOSA hosted national contests in 1994, 1997, and 2001 — the extra flights generated by these contests may be hidden in the data.

Limitations of this study A more detailed study of this data would be of interest, such as a three-dimensional analysis correlating number of annual flights as a function of both temperature and precipitation departure. Such a study might also incorporate a quantitative measure of economic strength. In addition, annual weather data that is more specific to the location of SOSA (eg. for Cambridge or Hamilton) may be available for a more detailed characterization.

Conclusions It would appear that annual flight activity at SOSA may be quantitatively dependent on annual regional temperature and precipitation, with a possible secondary dependence on strength of the economy. Since weather services such as Environment Canada prepare seasonal forecasts that predict temperature and precipitation departures for upcoming months, it may be possible to use such forecasts as a guide to predict an upcoming flying season.

Perhaps the best conclusion to be drawn from the analysis is that, due to variations in weather, annual flights will vary. Until we can control the weather, there isn't much we can do about this effect, so we should take advantage of every good soaring day and fly when we can!

Acknowledgements Many thanks to Pat O'Donnell for providing the annual flight data presented in this article, and to Tony Burton and Jörg Stieber for many helpful suggestions. The use of data provided by the Meteorological Service of Environment Canada is also greatly appreciated.

References

(1) Robock, A. Volcanic Eruption, Mount Pinatubo. *An Encyclopedia of Global Environmental Change*. MacCracken, M.C. and Perry J.S., Eds. John Wiley & Sons, 2002; Vol. 1, p737. *<http://climate.envsci.rutgers.edu/pdf/EGECPinatubo.pdf>*

(2) Rosenberg, M.T. Mount Pinatubo Eruption: The Volcanic Eruption of 1991 that Cooled the Planet. *<http://geography.about.com/library/weekly/aa030901a.htm>*

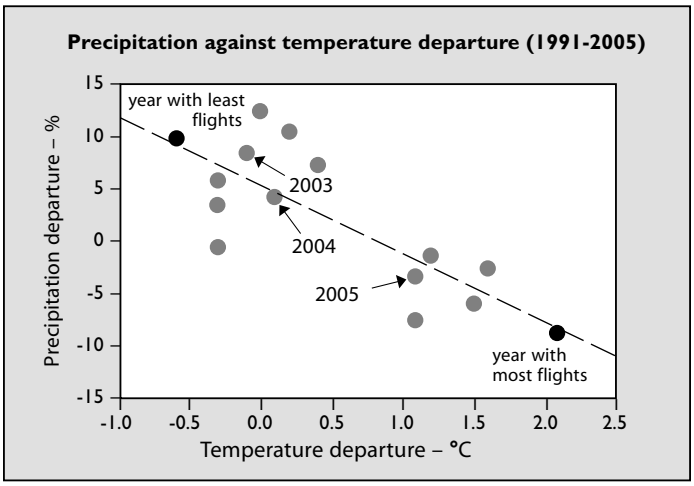


Figure 3 Precipitation departure versus temperature departure (1991-2005) for the climate region in which SOSA is located.

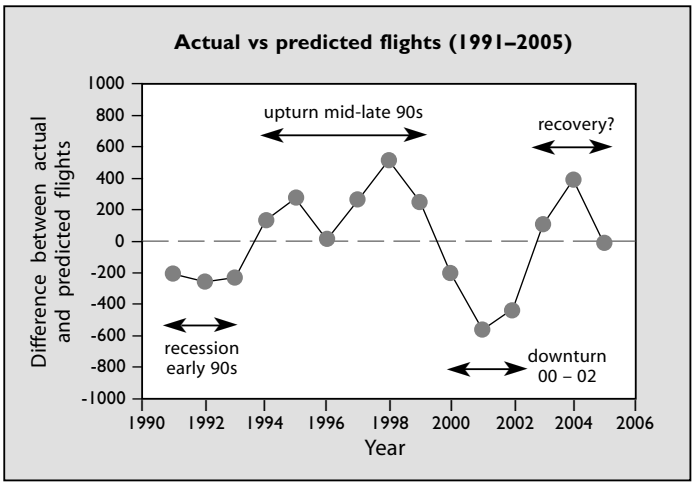


Figure 4 Actual less predicted annual flights at SOSA, 1991-2005. Predicted flights are derived from Figure 1. The general state of the economy for this time period has been highlighted.

Make mine a Mini

Jan Scott, from *Bungee Cord*

Peter Seliger

The famous late-30s *Minimoa*. The photo was taken at the International Meise (Olympia) Meet in July, 1988 at Winzeln in the Black Forest area of Germany. Jan Scott was flying. The meet celebrated the 50th anniversary of the first flight of the Meise at the end of 1938 or January 1939.

BACK IN 1933, while Wolf Hirth was running the glider school at Edmund Schneider's facility in Grunau, he designed a revolutionary new high performance sailplane, which he called the Grunau 7 *Moazagotl*, named after the lenticular clouds associated with wave conditions. The large 20m span sailplane was very light, and it was the first sailplane ever to carry water ballast. Most noticeable on the Moazagotl was the shape of the wing; a gull-like knee half way out toward the tip, with swept back outer sections and gracefully rounded ailerons protruding aft from the trailing edge. Hirth obtained the advice and assistance of Dr. Friedrich Wenk in the design of the radically new wing concept. Wenk had pioneered the gull wing on his *Weltensegler* flying wing in 1920. After Hirth founded his own sailplane manufacturing plant in Göppingen in 1935, he began design work on a smaller, improved version of the Moazagotl with a 17m span. This new design that followed two earlier models, mostly copies of Schneider designs, was the Göppingen 3 *Mini-Moazagotl*, later shortened to Minimoa.

The early models were quite different from later ones. The first prototype was a high wing model, where the stick was mounted inverted above the pilot's head. The second prototype was also a high wing model but with the stick now mounted on the floor. Several improvements followed:

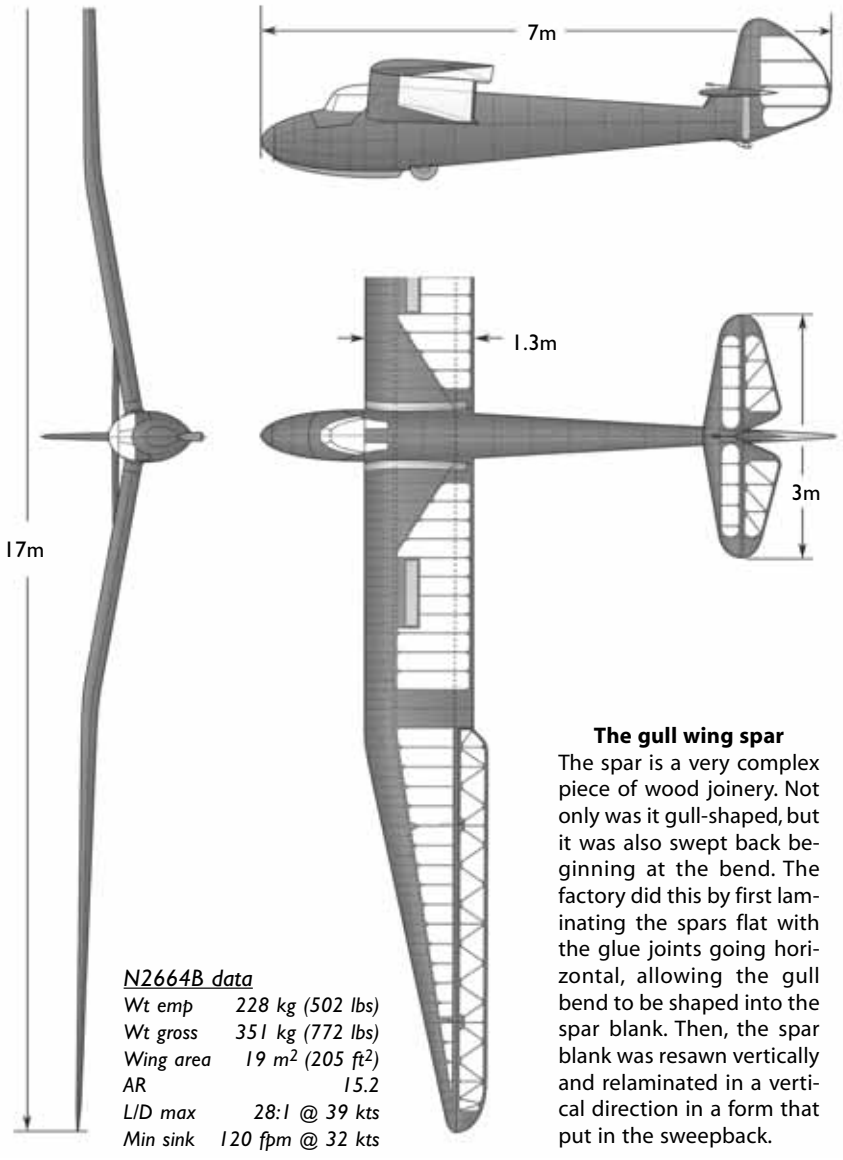
- ineffective landing flaps were replaced by spoilers and later, dive brakes,
- the original "Wolf" type rudder was enlarged,
- wing lowered to shoulder position,
- wing dihedral was increased,
- wheel brakes added, etc.

The glider was offered from the factory with two fuselage options, a single place and a two place version. The standard wings were designed to carry the extra weight of the larger fuselage. Only one two-place version was built — it was nearly impossible to get in and out of the rear seat, visibility was near zero, and the landing wheel had to be removed to accommodate the extra seat.

About 125 Minimoas were built by the Göppingen and later the Schempp-Hirth company. The last one was completed in the summer of 1939. A few of the last were refined competition models with droppable wheel dollies.

D-8064 (now **N2664B**) A great many sailplanes were destroyed in Germany during and immediately following World War II. A few were captured and brought to Allied countries for study. Over time, most of these were also destroyed. Werk No. 184, which eventually became mine, was reportedly removed from the Schempp-Hirth factory by Wolf Hirth and hidden at some secret location where neither the German nor US governments found it. When civil aviation was allowed to restart in Germany in 1951, Hirth unveiled it and returned it to his facility at Nabern. There the remaining AD work and certification was completed. No. 184, now registered D-8064, was then taken to the gliding centre at Homberg where it was Wolf Hirth's personal sailplane.

Shortly before Hirth's fatal accident in 1959, the Minimoa was sold to Hans Steiner, who took it to Switzerland where it was registered as HB-626. No. 184 did not have the mandatory dive brake modification issued in 1941 that applied to all German sailplanes because it had been hidden away at the time. A few months after purchasing the Minimoa, while attempting an outlanding, Steiner



N2664B data

Wt emp	*228 kg (502 lbs)*
Wt gross	*351 kg (772 lbs)*
Wing area	*19 m^2 (205 ft^2)*
AR	*15.2*
L/D max	*28:1 @ 39 kts*
Min sink	*120 fpm @ 32 kts*

The gull wing spar

The spar is a very complex piece of wood joinery. Not only was it gull-shaped, but it was also swept back beginning at the bend. The factory did this by first laminating the spars flat with the glue joints going horizontal, allowing the gull bend to be shaped into the spar blank. Then, the spar blank was resawn vertically and relaminated in a vertical direction in a form that put in the sweepback.

overshot the field because of the ineffective spoilers and seriously damaged the glider. Quickly and professionally repaired, it ended up with a slightly different nose and a new bubble canopy that had been standard equipment on some of the 1939 Minimoas.

In 1964, Steiner sold the Minimoa to Klaus Rudolph, who owned a paint store in Regensburg. Five months later there was another overshoot of a field while attempting an outlanding in Austria. This time the Mini apparently went back to Schempp-Hirth for repairs and remained there until February of 1966, when it was seen by George Kern of California, who was at Schempp-Hirth's Kirchheim, Teck plant to place an order for a Cirrus. The waiting list for a Cirrus was rather long, so he managed to buy the Minimoa, which at the time apparently belonged to Schempp-Hirth. The deal stipulated that they would be allowed to buy it back when George's Cirrus was ready for delivery. George brought the Mini to California, where it was registered N2664B. It became a well-known and much admired sight at soaring events during the late 1960s. He made several notable distance flights and even completed his Gold badge in it! When his new Cirrus finally arrived, the factory wasn't interested in taking the Mini back, so he sold it to Harold Palmer of Seattle in 1972.

By now, the "Mini" was showing some wear and tear, so Palmer, after flying it a couple of years, put it in Art Penz's restoration shop for a complete refurbishing. It emerged a couple of years later looking like a brand new glider. Art had spared no effort to obtain a show finish, using large amounts of filler and many rubbed coats of butyrate dope. All-white with metallic blue and gold trim, it outshone even the newest of the glass ships. Art also modified the brake system. Standard on the Minimoa are two levers side by side on the cockpit floor – one operates the spoilers, the other the wheel brake. Unless the pilot developed some fancy technique of operating both levers the proper amount at the same time (most did not), he was faced with the sometimes agonizing decision of whether to use spoilers or the wheel brake during a fast rollout. This was the very cause of the two outlanding accidents in Europe. Art connected both controls to a common T-handle as on the 1-26, thereby eliminating the problem.

All the filler and dope had added a lot of weight, most of it behind the cg. Thus the minimum pilot weight was now a hefty 210 pounds!

In 1978, while I was president of the Vintage Sailplane Association, Harold called me and said that he had taken up sailing and wanted to sell the Minimoa. Could I put an ad in the VSA newsletter, *BUNGEE CORD*? At the time there were only three other Minimoas flying in the world, and their owners were always turning down offers to buy. I asked him what he wanted for it; he told me, and I bought it sight unseen there and then. I had never seen a Minimoa in the air, I never sat in one, nor did I even know if my 6'-4" frame would fit! These were all secondary concerns — by golly, I owned a Minimoa — and the best looking one in the world too!

I had a two week vacation coming, so I set out from Virginia to pick it up in Ephrata, Washington in July, and for the next five days raced thunderstorms and rainshowers all the way back to Virginia and made it home without getting the Mini wet at all on the open trailer.

A week later it was time for my first flight in it. I took it to the local soaring school at Warrenton and assembled it without difficulty with the help of my wife Mai and a couple of bystanders, although the wings were heavy and cumbersome to handle due to their gull shape. I managed to squeeze into the cockpit, but the way I was wedged in there, the safety belt seemed unnecessary. The tow was easy as long as the nose was pointed right at the towplane's tail. Any skid, however, would result in a bank that could barely be overcome by the ailerons. Once off tow however, I found it very easy and docile to fly. Visibility was quite poor except forward and up. The

Why the gull wing? Martin Simons

The gull wing question pops up fairly often and there is no one simple answer – it isn't even true that gulls have wings like that, they keep their wings pretty straight.

The first glider with something like the "gull" form was the disastrous *Weltensegler* tailless glider which soared briefly before breaking up and killing its pilot in 1921 (pages 13-15 of my *1920–1945* volume). The sight of this glider actually climbing immediately after being bungeyed off the hill excited everyone who saw it. Whatever the reasons of designer Friedrich Wenk, many, including Alexander Lippisch I suspect, thought the gull form must have some advantages even though it complicated the construction.

Lippisch introduced a very slight kink in his own *Storch* tailless gliders and this was perpetuated on the *Falke* training glider, though you would hardly notice it unless you looked carefully. In 1930 came Lippisch's famous *Fafnir,* often described as the most beautiful sailplane ever. My own interpretation is that Lippisch had realized by now that some dihedral was useful for stability in circling flight. Nearly all gliders before this had no dihedral except for a little taper on the underside. I think there was a belief that tilting the outer wing up must cause some loss of efficiency. So the *Fafnir* had some dihedral, but the outer wing was flat.

I think several ideas came together here: Wenk's design, a mistaken appreciation of bird's wings, the need for some dihedral, the notion that a flat outer wing would be more efficient, and the aesthetic element. At any rate, the *Fafnir* was a great record breaker. Dittmar had gull wings on his *Condor*, which was built partly from the *Fafnir* plans, and he set records; Lippisch continued with the *Fafnir 2* which set more records, and so on. As so often happens, when a champion pilot happens to fly a particular aircraft, less able pilots think the sailplane was responsible rather than skill, so they follow the fashion.

A specious argument also appeared. When it was recognized that drag could be reduced by mounting the wings lower on the fuselage instead of on a high pylon or neck as with the *Wien, Rhönadler, Rhönbussard, Professor,* etc, there was some increased risk of ground looping if one wing was a bit low on takeoff or landing. So, it was said, by using the kinked wing form, the tips could be raised higher off the ground. It wasn't admitted that exactly the same result could be achieved using straight wings with a few degrees of dihedral. Hans Jacobs, who advanced this argument, used gull wings on most of his designs after the *Bussard*, including the fabulous *Reiher*, but with the *Weihe* of 1938 may have realized it was quite unnecessary.

Most notably for the present subject, when Wolf Hirth wanted a new super-sailplane in 1933 he turned to Wenk. The result of this was the 20m, strut-braced *Moazagotl* which had a swept back wing shape and gull form like Wenk's original *Weltensegler*. The *Moazagotl* was very successful and led directly to the 17m *Minimoa* of 1935. When Wolf Hirth was asked about the aerodynamic advantages of the gull wing, he replied, "None, but it sure sold a lot of Minimoas".

ailerons were weak and the spoilers did very little spoiling — but boy — did it thermal!

After about an hour I returned to the field. I decided to come in low and slow. On downwind I found that I could not see the runway once I was past the threshold, which made pattern planning difficult. On final, I was too high; fortunately it slipped well, but I still used most of the runway touching down about 15 mi/h too fast. I had noticed a strange rattling during the flight which I later found was made by the tapered wing bolts that were not properly seated. I learned that these must be tightened while someone unloads the wing by pushing up on the wing tips.

Over the next seven years I had many wonderful flights in the Minimoa. I completed my Silver badge in it, but soon realized that long flights were out of the question for me because of the cramped cockpit.

By 1986 the effect of the 28-30 layers of dope was showing. Butyrate dope never stops shrinking, and the delicate structure of the Mini was being squeezed and twisted. Art had neglected to provide drain holes and it did not occur to me to add those until some interior moisture damage was evident. In short, it was time for another overhaul.

I contacted two groups in Europe with great expertise in restoration of gliders: the Münster Oldtimers Club in Germany, and Aerofa in Hungary. The plan was to take the Mini to Europe and fly it in the International Vintage Glider Rally, leave it to be restored, then fly it again in the rally the following year. And so it went. The Münster club was chosen for the job. They had just finished the restoration of their own Minimoa and *Goevier* trainer and were looking for another project. So after the 1987 rally in Aalen, Germany, I left the Minimoa at Hahnweide near Stuttgart where it would participate in an airshow before going into the shop in Münster.

The restoration performed by the Münster group under the direction of Paul Serries was immaculate. It resulted in the awarding of the *"Best in Show"* prize at the International Rally in Bourges, France, in 1988, and also the VGC Restoration Prize for 1988. I left the Mini in Europe for another year. During that time it participated in several airshows where it actually earned enough money to pay for a fair portion of the restoration costs. The airshows were flown by qualified Dutch, British and German pilots, at times with two other Minimoas. In 1989 I took it to the International Rally in Hungary where I had the unforgettable experience of flying it over the centre of Budapest on a beautiful and sunny day.

N2664B spent most of its time inside its trailer in a dry building. I took it to special events, but rarely flew it at its home base. It was displayed at Oshkosh in 1994 and it also participated at the 1995 International Vintage Sailplane Meet in Elmira NY. It was displayed in the exhibit hall in Indianapolis and Huntsville during the annual SSA Conventions held there. It was advertised for sale in early 1996 to the highest bidder, with the winning bid coming from the Aventoft Club in Germany.

I sold it mainly because I was not comfortable in it. The cockpit was rather cramped, and I was really too tall for it. Hanna Reitsch told me that she had flown the Mini while it was owned by Wolf Hirth, and if she could fly it, as tiny as she was, you can imagine how I felt in there.

The 3-view of the Minimoa is extracted from a graphic in *Sailplanes, 1920-1945*, by Martin Simons, ISBN 3-9806773-4-6, published by EQIP Verlag of Königswinter, <*eqip@eqip.de*>. ■

Something like the real thing

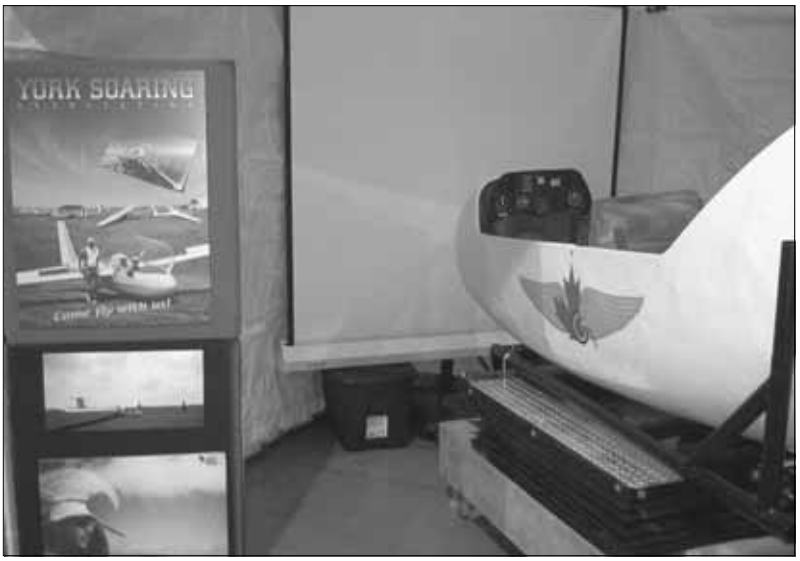
Paul Moggach, York Soaring

LIKE A LOT OF GLIDER PILOTS, I'm interested in the mechanics of the aircraft just about as much as I am in flying them. However it has been my obsession with flight instruction that has led me to building a full-sized glider flight simulator.

From the outset (at least twenty years ago) I have looked for ways to improve the instructional process. During the first ten years this meant examining the conventional flight training curriculum and in-cockpit techniques. However, I eventually began to come up against the "wall", in that the gains were coming in smaller increments. While there were still some difficult things to teach efficiently such as the landing, the real issues were not in teaching students how to control the aircraft but rather what to do with it. The other area that was not efficiently taught was emergency procedures. Some of them were just too dangerous to practise or demonstrate, while others required a lot of recurrent training.

The normal way to approach some of these issues in the past was to lengthen the training schedule as there was little being done in the way of recurrent instruction. Others tackled various instructional problems with the use of motorgliders. But ten years ago, it became apparent to me that I might be able to build a flight simulator for some reasonable amount of money to help with these issues. I felt that for all of the same reasons that simulators were used with commercial aircraft that they would be good for our environment as well.

Well, talk is cheap and so are glider pilots, so this idea just bounced around for a few years. Fortunately, desktop computers and flight simulation software became more powerful and cheaper as I mulled things over. Finally I decided to start and recruited a few like-minded pilots at York. In my own mind the budget was $5000 and that's before I set any of the actual criteria for the simulator. Then we just started acquiring things whether we needed them or not as long as they were free. In the end, the criteria were to use a single-seat cockpit, a 3-axis motion platform, and an image projected on a 6 foot wide screen.



The simulator display at the Outdoor Adventure show in Toronto in February, showing it with its full electronic instrument panel and mounted to the motion platform.

Whenever we talked outside our circle about this there were always objections about what motion would be necessary, but I felt confident that within the parameters we were choosing, this would be sufficient for the kind of experience we were looking for. Motion did seem important to me; however, in the gliding environment for most normal flight instruction, I didn't think I would have to pay too much attention to the accelerations. The jury is still out on this, but the initial signs support this approach. We also looked at head-mounted displays versus projection and the projection won out. In any event we made the decision to go ahead feeling that we could fix or add anything as required.

So that's how we started and of course the zero-based budget dictated that things would proceed at a leisurely pace. Until a year and a half ago, there was still not much to show in the project. Then along came the *Freedom's Wings* program at York for disabled flight, and as they say, the rest is history.

Actually, what really happened was that we started our flight training program for the disabled with a Krosno. Almost immediately we found that there were a lot of demands on a single aircraft. We needed something to show with our outreach programs, and we were doing a lot of flying and competing for the same resource. As well, we were becoming more sensitive to the problems that the disabled had with transportation. There could be large gaps in a student's flight training program due to this so that every flyable day was precious. Since the simulator ideas were idling away in the background it was only a matter of time before we thought that this might be a solution to some of our problems.

So the next conversation was about money. *Youth Flight Canada* was willing to fund the project if it could be done for a reasonable price. When I first talked with Charles Petersen we came quickly to a money versus time equation. If we were going to follow the path of the first simulator project, it would cost $8000 and take 2–3 years. As glider pilots we felt we were pretty virtuous, but that patience wasn't necessarily one of them. We eventually settled on a $25,000 budget and an ASAP time-frame of let's try to do in a year!

The criteria had changed in this process too. ⇨ **p21**

Walter Chmela inducted into Canada's Aviation Hall of Fame

CANADA'S AVIATION HALL OF FAME inducted four new members who have made significant contributions to Canadian aviation at a formal ceremony held in Montreal on 27 May. The inductees bring to just 200 the number named for pioneering or advancing aviation and space endeavour in Canada since the Hall was established in 1973. Those accepted into the Hall are the select few whose contributions have been recognized to be of significant benefit to Canada. The Hall's goal is to maintain, preserve and promote their accomplishments.

Two of the inductees, Walter Chmela, of North York, ON, and Fern Villeneuve, of Carrying Place, ON, are named for significant support of the Air Cadets. Their induction texts are:

Walter Chmela has displayed tireless devotion to the grass roots promotion and growth of soaring, including the development of practical supplementary glider programs for Air Cadets. These activities have been of significant importance to aviation in Canada.

Fern Villeneuve developed a passion for military aerobatics, and was the initiator and lead member of the RCAF Golden Hawks team (precursor to the Snowbirds) in the 1959. His longstanding work with the Canadian Air Cadet gliding program have helped shape the modern Air Service and have proven a lasting benefit to Canadian aviation.

The Aviation Hall of Fame is located in the hangar at the Reynolds-Alberta Museum in Wetaskiwin, Alberta. The 200 members inducted have come from across Canada and have led extraordinary lives as military and civilian pilots, doctors, scientists, inventors, aeronautical engineers and administrators. The Hall strives to increase the public's understanding and interest in aviation history by making its displays, archives, records and artifacts accessible to current and future generations. The heroism and courage embodied in the Members of the Hall serves to kindle the spirit of adventure in Canada's youth.

Walter Chmela in back seat readies for a 2-32 spin check for York Soaring instructor Wayne Eaves who was migrating into 2-32 instructor status on the afternoon of 11 July 2004.

Walter was nominated a few years back by his colleagues and friends. The nomination is then submitted to a panel of 6 or 8 aviation experts from across Canada, who meet in the fall of every year to choose the new inducted members. They wade through the nominations and score them on a marking scheme of 100. The key criterion that has to be met is their lasting contribution to Canadian aviation. After selection, the inductee is contacted for personal information and a photograph to be used at the Induction ceremony and later in the permanent display panel erected in the Hall of Fame. At the dinner, they are awarded a certificate of induction and non-offical medal. Their photo is also reproduced in charcoal by a portrait artist, and they will have their biography published in the CAHF book, *They Led the Way*.

Soaring has had only one previous inductee, one of SAC's pioneers, Julien Audette. The story of his induction and soaring biography is in *free flight 4/1989*, archived on the *free flight* web page.

Biography Walter Frank Chmela was born in Vienna, Austria on 28 May 1926. From an early age he was interested in aviation. He was an avid model aircraft builder and participated in many competitions. Enthusiasm for the sport of gliding was taking hold in his country at the time, and he made his first solo flight in a German SG-38 primary glider in 1940. At the time, all first flights were solo, and the glider was bungey launched off a hillside. He received his Glider Pilot Licence in 1943.

Following high school, he studied machine design at the Technical High School, and law at the University of Vienna. From 1948 to 1950 he worked in technical administration during the reconstruction of Vienna. In 1950 he immigrated to Canada with just $25 in his pocket. He worked for several years in engineering as an electrical designer and designer of special purpose machinery, tools and dies.

In 1962 he formed his own company in Toronto that provided personnel and consulting engineering services for mining, petrochemical, automotive, and general manufacturing industries. Walter operated his company for 33 years until 1995.

When he arrived in Canada, Walter found few opportunities to continue with gliding, but with his 'can do' attitude and persistence, he made it happen. He co-founded the Harmony Gliding Club in 1954. It needed towpilots

so he took flying lessons, earning his Private Pilot Licence in 1956, and bought a British Auster to use as a towplane.

In 1961 he founded York Soaring, providing the land and supplying the towplanes and gliders, and soon rounded up help to build two large hangars and a club house. By then he had his commercial licence, his multi-engine rating, and the glider instructor rating, including aerobatics. Over the next 45 years he has inspired others by his many personal achievements.

From 1970 to 1984, Walter organized wave flying camps at Black Forest Gliderport in Colorado Springs, where he taught high altitude flying to groups of up to 20 pilots, lecturing on the physiology of high altitudes and the use of oxygen, and conducting orientation and instructional flights. He gained his 'Diamond C' badge and set six Canadian gliding records in the USA, three of which still stand after 30 years or more, most notably the Absolute Altitude (citizen) of 12,449 metres (40,840 feet), flown at Black Forest in 1974.

Walter's encouragement for young people to enjoy flying is legendary. Over a period of 34 years, from 1972 to the present, he has organized annual flying training camps for the Royal Canadian Air Cadets at York. More than 500 cadets have graduated from these camps.

In 1973 he was named Instructor of the Year by SAC. In 1976 and again in 1993 he was presented with Achievement Awards by the Ontario Ministry of Culture, Tourism and Recreation. In 1993 he was awarded the prestigious FAI *Paul Tissandier Diploma* for long and devoted service to the sport of soaring.

Since 1984 he has served as President of the Ontario Soaring Association, an organization dedicated to providing umbrella services to all of Ontario's gliding clubs.

But Walter's real contribution to the sport is as a builder and promoter, as represented by his work with York Soaring. York's expressed goal is to introduce more people to the sport and provide instruction at a reasonable cost. He has served as its President and Treasurer since 1961. He was CFI for about 10 years, a towpilot, and recruiter of new people into the sport. York has won SAC's *Roden Trophy* for the most efficient club many times between 1974 and 1988.

Under his leadership, York Soaring has grown to be one of the largest and busiest in Canada. It has about 150 members and its fleet now consists of 19 gliders and 5 towplanes. It has its own 200-acre airfield at Arthur, Ontario, complete with a serviced campground and a ten-bunk trailer for cadets. In each of the past 15 years it has averaged 5000 aerotows, 600 introductory flights, mostly to first timers, and 2500 instructional flights. Each year the club graduates an average of 25 new licensed pilots. As well, Air Cadet training camps are held concurrently with normal club flying operations, and he is organizing the first ever Air Cadet Officers' glider pilot training camp for 2006.

He remains very active in the club, looking after maintenance of the aircraft and field and its finances. As well, he arranges meetings and takes care of membership, which continues to grow. His spirit of volunteerism still sets a high standard and his enthusiasm for the sport has never diminished. ■

Club sustainability, growth and safety management

Roger Hildesheim, Gatineau

these are not mutually exclusive factors
a case study in implementing a gliding club management system

ABOUT 3 YEARS AGO, THE GGC BOARD was looking for a way to resolve issues that were affecting the club. Membership, volunteering, and safety were the big topics, as they are in just about every gliding club in Canada. After discussing the symptoms we decided that identifying and fixing the root causes would be the most productive way to tackle the issues. The root issues identified were:

- The club had lost, for various reasons, several experienced, knowledgeable members. Most of their knowledge was not documented. Consequently we were at risk of losing legacy operational know-how.
- It was becoming clear that only a handful of members understood how to perform the many core activities around the club.
- Fewer members were having to shoulder more of the everyday work. The learning curve for new club members to become productive volunteers in activities that supported the flying operation was too long.
- Our flightline was not running nearly as efficiently as it had in previous years.
- We were suffering from repeated flightline incidents and hangar rash which pointed to a general lack of understanding of general ground/flight operations.

In short, we were at risk of losing over 60 years of operations experience and exposing ourselves to relearning those lessons the hard way.

Looking at these root issues we realized that the symptoms were not unique to Gatineau Gliding Club. They are common to many commercial and not-for-profit organizations.

Many gliding clubs adopt an informal approach to management. Like other small organizations, there is little system as such, just "our way of doing things", and "our way" exists in the heads of the club elders. This informal approach has the advantages of flexibility and minimum effort. But it has drawbacks in terms of transparency and consistency. It fails to preserve knowledge of "what works," which puts the organization at risk as members depart. Informality also makes it hard to demonstrate compliance with regulatory requirements.

Any organization can better manage its way of doing things by systemizing it. This ensures that the important things are covered and everyone is clear about who is responsible for doing what, when, how, why and where. In the end, being more effective and efficient will result in increased member satisfaction.

The Plan With that in mind, and not wanting to reinvent any wheels, we looked to management system models used by other organizations to address similar issues. Two obvious models jumped out at us:

- ISO 9000 for quality management systems.
- Transport Canada Safety Management System (SMS)

Most of us have heard of the ISO standards for management systems. "Management system" simply refers to what an organization does to manage its activities in order that the services it produces meet the objectives it has set itself, such as the following:

- enhancing member satisfaction,
- complying with regulations, and
- meeting safety objectives.

The Transport Canada SMS model is similar to ISO 9000 but with a strong bias toward safety as the primary element to be managed.

We realized that a simple blend of these models would help to address the issues GGC faced in managing the gliding club operation.

Implementation We wanted our system to address flying and non-flying operations. We also wanted a way of clearly and logically presenting information. Our operations documents would need to be rich in photos and graphics to assist in communicating the information. Last but not least, we did not want to create a monster that consumed more energy than it saved. Our "system" is based on a three tier approach:

The *top tier* is the overall guiding principles or "why" the club exists which includes the letters patent, bylaws and top level operations manual.

The *second tier* includes the "what" we do to meet members needs and manage safety. This includes our flight operations, ground operations and safety management manuals.

The *third tier* has the details of "how" we do the things we need to operate. This includes our "Guides" such as our Field Manager Training Guide and Tow Rope Maintenance Guide. This document structure is given in Figure 1.

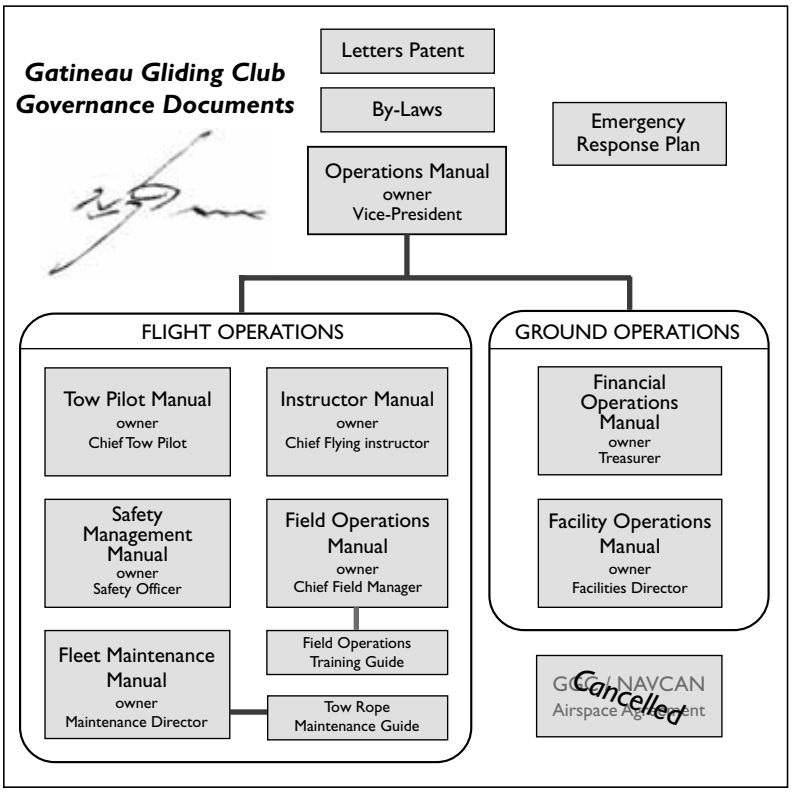


Figure 1

Additional documents exist for our Emergency Response Plan and our NavCan airspace agreement (recently cancelled by NavCan, but that's another article). All these charters, manuals, and guides have been posted in .pdf format on the member's section of the club web site.

Each manual is assigned to a responsible member in the club such as the CFI, Safety Officer, Chief Tow Pilot, etc. Once a year we ask these folks to sit down and look at incorporating any lessons learned and improvements to their part of the system.

Results Before anyone laments the corruption of our "pure" sport by bureaucracy, take a deep breath and hear me out. We implemented this system for the 2005 season. What happened you might ask?

- The number of new members in our club increased. Our membership committee now had a defined package of information which could easily be used to indoctrinate new members into our operations.
- Flightline efficiency improved and the number of flights rose.
- We had no high severity incidents/accidents for the first time since 1998, and turned around a multi-year increasing trend in incidents/accidents related to ground operations.

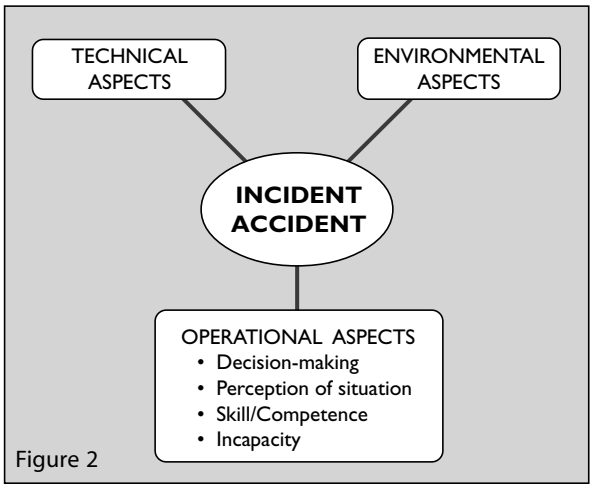


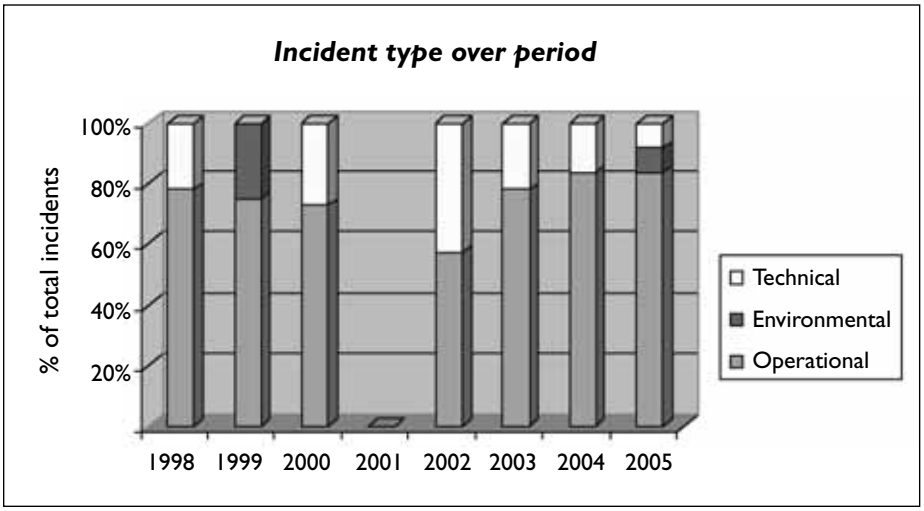
Figure 2

At GGC, we use our safety management system approach to collect data and to analyze incidents annually to identify trends using the template shown in Figure 2.

Once a trend is identified, we target specific actions as our annual improvement focus. Notice I said "trend" and not trends. My experience at tracking metrics in organizations is that the greater the number of things that you try to manage, the greater the energy required from the organization and the greater the risk that the system will fail completely. It is better to focus on fixing a small number of trends/issues rather than shooting at a large number of trends/issues/actions. A sample set of this trend data is given in Figure 3.

We hold at least two operations/safety briefings a year (once in spring and once mid-season) to review flight operations procedures, highlight safety items and to introduce new club members to the dynamics of running a safe and efficient flightline.

Figure 3



Conclusion Capturing and organizing a club's operational knowledge and communicating it to the membership is a critical part of club management.

Although 1–1/2 years is far from a definitive test, we believe we have shown that a club can manage and improve operations in ways we never thought could be done. We are actively soliciting feedback from members and are continuing to refine our procedures.

Finally, I would like to thank the GGC board of directors under President Ray Bastien for their support. We were fortunate to have a diverse set of perspectives and operational backgrounds on our board. I would also like to thank Dan Cook for laying the groundwork as a former senior instructor and safety officer at GGC.

The Ambulance in the Valley

Here's some verse by "anon" for you to read if your club is waffling about conducting a hazard analysis of its infrastructure and operations. Go to the SAC web site Documents page for the *Club Hazards* and *Risk Assessment* forms.

T'was a dangerous cliff, as they freely confessed,
Though to walk near its edge was so pleasant;
But seeking the view there had slipped not a few:
A Prince, and a Duke, and oft many a peasant.
The people said something would have to be done,
But their projects did not at all tally.
Some said, "Put a fence 'round the edge of the cliff",
And some, "An ambulance down in the valley".

The cries of the crowd was profound and quite loud,
As their hearts overflowed with their pity,
And the cry for the ambulance carried the day
As it was spread through the neighbouring city.
A collection was made to accumulate aid,
And the dwellers in highway and alley
Gave dollars and cents – not to furnish a fence,
But an ambulance down in the valley.

"The cliff is all right if you're careful", they said;
"It isn't the slipping that hurts them so much
As the shock down below when they're stopping".
So for years (we have heard) as these mishaps occurred,
Quick forth would the rescuers sally,
To pick up the victims who fell from the cliff,
With the ambulance down in the valley.

Then an old sage remarked, "It's a marvel to me
That people give far more attention
To repairing results than to curing the cause;
When they'd much better aim at prevention.
For the mischief, of course, should be stopped at its source;
Come, neighbours and friends, let us rally,
If the cliff we will fence, we can almost dispense
With the ambulance down in the valley."

"He is wrong in his head", the majority said;
"He would end all our earnest endeavour.
He's a man who would shirk this responsible work,
But we will support it for ever.
Aren't we picking up all, just as fast as they fall,
And giving them care quite liberally?
A superfluous fence is of no consequence
If the ambulance works in the valley".

The story looks queer as we've written it here
But things oft occur that are stranger.
More humane, we assert, than to succor the hurt
Is a plan for removing the danger.
So a sensible few, who are practical too
Bore with such nonsense no longer,
Scorned all pretense and put up a stout fence
On the cliff that hangs over the valley.

the "Comfort Zone" principle

Pssst! Let's talk. Recent gliding accidents have indicated that all instructors are not comfortable with when they should take control from a student during flight instruction. Some instructors have argued that many instructors take control too soon and don't give the student enough latitude to practise. This problem may be true in some situations but it has the potential to lead quickly to an unsafe situation. Worse still, some instructors never stop manipulating the controls while the student practises the air exercise. Usually there is a fear that the student will put the instructor into an unsafe situation. Unfortunately, the student never gets a true feel for the glider's response and learning the necessary handling skills is very much slowed.

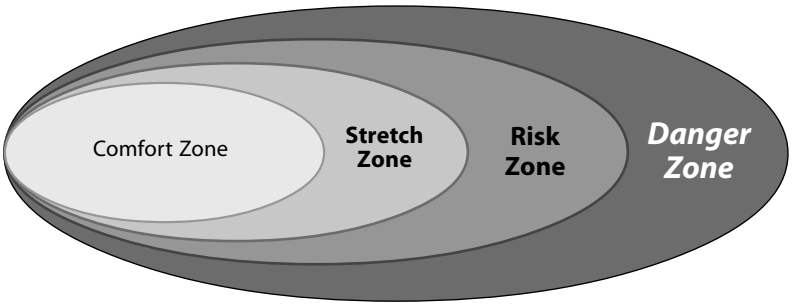
To assist instructors in understanding how far is too far, we will examine a risk management model that describes comfort zones.

The *Comfort Zone* model illustrates how challenging situations can have both positive (expanding) and negative (reducing) effects upon a participant's personal view of their own experience. The large goose egg represents a pilot's overall total knowledge, skill, and experience. The Comfort Zone represents one's personal level of satisfaction with the risks in flying. These are the elements of safety that protect us and make us feel comfortable. As long as pilots operate the glider within their personal comfort zones they should be able to conduct the flight safely. The *Stretch Zone* represents flying activity that is beyond their normal experience and skill level and therefore outside their normal comfort area. Flying in this range under supervision can be safe. However, the new experience will develop a pilot's capabilities introducing them to new experiences, skills and knowledge.

The *Risk and Danger Zones* illustrated are beyond the pilot's normal range of capabilities; flight exercises attempted in these zones may not have suitably safe outcomes.

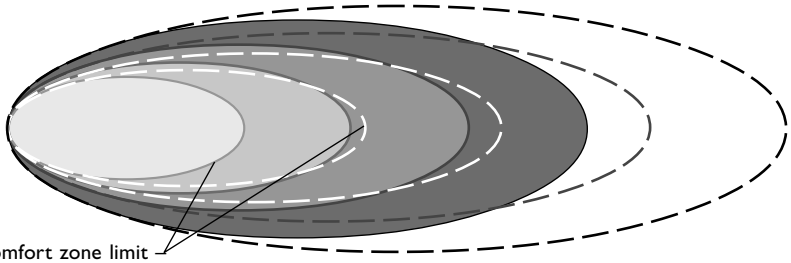
Based on the *Law of Primacy*, if the instructor takes a student into the Risk or Danger Zone this could be a negative learning experience (example: a stall/spin exercise too early will likely inhibit later training).

A good glider instructor will use the knowledge of their student's capabilities (zones) to allow the student to experience flight in the Stretch Zone thus learning from new experiences. The instructor will take control from the student when the flight moves towards the limits of the student's capability to handle the exercise safely (Risk Zone). The instructor must never allow the flight to progress to the Danger Zone where the student is not capable of maintaining the flight safely. Of course the instructor has more experience, knowledge and skill than the student does. The instructor's Comfort Zone should easily encompass the student's Stretch Zone. If the



Thanks to Kevin Molonev, BGA Safety who presented this model at the OSTIV Training & Safety Panel 2005.

Possible relative size of a student's zones (solid colours) compared to the relative size of an instructor's zones (dashed lines).



Comfort (Minimal learning)	**Stretch** (Good learning)	**Risk** (Marginal learning)	**Danger** (No learning)
Personal symptoms			
• Good feeling about flight • Alert but relaxed • Easily managing flight & maneuvers • No stress symptoms	• Slight butterflies in pit of stomach • Heightened alertness • Start asking yourself questions/ options & mentally providing answers to yourself • Some stress symptoms: hair standing on end, goose bumps	• Burning in pit of stomach/ nausea • Easily distracted/may have difficulty focusing on problems • Asking yourself questions but no longer providing answers to yourself • Under stress and sweating/heart rate higher	• No feeling/numbness or extreme nausea • Tunnel vision starts to set in, only able to focus on one thing • Loss of situational awareness (airspeed/traffic/etc.) • High stress, rapid or irregular heartbeat
Student symptoms observed by instructor			
• Student notices elements/ situation of flight without prompting • Handles all tasks • Relaxed noticeable head movement looking around	• Less talkative or may ask more questions • May express lack of confidence/ request assurance • Weaker scan technique • May have to focus on new task & need promoting to complete others • Becomes a bit restless, may mention being uncomfortable	• Stops asking questions, may seem distracted • Has difficulty answering questions, nervous voice pattern • May not respond quickly to verbal/physical control prompts • Head fairly still • Sweating visible, pale clammy skin colour behind ears, breathing deliberate	• Does not respond to questions • May stop flying & become passenger • No response to verbal/physical prompts on controls • No head movement • May freeze on controls • White skin tones, breathing irregular

instructor allows the student to go into the instructor's Risk Zone, the flight is not being conducted safely. This model is only good if instructors can identify these zones in themselves and in their students. How do you tell what is the limit of your perceived Risk Zone let alone your student's?

When you are in your Comfort Zone you may experience personal symptoms similar to those described in the table across. This table is based on observations made by instructors. These symptoms may or may not be evident in an instructional flight nor are they limited to those expressed. Everyone is different and all instructors need to learn about their own symptoms and those of their students to develop their own criteria. The table will give you references to help you start measure the transition between Comfort and Stretch Zones. Body language, physiological responses, speech patterns/tone and the ability to communicate are indicators to read the symptoms.

When coming towards critical times in a flight lesson (eg. landing phase) the instructor may ask questions about the flight to find out indirectly what zone the student may be in. If the instructor listens to what is said, and notices how the student responds, more information becomes available. Lack of response is a bad sign and taking control is recommended until you find what the problem is. At a critical point in the flight if a verbal prompt is made to the student and an immediate response is not seen, the instructor must take control.

Often an instructor will look for head movement. Proper scan procedure is one of the first techniques to deteriorate near the end of a student's Stretch Zone. If possible, one can also look at the back of the ears/neck for colour of skin and signs of sweat. As an instructor, any time a student takes you into your own Stretch Zone you should take control and put the flight back into your Comfort Zone.

Escalation of zones can also progress very quickly. For example, in spin recovery exercises you may find yourself in your Risk Zone quite quickly. Anticipation and prompt response are necessary. However, more often than not, it will be a student or another pilot who is performing well who will surprise you. Also moving from the student's Stretch Zone to Risk Zone may be subtle. Don't let your guard down, stay alert and keep looking for clues from your student.

Lastly we need to mention the *instructor/ student syndrome* described in the Glider Instructor Manual. Don't fall into the trap where the student sees some aspect of the flight isn't correct but continues, thinking the instructor will prompt a fix, and the instructor is waiting for the student to correct and doesn't issue a prompt in time. The table gives examples of Safety Zone symptoms.

In summary, please remember that a serious accident with an instructor on board is *never* acceptable. We are in the aircraft to fly safely first and to instruct second. Stay in your Comfort Zone if you are instructing and keep your students out of their Risk/Danger Zones!

Dan Cook, Safety Officer

Important Notice, especially for CLUB SAFETY OFFICERS and CFIs

The Safety Workshops held recently indicated that SAC pilots wanted more safety information on the web. The interim solution (for data collection/distribution) is to use the Safety Section of the SAC Round Table web site <*sac@sac.ca*> which now includes:

1. *CFI Forum, part I* This is an open forum for discussions at CFI level on training issues and suggested agenda items for a closed CFI Form (part II) which will be a web-based meeting for CFIs. Details TBA but the first test meeting is in May, electronically hosted by David Donaldson. For CFIs or club Safety Officers to register for the meeting, contact David at <*www.dragonsong.ca*>.
2. *Incident Reports* Open Forum for reporting of incidents and safety information.
3. *Safety Alerts* Closed Forum safety issues FT&SC wants to pass on to all pilots.
4. *Type Check Out Database* Checklists/notes for type conversion by type.
5. *Accident Summaries* List of annual SAC accident reports, and "Lessons Learned".

Feel free to post safety information/discussion under these headings. If your club has a glider not listed in the type checkout database, please add the notes. The Instructor Manual is now on the SAC Documents page (with an improved version on the way).

Miscellany

Death of the birdman

The ornithologist Angelo d'Arrigo, who recently died in a plane accident aged 44, was variously dubbed "the birdman" and "the human condor".

On 24 May 2004 he stunned a group of climbers on the summit of Mount Everest when he swooped closely over them in a non-motorized hang glider at a height of just under 9000 metres, or close to 30,000 feet. No human had ever done so, nor has since. The *Over Everest* project took more than two years to prepare, including high altitude tests of both men's reactions in the wind tunnels and flight simulators of the Italian Air Force.

Pilots, climbers and scientists had told the Franco-Italian it would be impossible to survive such a flight in temperatures as low as -50°C, at a wind-driven speed of more than 100 mph, even with a fighter pilot's helmet and oxygen mask — which was why he did it. He was, he said, "following the dream of Icarus" as he soared over the 8850m (29,035 feet) summit in the company of Himalayan eagles and British pilot Richard Meredith-Hardy, who had towed him within 1000 feet of the sum-mit in a microlight.

"No Limits" was d'Arrigo's motto, his e-mail address and the logo on his helmet. But he was also known for his charity work on behalf of children he met on his travels — including rejected Romanian AIDS victims — as well as for his work as an ornithologist.

In 2003, d'Arrigo, flying a motorized hang-glider as part of a Russian ornithology project, "guided" a flock of endangered Western Siberian cranes, born in captivity, for 3400 miles to show them the species' traditional migratory route from the Arctic Circle, across Siberia to the shores of the Caspian Sea. He and they flew up to 120 miles for six hours each day, with d'Arrigo showing them how to save energy by using thermal currents. He also chose their overnight resting places.

Two years earlier, he had completed the first "free flight" over the entire Sahara desert and the Mediterranean, following the migratory path of desert hawks. A year ago, d'Arrigo acquired two Andean condors' eggs from a university in Austria and decided he would attempt to be their "mother," without whom condors rarely learn to fly.

They hatched in a nest at his aviary, on the slopes of Mount Etna in Italy, which he had covered with a black and white hang glider, shaped like a condor, to get them imprinted on its shape and presence. He regularly took off with the craft, carrying hidden food, and returned to feed them. In recent months, as they grew, he had been giving them flying lessons around Mount Etna and had hoped to release them in their natural habitat, in the Peruvian Andes, later this year.

On January 6 this year, d'Arrigo beat the hang-gliding altitude record he had set over Everest when he overflew the Tupungato volcano in the Andes, on the Chile-Argentina border.

Although the volcano, at 6570 metres (21,555 feet) is lower than Everest, he used the unique thermal air currents which race up the volcano's cone walls from the Pacific to soar to a recorded height of 9100 metres. He said he had learned of these currents by studying the flight of native condors and following their path.

D'Arrigo spent his later years at his No Limits Etna Centre, the spot chosen because "it is where the elements mingle — earth, water, air, and fire".

thanks to **Stewart Midwinter**

the SAC/Air Cadet Treaty of Pepin the 1st

Once upon a time, during the regime of *Pepin le 1er,* SAC and the Air Cadet League of Canada realized that it made sense to cooperate, rather than try to dump boiling oil from parapets and catapult rotting corpses from siege machines at each other.

Accordingly, a treaty known as the Treaty of Ottawa, was signed in the year of our Lord MCMXCVIII; henceforth each organization agreed to cooperate and support each other when it made sense to do so.

In keeping with the spirit of this accord, SAC partook to distribute the summer issue (#3) of *free flight* each year to the 300 plus cadets taking the annual Air Cadet League glider pilot training course. Successful cadets on the course also receive an "A" badge.

So, to the Air Cadets that are reading this now, I hope you are enjoying the magazine. You can also join the Soaring Association of Canada at no cost — all you need to do is e-mail your mailing address to <*sac@sac.ca*> to be added to the database and you will continue to get the magazine.

By the way, SAC aside, there was a Pépin le 1er. He became the king of Aquitaine at age 14 in 817 and croaked in 838. Of course you will recall that he was the son of Louis le 1er, also known as Louis le Pieux (the Pious) and with whom he had an important family squabble — involving pitched battles, etc. I wasn't referring to that Pepin.

Jim McCollum

What should you drink?

Dr. Ken Wishaw, from *Gliding Kiwi*

I would like to offer an alternative opinion to the recommendation often made that only water should be taken during long soaring flights. I am a medical specialist (anaesthetist) and fluid physiology and fluid management is a central part of my practice every day.

On long hot flights the strict adherence to water only may in fact degrade performance to the point of being hazardous. A few facts need to be understood as to why this is so. If basic arithmetic and technical details turn you off, skip to the recommendations!

Our blood and body fluids normally contain 135–150 millimoles (mmols) of sodium and 100 mmols of chloride. We sweat at a rate of about 1/2 to 1 litre per hour on a hot day while gliding. Additionally we lose water at high altitude from breathing air with a low water content.

What we lose in sweat depends partly on our genetic makeup, but more importantly on if we are acclimatized or not to the conditions. The more acclimatized we are the less sodium and the more potassium we lose in our sweat. Sodium losses for a person that is well acclimatized is of the order of 5–30 mmols per litre. For someone who is not acclimatized (say an office worker who flies one or two days a week), sodium losses in sweat may be of the order of 40-100 mmols/litre.

(As a rough way of gaining an appreciation of these figures, one level teaspoon of table salt, which is just sodium chloride, dissolved in a litre of water equals approximately 100 millimoles per litre).

We do possess a very sophisticated sodium control system in our bodies that works well providing we are sufficiently hydrated to produce reasonable amounts of urine. Most of us readily excrete excess sodium in our urine. Conversely, we also have a specific salt appetite. Glider pilots with low sodium levels often love salty foods at the end of the day!

Ingestion of water to replace sweat losses will decrease the sodium concentration in our blood, as we are not replacing the sodium that we are losing. Severe acute decreases in blood sodium (say 10%) may cause headaches, lethargy, apathy and confusion. Severe acute decreases (over 15%) may cause convulsions. While this is extremely unlikely to occur in our sport, cases of convulsions occurring in top athletes who only use water replacement are documented. Suffice to say even the mild symptoms are highly undesirable for a pilot!

Potassium losses may cause low blood pressure and weakness. Small amounts of sodium and potassium in rehydration fluids increases

the rate at which the gut can absorb the fluid. Drinking only water, apart from leaving you still dehydrated (because you haven't absorbed the fluid) can make you feel bloated and nauseous.

Pure water ingestion tends to shut off the thirst reflex, even when we are dehydrated. Taste is a critical factor on whether athletes drink adequately during exercise. Some people love pure water, others loathe it.

High carbohydrate drinks such as energy drinks, fizzy drinks and fruit juice contain 10%-30% carbohydrate. Levels of carbohydrate over 8% inhibit intestinal absorption of the fluid. None of these are appropriate for rehydration during flight.

Sports drinks are not excessively high in sodium. At recommended strengths they contain 10-25 mmol/litre. They are also designed to replace potassium losses. They do contain carbohydrate but this is of the order of 6% which will not impede absorption or cause large fluctuations in blood sugar levels.

Recommendations

- Don't even *consider* flying without first being well hydrated!
- On short flights it is not critical whether water or an electrolyte replacement is drunk.
- On longer flights (say over two hours) we should be aiming to replace what we are losing. Sports drinks are appropriate for this. As we are a "light physical activity in a hot environment", some dilution from the recommended concentration can be used if this makes it more palatable. The brand is not as important as what tastes good to you.
- The carbohydrate (sugar) content is not harmful. Carbohydrate ingestion could only lead to a problem if a large carbohydrate load is taken at widely separated intervals, with the risk of insulin oversecretion and low sugar levels occurring some hours later.
- Never take high sodium loads such as salt tablets.
- Heavy coffee and tea drinkers are prone to severe headaches on acute withdrawal. Recent studies have shown that caffeine is not deleterious to sport performance, and a small amount on the long flying day before and after the flight is okay.

There are excellent fact sheets at *<www.sports dietitions.com>*. ■

Positive feedback

By chance your April/May issue of *free flight* arrived on the day I was leaving New Zealand. Therefore I had plenty of time to read it during the long flight to Britain.

I suspect that you seldom get much feedback, and that when you do it is probably critical. If so, then this is the exception!

I found all the articles interesting and thoughtful. It reinforced my belief that Canada offers tremendous soaring potential within a reasonable regulatory framework. The latter is, I am sure, due to the efforts of the devoted individuals who make up the SAC. As a result Canada has one of the very few soaring communities which can be confident that the best is still to come.

With best wishes,
Justin Wills

Two worthy 2005 trophy winners

Ian Oldaker made two presentations on behalf of SAC to Pat O'Donnell, above, and Jeremy Sawyer at a recent safety seminar.

Pat, SOSA's CFI, was SAC's ***Instructor of the Year***. He continues to provide insight regarding training, is highly safety conscious, and his vigilance in this regard sets a wonderful example for all club members, but especially for students. Pat did the most instructional flights at SOSA last season (approaching 200!). For many years, Pat has been the backbone of SOSA's midweek evening student flying.

Jeremy, a member of York Soaring, was the only Silver badge pilot under 21 in 2005, earning him the ***Silver C Gull*** trophy. Jeremy was born 21 May 87 and completed his Silver badge (#933) with an altitude and distance flight on 10 July, flying an Astir CS.

club culture ...

from page 5

There is another side to this issue because there *can* be instances of pilots exhibiting undisciplined or unsafe flying practices. If a given pilot is constantly minimizing his safety margin, an accident is inevitable unless action is taken. As a club, we have a responsibility to take action for the sake of everyone involved in soaring.

On reporting as admission of error
Any flight with no accident is objectively, by definition, safe. Events could have produced harm though, so an "I got away with it" report is valuable. It is worth noting that the concern about the misuse of incident reports is contributing to the perception that an incident is about doing something wrong. The question is – how large was the safety margin? A "razor's edge" justifies far more analysis than "a country mile".

No pilot would ever insist any given flight was perfect. There are always things that could have been done better. An incident report is simply about *what could have been done better* (from a safety perspective), rather than what was done wrong.

Not every incident justifies an incident report. For example, flying cross-country isn't an incident, but the club may want to ask for an incident report if a club ship is landed out by a pilot who is not cross-country rated. In most cases, landouts are great learning experiences which ought to be shared.

Summary We can do a better job if we begin using incidents and accident reports more constructively. Our club culture *must* support this. Food for thought and my 2¢ worth.

Comment from Dan Cook:
A telling inside look at the challenges of safety culture. My comments are questions revolving around the subject and use of "sanction", but I suspect we know the answers:

1. Is the current club safety culture nurturing?
2. Are sanctions imposed on pilots who do not report incidents/accidents? What would be an appropriate sanction? Should the pilot be required to, say, lead a safety discussion with the club members about the incident if they do not report and the incident is discovered/ reported by a third party?
3. Are pilots who report incidents/accidents protected from penalization by the fact they have reported? see question #1
4. Is a discussion with the CFI or SO over an incident considered a sanction? Is it considered a training opportunity?
5. Do experienced pilots in the club feel they are beyond training experiences or learning opportunities? see question #1
6. Can sanctions be considered punitive or developmental/educational? Is requiring someone to learn from an incident a sanction? Can someone be required to learn from an incident and have it become a positive experience? Can we manage incidents/accident reporting policy in a manner that pilots will find it a positive experience?

If we can answer the last question we have nailed the first one correctly I think!

Comment from Ian Oldaker:
Thanks to "anon" for sharing this. *There is one thing that is not included. It is that those in charge, the leaders if you like, should be tasked with giving feedback to the people who report incidents or safety hazards and safety concerns.*

This feedback is vital to getting any acceptance of the value of reporting. Just talk to Alberta Zone director John Mulder about the introduction of a safety system into an airline he worked with! He stated at the SAC AGM that the company's safety program to encourage feedback had no response until acknowledgement and then dissemination of incidents was emphasized. Feedback works! – even to those who report anonymously. Feedback can be given directly to the reporter if known, and should also be in the club's web site, etc. for members.

I should mention that providing acknowledgement of a report plus feedback (lessons learned) is now included in the SAC Safety Initiative. We can all learn from the mistakes of others! ■

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something like the real thing

from page 11

The simulator would use a two-seat Krosno cockpit to match the disabled flying program requirements. The simulator would also be portable so that it could be easily moved around in a small cargo trailer, and could be set up in a 10x10 foot area. The simulator would be built in several phases, the first of which would be a non-motion version using the full Krosno cockpit. The go-ahead was given in the fall of 2004 with the first phase to be completed for the disabled community's show, *People In Motion*, at the beginning of June in 2005.

So where do you start? You start with a trip over a few dull, chilly days in November to Kutztown, Pennsylvania with reciprocating saw in hand to acquire a bent Krosno cockpit. Next you turn it over to an over-extended Lee Bertrand for a little creative reshaping. Things idle away for a few months until the beginning of May. Then came a seemingly endless cycle for a few weeks of applying body filler, trying version-X of adapting the real controls to the electronic ones, buying a computer, projector, screen, portable gazebo etc. and assembling and disassembling parts of the cockpit. Local hands John DeJong, Charles Petersen, and Doug Carman take turns at sanding, riveting, and otherwise poking about the cockpit in my garage. Electronic instruments, orginally to be built from scratch, are acquired from *SimKits* in the Netherlands and assemble by Alex Upchurch. In the last week before the show the enclosed trailer was acquired and licenced, the cockpit is painted by Jeremy Sawyer, and the system has its integration test via a swarm of neighbourhood kids. Phase 1 makes its first flight on a Monday afternoon, its shakedown flights on Tuesday evening, and the *Freedom's Wings* decals are applied to the side on the Thursday at the In Motion show. Charles Petersen is a capable spokesman for the local CITY TV cameras the next morning and nothing serious breaks for the rest of the show. Whew!

Now we had our Phase 1 machine. We didn't have a motion platform yet and we had a little time to think whether or not to go any further. The show's response just prodded us on. What we found was that this was a brilliant way to bring our sport from our airfields to the people. When you bring a glider to a show, it's a step up from just pointing at pictures; however, when you bring a simulator, you take people flying!

The brilliant thing that we did, which was pure luck, was to build a two-seat simulator. The pilots at the show are in their element and show off their well-practised introductory flight skills. What we didn't know was that a small, accessible simulator would be such an interactive tool. While flying, you involve the passenger and the crowd around you too. I encourage any club to try to get to this stage. With a little bit of scrounging you can have something for $2000 depending on where you are on the time-versus-money curve. You will not regret building a simulator for the outreach business alone. We have proceeded on with the motion part of the project and a second non-motion simulator for shows and other displays.

So now we have a start. We are just beginning to explore the flight training potential of this phase. We are particularly interested to see how effective it will be at teaching the landing phase of flight which we know is problematic. The simulator will allow us to pause the process and check the student's understanding, something that is very difficult in real time. As well, we run a number of concentrated flying camps where it would be great not to have any down days due to weather. I hope our motto from now on will be that we are always open for flight training.

From here on in the sky's the limit. We are already developing the local airport scenery so we can start doing situational training on approaches and emergency situations and I'm sure other training scenarios will come to mind as we explore this new tool. But that's another story yet to be written. ■

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Note: items 5 and 6 not stocked – external purchase approval is given

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Order these through the SAC office

33	FAI 'A' badge, silver plate pin *(available from your club)*	$ 3.00
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Please enclose payment with order; price includes postage.
GST not required. Ontario residents, add 8% sales tax.

SAC forms *(downloadable from SAC web site forms page)*
FAI badge application, Official Observer application, Flight trophies, FAI Records application, Flight Declaration form

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Disponibles au président des prix de la FAI – Walter Weir
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Les articles 5 et 6 ne sont pas en stock – permis d'achat externe

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The following badge legs were recorded in the Canadian Soaring Register during the period 8 Nov 2005 to 7 May 2006.

SILVER BADGE

994	Philip Hinton	SOSA
995	Ernie Prack	SOSA

***DIAMOND ALTITUDE** (5000 m height gain)*

Martin Argerami	Regina	5200 m	Jantar	Cowley, AB

***DIAMOND GOAL** (300 km goal flight)*

Ernie Prack	SOSA	305.4 km	LS-4	Rockton, ON
Robert Toupin	ACE	308.1 km	ASW-24	Julian, PA

***GOLD ALTITUDE** (3000 m height gain)*

Martin Argerami	Regina	5200 m	Jantar	Cowley, AB
Herman ten Cate	SOSA	3606 m	Astir Jr.	Tocumwal, Aus
Gabriel Duford	Champlain	3340 m	ASW-20	Julian, PA

***SILVER DISTANCE** (50 km flight)*

Philip Hinton	SOSA	78.7 km	SZD-51-1	Rockton, ON
Ernie Prack	SOSA	109.5 km	LS-4	Rockton, ON
David Donaldson	Great Lakes	56.7 km	1-26	Tottenham, ON

***SILVER ALTITUDE** (1000 m height gain)*

Martin Argerami	Regina	5200 m	Jantar	Cowley, AB
Thomas Moss	Quebec	1400 m	L-23 Blanik	St. Raymond, QC
Ernie Prack	SOSA	1235 m	LS-4	Rockton, ON
Gabriel Duford	Champlain	3340 m	ASW-20	Julian, PA
Pierre Cypihot	Champlain	1795 m	Diamant	Julian, PA

***SILVER DURATION** (5 hour flight)*

Greg Finlay	SOSA	5:23 h	LS-4	Rockton, ON
Alan Thomson	Montreal	5:13 h	L-33 Solo	Hawkesbury, ON
Drew Wilson	Great Lakes	5:36 h	ASW-19	Colgon, ON
Claude Blanchette	Quebec	5:12 h	Grob 102	St. Raymond, QC
Alain Laprade	Montreal	6:02 h	ASW-20B	Hawkesbury, ON
Ernie Prack	SOSA	5:34 h	LS-4	Rockton, ON
Gabriel Duford	Champlain	5:10 h	ASW-20	Julian, PA

***C BADGE** (1 hour flight)*

2830	Martin Argerami	Regina	see Diamond altitude		
2831	Greg Finlay	SOSA	5:23 h	LS-4	Rockton, ON
2832	Claude Blanchette	Quebec	5:12 h	Grob 102	St. Raymond, QC
2833	Bruno Legare	Quebec	2:10 h	L-13 Blanik	St. Raymond, QC
2834	Ernie Prack	SOSA	5:34 h	LS-4	Rockton, ON
2835	Michel Cote	Quebec	3:02 h	L-13 Blanik	St Raymond, QC
2836	David Donaldson	Great Lakes	1:47 h	1-26	Tottenham, ON
2837	Gabriel Duford	Champlain	4:38 h	ASW-20	Julian, PA

Robert Toupin's flight narrative on his Gold distance/Diamond goal claim form

Flown along the Bald Eagle Ridge from Ridge Soaring, 25 April 2006, mostly in thermals. Time didn't count – the completion of the task did. So listening to the conflicting reports from other pilots about the ridge conditions, I decided to stay high. I forgot the "big picture" and concentrated on just going from one point to the next.

Going north: Milesburg, Howard Dam, Lock Haven (oops! two gliders just outlanded there), and my first turnpoint, Pine Creek. Now I turn south to Bedford gap – 154 km. On the radio they talk about rain coming! No reason to give up. Point by point again, and stay high. At last Altoona. Now further south to Bedford gap. A gigantic pale gray blanket is slowly covering the sky. Haze everywhere. I keep going. Bingo – Bedford gap. Now north again – 95 km to go.

I can only see 2 kilometres ahead of me. I set my mind for an eventual outlanding. And I keep going north, point by point. I find probably the last thermal of the day to cross the Altoona gap. I can't see the ridge on the other side – but I get there and I'm not down yet. Now gray sky – no cumulus – 50 kilometres to go and it starts raining.

My last chance is the ridge and I cling to it, going from one decent outlanding field to the next – 30 kilometres left. I'm still in the air, supported by the ridge. "Maybe I'll make it!" Here's a great field to land. Twenty kilometres – 2200 feet high and staying around that number for quite a while. Now it's pouring rain! Ten kilometres – 2000 feet and I'm not going down – *"I'LL MAKE IT."* And I did!

Why a paper declaration in a flight recorder era?

Could anything be more discouraging than flying your badge task and then finding out that your FR has malfunctioned or has the wrong info stored on it? One of the most common FR problems is failure to properly declare your task. It's easy to get it wrong – especially with a non-user-friendly FR you aren't completely familiar with (say, the club FR). You may also see that the sky isn't "right" and want to make a last minute pre-launch change of task that isn't stored in the FR. Since a paper declaration is still legal, do one as a backup.

All you need to do is write out your declaration on a sheet of paper and get your OO to sign it before you take off. Be sure to include all the required items: date, pilot name, glider type and registration, FR serial number (it's your barograph), task TP's in sequence including start/finish points, date and time, pilot signature, and OO signature.

It's easy to do and good insurance. But, the FR *must* be ON and stay on when the paper declaration is timed and signed. If the FR is turned on *after* the paper declaration is made, then the one in the FR now becomes the "latest" one – and the one just signed is obsolete!

Chechlist – Oberleutnant Pfelz, Ka6 Kommandant

1. ***Ist der Wingen solidisch ongetaped?***
2. ***Auf both Sides?***
3. ***Ist der Tail still in der Trailer?***
4. ***Floppydingen auf denwingen goes up and down?***
5. ***Und die oder Floppies: Ruder, ... ?***
6. ***Ist der Parachute nicely gestarched?***

Perhaps it fliegen vill!

Seen in the VSA segelflugplatzklubhaus in 1984

New video from New Zealand

A 75 minute video on the 2006 New Zealand Grand Prix is now available. The graphics were designed by those who did the America's Cup races and, with three cameras in each cockpit, the pilot expressions are simply amazing. There were also two helicopters covering the races, so you get to see two whole races from start to finish. Eleven sailplanes participated and are flown by the World's top ten pilots from eight countries. The South Island scenery and the soaring is breathtaking !

The production cost was over $400,000, done in part with government support. The video is available by 1st class air mail for US$27. Visa or MasterCard. Order from <john@johnroake.com>

Trading Post

Personal ads are a free service to SAC members (give me name of your club). $10 per insertion for non-members. **Send ad to editor**. Ad will run 3 times unless you renew. Tell me if your item has been sold sooner. Subject to some editing for length (usually 6 lines max).

single seat

1-26C, C-FZDF, 1957, 1900h, current annual to May 14/06. Open trailer. Asking US$10,000. For further info contact Orlan Dowdeswell, (306) 789-3302 or <*odowdeswell@accesscomm.ca*>. At Regina.

HP-14T, C-FAXH, 1480h, glider & trailer in vgood cond. Hydraulic flaps. New MicroAir 760 with boom mike, ILEC SB8, ELT, O2, new winglet fences. Low maintenance A/C giving good bang for your dollar. Info: <*www.soaridaho.com/Schreder/HP-14/C-FAXH*> $17,300 obo. <*spencer.robinson@rogers.com*> (416) 620-1218.

Jantar, C-GDPJ, 1978, encl. trailer, 508h, current annual to May 06. Asking US$20,000. Further info contact Orlan Dowdeswell at (306) 789-3302 or <*odowdeswell@accesscomm.ca*>. At Regina.

PW-5, C-GLDY, well cared for PW-5 in excellent cond. $35,000 with good Avionics trailer, $26,000 without trailer. Evelyne, <*evcr@telus.net*>, (250) 342-9602. Pictures and more info at <*http://web.mac.com/ewsflys/iWeb/PW5/PW5_Intro.html*>.

PW-5, C-GBVL, 1998, 272h, ATR57 radio, Volkslogger, National 490 chute, Azimuth fully encl. aluminum trailer. $31,000. <*jim.kayer@rogers.com*>. 80 miles north of Toronto .

Libelle 201, CF-TQL, #113, 1515h, fresh CofA, all ADs complete, enclosed trailer, located in Edmonton. $17,500. Dave, <*loretta@second-impressions.com*> (780) 221-8535.

Std Cirrus, C-GEOD, 1800h. Refinished. Microair radio, elec and mech vario on good TE probe, connections and mounting for Volkslogger and PDA, O2, wing wheel, tow-out bar, trailer nice to tow. Easy flying, great thermalling glider for the great low price of $19,500. Many photos by e-mail on request. Al Hoar, (403) 288-7205, <*gwen.al@shaw.ca*>.

Std Cirrus, C-FDFN, 1972, 2300h. Ball 703 electric, PZL mechanical varios, Microair 760 radio with boom. Turn & bank, O2, enclosed metal trailer. Gel coat in good cond. Located in Calgary. $19,000 plus GST. Gerald Ince, <*gince@shaw.ca*> (403) 242-6331.

SZD-36 Cobra-15, C-GQWQ, 1977, 897h. No damage. L/D 38/1, A-1 condition, kept in hangar. Modified Pik-20 fiberglass trailer. Located in Toronto. Asking $15,000. Charles Kocsis (416) 908-5638, <*karoly_cobra@yahoo.com*>.

ASW-17, C-GVQW, 1050h. 48:1 measured. 20 and 15 metre tips. New panel including LX5000, gel coat refinished. Great rigging aids, trailer, tow-out gear, waterbags, new chute, covers etc. Best value for performance on the market, US$25,000. Eric Gillespie, 905-932-7258 or <*ekg@cunninghamgillespie.com*>, Toronto.

Genesis 2, '98, 331h, 100% race ready. Excl. cond., CAI302, 303, SageCV, WinPilot, ATR720C, trailer, chute. US$45,000. Dave Mercer, <*djmercer@telus.net*>, (780) 987-6201, Alberta.

Nimbus 2B, C-GAJM, 1977, #25, 1120h, 20.3m, 49:1. Flaps, tail chute, 110L water ballast, Filser LXFAI flight computer/GPS/final glide calc, chute, trailer, and all glider covers. An absolutely beautiful flying machine, and proven competitor. Based at York. $37,500. Peter Luxemburger <*iluv2soar@ yahoo.ca*>.

DG-400, GAJM, '87, Rotax 505, ttsn 160h, ttsoh 43h, DEI with auto-retract system. Prime cond, no damage, solar panels. One man rigging, tow bar, wing wheel, tail dolly, Becker radio, Winter insts, Zander 850 computer. Cobra trailer, solar panels. $100K. Ernst Schneider <*ews@ews.ca*> (403) 616-6397. Pics & more info <*http://web.mac.com/ewsflys/iWeb/DG400/DG400_Intro.html*>.

two-place

RHJ-8, 1979, 1400h. Based on the HP-14, side by side reclining seating, T-tail. Many improvements: elevator and rudder gap seals, increased rudder length, wing root fillets, winglets. Best L/D 34 at 50 kts, thermal 40-42 kts, stall 35 kts, roll rate under 5 sec. Fits tall pilots. A parallel hinged single piece canopy, improved ventilation. No trailer. US$18,000 (.0019 L/D points per $). John Firth, (613) 731-6997, <*firsys@magma.ca*>.

Ka-7, C-FKZS, #7255, 727h. Fuse restored '96 - wings in 2001, Ceconite with dope used. Not flown since '01 (club folded). Basic panels - mech. varios with TE and MacCready ring, radio with dual PTT. Open trailer in good cond. $10,500. For more info contact Keith (306) 249-1859 or Don (306) 763-6174 e-mail: <*k.andrews@sasktel.net*>.

magazines

GLIDING & MOTORGLIDING — world-wide on-line magazine for the gliding community. Edited by Val Brain, <*www.glidingmagazine.com*>.

GLIDING KIWI — Editor, John Roake. Read worldwide with a great reputation for being first with the news. US$40. Personal cheques or credit cards accepted. NZ Gliding Kiwi, 79 Fifth Avenue, Tauranga, New Zealand. <*gk@johnroake.com*>.

SAILPLANE & GLIDING — the only authoritative British magazine devoted entirely to gliding. Bimonthly. US$45 per year airmail, US$35 surface. <*beverley@gliding.co.uk*>.

SOARING — the monthly journal of the Soaring Society of America. Subscriptions, US$43 price includes postage. Credit cards accepted. Box 2100, Hobbs, NM 88241-2100. <*info@ssa.org*>. (505) 392-1177.

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Solaire Canada LS series of sailplanes, LX glide computers, Dittel radios, Collibri FRs. Ed Hollestelle, <*ed@solairecanada.com*>, (519) 461-1464.

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