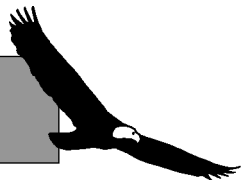
free flight • vol libre

2/06
Apr/May

Priorities



Phil Stade

Final notes from the past-President

WHEN I JOINED THE BOARD IN 2002 I reviewed the issues that had been raised over the years. One recurring concern members had was that SAC was meeting its mandate and effectively dealing with issues. In many cases the discussions involved marketing or insurance. During 2005, SSA was approached to see if these two issues could be addressed by an increased relationship between SAC and SSA. Although marketing may still be an area for cooperation, the possibility of SAC being involved with the SSA insurance program or insurer is a non-starter for now. Our claims history disqualifies us at the insurer level. Our Insurance committee continues to provide us with an excellent program that meets our needs in spite of the accidents we've collectively experienced. Please take time to personally thank Keith Hay and Richard Longhurst when you see them for their hard work and willingness to take on a job that generates very few words of encouragement.

I wish to publicly thank the SAC Board that created the Pioneer Fund, all the donors, and Jim McCollum for ensuring that today SAC is financially viable. Jim's initial management of the Pioneer Fund and his recognition in recent years that it needed professional management has converted the relatively small amount of donations and life memberships into a substantial balance today. This money was donated by individuals convinced that SAC should be financially strong and their intent has been turned into reality. The income stream generated allows SAC fees to be kept low and increasing at less than inflation. Some comments regarding this matter show that the importance of financial stability is highly under-appreciated until it's gone!

I have twice observed the introduction of the SAC Safety Initiative and listened to the concerns raised by club members. One theme of the objections is that the Board and the Flight Training & Safety committee are telling clubs and pilots what to do. A good friend of mine read the material and said that it reminded him of the way the military works: "Here are the rules. Obey!" That didn't work before and it won't work now. Another common complaint is that the approach is bureaucratic and the number of documents involved with the Safety Initiative is pointed to as supporting evidence.

Perhaps taking a few steps back to review the intent and expectations of the SAC Board and the FT&SC would help members with their objections. Since the beginning of this project, the Board and FT&SC have been trying to formulate an approach that provides clubs and individuals with the tools they need to have safe operations. Although different clubs have common issues it is obvious that the solution at one club may not work at another. In light of that reality a new approach was required and, in spite of the heated and negative words some have used to describe their impressions of the program, I believe we are on the right track. The program asks clubs *to consider their own operations* and the documents provide the tools *to start the process, document issues needing attention, determine the relative risk of that issue, come up with solutions, and ensure that follow-up occurs*. It is a given that the accident rate must come down in Canada. At the SAC AGM in Calgary in 2004 the message from the membership was loud and clear. Something must be done now! It is no longer acceptable for clubs to not formally examine operations and find solutions to their safety issues. *The SAC Safety Initiative provides the tools… not the solutions. Solutions will arise from the club's own efforts!* Is there any other way to proceed?

I have participated on the SAC Board for four years and now clearly see the need to maintain a strong organization to represent Canadian soaring. I suspect all past Board members would have come to the same conclusion. Please carefully consider what SAC has done and can do for soaring in Canada and volunteer to help it accomplish even greater things when the opportunity arises. ■

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

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Cover
Réal flies above Hawkesbury and the Ottawa River just east of the Montreal Soaring Council field in the club Astir. Due to the wide-angle effect of the lens, he is closer to the ground than it would appear in the photo.

photo: Réal LeGouëff

DEPARTMENTS

Standards, Curriculum, Discipline, Sanctions, Culture?

which will improve safety?

Ian Oldaker, SAC Operations Director

SOME SAY FLYING MUST BE *ABSOLUTELY SAFE*! Safety is defined as being free from danger or risks, or the condition of being safe. We all want to be as safe as is reasonably achievable. But reaching absolute safety or a complete absence of risk are both impossible. Achieving an acceptable level of risk by controlling and managing the risks to improve our *safety* is through a combination of all the items in the title, and maybe a couple more.

Risk We always accept risks. The gain is worth taking the risk that something will go wrong, and when it does we pay the price. To guard against a large financial risk we take out insurance. It's the cost of doing business. In any endeavour there are costs associated with an inadvertent event, such as an accident. The damage to equipment or people is easily seen and may be quantified, but loss of use of equipment, and the lost income are not so easily added up. The higher insurance costs, rental of replacement aircraft, and loss of reputation are hard to measure. The loss may be more emotional than financial, but safety inevitably comes down to *the cost*.

We admit that our safety record has to be improved, but how? Increase insurance rates to penalize those who have high-cost claims? Consider the higher premiums after a car accident; the increases can be severe! In the SAC insurance scheme, higher rates are assessed after claims, and the increases have resulted in some changes in a club's outlook, even if SAC has sometimes been blamed for the increased rates!

Standards Some say ours are too high. A comparison with many other countries shows that our (legal) standards for a glider pilot licence are at the lowest end of all gliding countries, equal to the ICAO minima. Many years ago a SAC AGM voted for an increase in the minima, though these increases were still way below what many other countries regard as a *licence* requirement. Look at the German requirements — they include a Silver distance flight! The Bronze badge is the BGA's standard. SAC published a recommended standard in 1985 and this has remained essentially unchanged since. About two years ago we made some additions to the standard in the area of recoveries from launch failures and in spin recognition, to recognize that the low-level spin continues to be responsible for many of the major accidents worldwide. These standards were distributed to all CFIs at the time at country-wide seminars. Overall I don't think our standards have changed much over the years.

Curriculum Too complicated? Well, I put it to you that this also has not really changed that much. Three years ago we found that some European approaches to teaching a few of the exercises were more logical than ours, and made the learning and indeed the teaching of them easier. Some exercises were broken down into smaller elements, but the overall lesson was still the same. Also, the accident record of many countries pointed to a need to teach recoveries from a failed launch at altitude first, so this step was added. Now students learn the recovery free of the need to return to the runway low down and quickly, and maybe spin as a result, which is not what we want! Then when a real emergency occurs they should automatically do the right thing, because it was learned first and practised on more than one flight – the Law of Primacy, remember? We refined how to teach approach control. We added some parts to the spin lessons, to teach the spin awareness situations that all pilots probably cannot name right now! If you can recognize the situations that can lead to an inadvertent spin, we hope you can then avoid the stall and resultant spin! All aircraft will not display the usual 1g stall warnings when in other flight attitudes that we know have produced spins suddenly and without warning. So learn these situations and review them often!

Discipline This can mean self-discipline, where pilots go about their flying in a very deliberate manner. Is the typical club member seen to be disciplined in his or her approach to flying? Is he or she scanning the sky for other gliders to see where a conflict might occur during the tow, do they do a walk-around, do you remove chatting people from around the

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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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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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.

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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.

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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.

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cockpit as the pilot is getting ready, etc? Is the club leadership supportive of a *disciplined* approach to its procedures and rules for pilots? Do the leaders give regular feedback on safety issues? These are the kinds of discipline that are worthwhile, are generative, and produce good attitudes in all members.

Sanctions When I was a kid, discipline at my school was a cane across the backside! Do you discipline your members by sanctioning or punishing them? It is a negative form of discipline guaranteed to make them leave the club, or to stop contributing or reporting incidents! After an accident, which the pilot certainly did not intend to have in the first place, he or she has even less intention of repeating the event. Punishment will not improve a fellow's behaviour if he landed with the wheel up.

Before we allow someone to fly our gliders we adequately check their skill and abilities to make good decisions, etc., right? We take out insurance. After the fact we may wish we had done a better job, but it's a little late then. Punishment won't help either us or the pilot (unless you want some kind of *makes me feel better* feeling). Punishing poor technique or poor judgement can have negative reactions among other pilots if they feel it was undeserved. Of course this doesn't change the circumstances of the accident that may well reoccur. Fear of punishment inhibits communication, and so we tend to cut off flow of information about possible problems that might need to be fixed.

Culture The club *culture* is more than just the manner in which the leaders and members go about their flying. It is the sum total of the way the club operates, the leaders lead, the members support each other, and the way that the individual pilot approaches his or her flying. The culture – see table below – can be *pathological, bureaucratic*, or it can be very supportive of the leaders and members – what is called a *generative* culture. How does your club stack up?

Pilots in a generative type of club have the character and personality to accept comments (perhaps implied criticism!) and they look at events *from a distance*. In other words, they feel a responsibility toward the club, and not just to themselves – a generative approach to safety. This should be encouraged in all clubs.

How do we motivate people to do what we want, to improve our approach to controlling safety? One very important aspect of people's behaviour is social acceptance. We all try to comply so as to be accepted in the club. *Old boy networks* have been part of organizations for years and groups tend to form in clubs around an informal leader. You are either in the group or out. Unsafe practices among some members often can be traced to where they originate. Is it from a senior pilot or club leader? I hope not! However – a suggestion – to change the behaviour of a group, go to the leader(s) of that group. Change their way of doing things and those in the group will follow soon enough. Hopefully those on the outside will also change for the better.

HOW DIFFERENT ORGANIZATIONAL CULTURES HANDLE SAFETY INFORMATION

Pathological culture	**Bureaucratic culture**	**Generative culture**
Don't want to know	May not find out	Actively seeks info
Messengers (whistle blowers) are 'shot'	... are listened to if they arrive	... are trained and rewarded
Responsibility is shirked	... is compartmentalized	... is shared
Failures are punished or concealed	... lead to local repairs	... lead to far-reaching reforms
New ideas are actively discouraged	... often present problems	... are welcomed

Controlling and managing risk The safety initiative now being implemented at the national and club levels requires us all to identify the hazards and then to look at these critically to lower the risk that each one poses. We need to include the hazards that are present before we take off, the hazards that are lurking there, sometimes unseen or unrecognized (called *latent* conditions). Pilot low time/currency can be hazards, and what about pilot skill level being not self-recognized?

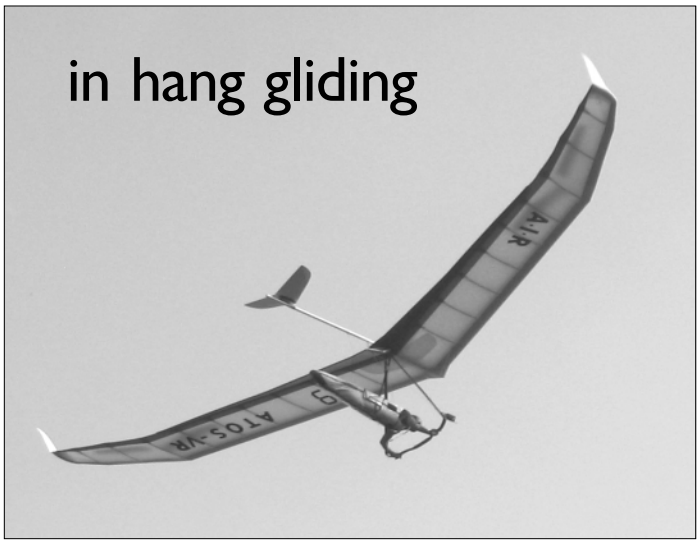
- A *hazard* could lead to a loss or injury. It could be a pre-existing latent condition or an immediate situation arising within an activity.
- A *risk* is the chance of a loss or injury, described with its probability and severity.

The club safety program must include a requirement that risks are assessed, ⇨ **p20**

The state of the art

Tony Burton, Cu Nim

sailplane and rigid wing hang glider performance is closing



Almut Bott

OUR RAG-WING BRETHREN have come a long way from the 1960s era of plastic sheet and bamboo! Today the state of the art in hang glider rigid wing aerodynamics and materials has brought their performance into a range that is overlapping the ultralight sailplane today. To show you where things are now, this article outlines the class structure of hang gliding with some of its history, and gives a description of the top-of-the-line *Atos-VR* rigid wing hang glider.

My thanks to noted Canadian pilot Martin Henry for his info on the evolution of the ATOS line of gliders, and thanks also to French pilot Jacques Bott (flying in the photo above) for personal comments on the class structure and much of the information on the Atos-VR that he flies and competes with.

Jacques began his flying career in 1971 as a glider pilot (now captain of an Air France Boeing 777). He says, "I'm still a soaring pilot in my soul. I intend to return to soaring when I'm too old to shift around under a hang glider and too old to practise my profession. Although I was a soaring enthusiast (300 km triangle with a Ka6 in 1975), I left that activity in 1978 when, for the first time, I succeeded in spiraling in a thermal and reaching cloudbase with my delta hang glider, even if in those days they had very poor performance."

Hang gliding classes

Class 1 flexible wing hang gliders The hang glider came first. From the early – and dangerous – Rogallos with slack sails, a 100° nose angle and seated harnesses, the gliders have evolved into sleek – and safer – machines. Slippery surfaces are used to build drum-tight sails; aspect ratios are increased as far as possible; the rigid ends of the leading edge tubes are replaced with flexible fibreglass rods; the tension of the sail can be altered in flight via the 'VG' (variable geometry) cord acting on the cross-tube junction; streamline-section control bars are widely used; the keel has retreated back inside the wing, its deep pocket being replaced by a slim tunnel in which it can simply flex sideways. The most recent gliders now have the cross-tubes replaced with a carbon-fibre beam. Washout at the tips is maintained by a system of internal struts. The external "king post" and all its draggy wing-supporting wires has disappeared as a result of these innovations.

Atos-VR specifications

Wt, empty	42 kg (93 lbs)
Wt, gross	150 kg (330 lbs)
Wing span	13.8 m (45'- 3")
Wing area	14.7 m^2 (158 ft^2)
AR	13.3
Pilot wt	48–108 kg (106–237 lbs)
Vstall	35 km/h (19 kts), flap 29 (15.7)
Vne	90 km/h (48.6 kts)
L/D max	19.5 @ 50 km/h
Min. sink	0.65 m/s @ 38 km/h

However, this class has suffered a severe decline in activity with the advent of paragliding. High performance wing handling is tricky (longitudinal instability) and tiring. The tumbling risk still exists — there were three occurrences due to turbulent alpine conditions during the last World feminine championship of about thirty participants, but with no sad consequences thanks to parachutes.

Class 2 hang gliders These are foot-launched rigid wings with 3-axis control. These gliders (the *Swift* is an example) didn't see significant development due to their high cost and cumbersome size when derigged. Only four participants showed up at the last World championship.

Class 3 paragliders Francis Rogallo, Domina Jalbert, and Dave Barish share the paternity of the paraglider, and also the experimenters who developed these men's designs and took them further and higher. Most of the early activity took place with what were basically jump chutes, until one day in 1985 when hundreds of pilots flew off the slopes of the Alps on specially designed parachutes and the media announced that a new sport — paragliding — was born.

Although still obviously a close relative of the Jalbert wing, the modern paraglider is as far removed from it as a Ferrari is from a Fiat 500. The first mattress-shaped paragliders had a glide ratio of around 4:1 and an extremely narrow speed range. A top competition wing now will glide close to 10:1 at its optimum speed and may exceed 65 km/h at full speed which can be reached by use of a foot-stirrup-operated "speed bar" that reduces camber in the airfoil.

Paragliders prevail in number but seem to be at the top of their popularity with no more increase in activity level, and even a light decrease (according to my friends who have paragliding schools). Paragliding will always be the

most hazardous of all when met conditions are strong (turbulent); untimely canopy collapses when occuring at low altitude often end with fatalities or severe back or hip injuries. Almost all European or World championships reported a fatal accident.

Class 4 hang gliders These include those models which are still foot-launchable, though not in the nil-wind conditions required of the other classes. Examples in this class include the *Carbon Dragon* and the *ULF-1*. In practice, owners of these craft rarely or never launch or land by foot, and there are few of them flying due to the time demands of the homebuilt construction involved.

Class 5 ultralight gliders As technology evolved, so did the design. In the 1990s, the leading edges made from D–section carbon-fibre spars gave a new life to rigid wing gliders. The strength of this structure made external wire bracing obsolete. However, these wings are virtually unable to flex, so moveable surfaces are needed to control roll. Usually these take the form of spoilers mounted outboard on top of the wing, although some designs have ailerons. They are operated by wires from the control frame. The pilot uses normal weight shift for pitch and roll; when one's body is pulled to the side to start a turn, the hinged control bar simply moves to the side as well and pulls on the cable that actuates the spoileron.

To my knowledge, this category is the only one to have developed, even in the absence of specific training centres. To get training, you have to go through a flexible wing school and, following training to your certificate, soloing on a rigid wing will only need a briefing (handling of rigid wing being similar to flexible one, but a lot easier). A.I.R could be working on a 15 metre dual trainer, aero-towable. It should be the best tool for training (such a training has been successfully practised for many years at Quest-air, Florida, with flexible wings).

The Atos-VR Currently there are about 1500 Class 5 ultralight gliders (rigid wing hang gliders) worldwide, the Atos-V being the most sold, but the Atos-VR, which went on the market in early 2005, took over from the Atos-V. Rigid wing hang gliders first appeared in 1995 and were a big step up in performance. Some problems surfaced when manufacturers began to increase the aspect ratio of wings in the early 2000s):

- tumbling (a problem that still occurs with flexible wing hang gliders used in competition today) and,
- spinning (many crashes).

Early rigid wings didn't have those problems since they had the pronounced wing twist required to maintain aerodynamic stability due to their low aspect ratio. Those problems were solved with the adoption of a fixed small V-tail, introduced on the Atos-V, built by A.I.R. This tail uses a lifting airfoil at a fixed angle of attack (now adjustable with the VR) to provide much-improved pitch damping. The result is a glider that has decidedly improved handling as well as a reduced stall speed.

The improved pitch stability expands the flying envelope of the glider, permitting pilots to fly in strong and turbulent conditions and reduces the risk of a tuck. An incipient stall is now easily recognized, since the control bar will begin to shake as the glider approaches a stall. In addition, yaw stability is improved, and it is more difficult to induce a spin on the glider. With an L/D ratio of about 20 at about 50 km/h, and a minimum sink rate of 0.6 m/s at 38 km/h, the VR is the best flying machine for thermal "scratching". During international contests, 100 to 250 km tasks have been flown at average speeds of more than 50 km/h.

This is the most successful hang glider, the best performing (aspect ratio, flaps, winglets), the safest (almost no risk of tumbling or spinning) and, paradoxically, its handling is among the easiest and the most accurate. Flying that hang glider is a no-limit delight...

The Atos technical evolution

The first of the Atos line was often called a B model. The hardware was poor, 17 to 1 was a pretty reasonable expectation, this was followed by the evolution to the ....

Atos C, which was cleaned up with new hardware (much the same through the latest models). The C was the "competition" model. High tech carbon control bar, a new wing/rib twist ratio, new spoilers, etc. etc.

It was arround this time that pilots started to find out the C had a pretty serious spin issue. If you ever had the chance to see a spin video of an Atos C, you would wonder why anybody would want to fly it. Adding the V-tail fixed the problem. The difference was night and day — getting the glider to spin now with the tail is "almost impossible". With the tail and some other minor changes, it became the V model. An L/D of 18.5 is a reasonable performance figure.

Next came the VX. This was intended to be a tandem glider design, but some competition pilots took a liking to its sink rate, so you would see a few of them at the meets. The VX had more square footage, a higher aspect ratio, and a funky additional dihedral in the tip section of the wing and dual cascading spoilers at the tip (the glider also got much heavier). They also incorporated a linkage between the V-tail and the flaps to compensate for pitch change when the flaps are deployed.

To make us lemmings want more, designer Felix Ruehle produced the VR. He had to add those sexy winglets. Do they do anything? — oh, they must — they look so good! Seriously, with some extra vertical component to the wing profile it improved the thermalling and glide characteristics. The VX and VR get about 19.5 to 1.

For the average pilot, the V is the better deal: it's lighter, easier to pack around, with a better, more durable tip design. But if money is no option, the sexy wingtips and bigger span of the VR is the way to go.

Not many of these wings are in Canada yet (perhaps 6 or 7 in Quebec and just mine on the west coast). A new V will set you back 17,000 loonies, and the VR is $21,000 — way too much for a hang glider!

I love my Atos V — it's very comfortable in the air, good performance, and a real calm wing to fly. The tail is an inspiration, smoothing out the worst the air can toss at me. For many years, I have flown cutting edge high performance flex wings. Their performance does get close to that of the early rigid wings but they require much more physical effort to fly. ⇨ **p20**

Definitely not a sailplane

the beginnings of lifting body research

Bertha M. Ryan, *from "Southwest Soaring"*

The author is an aerospace engineer who worked for NASA at Edwards, CA, in the 60s during the lifting body program. She is a graduate of Emmanuel College in Boston and MIT as well as a sailplane and power pilot. She built a 1-26 and flew it from Inyokern, CA. She was the SSA recordkeeper for years and has written many articles about soaring.

DO YOU REALIZE THAT GLIDER TECHNOLOGY has contributed to space travel? It all began in the early 60s at Edwards Air Force Base. An engineer at NASA had the idea that an ideal way to come back to earth from orbit would be to return in a vehicle with a lifting body shape. This shape has high volumetric efficiency and the blunt nose necessary to withstand the heat generated during re-entry. Aerodynamic lift, essential to flight in the atmosphere, was obtained from the shape of the body rather than from wings on a normal aircraft. Adding fins and control surfaces would allow the pilot to stabilize and control the vehicle. But could it be flared and landed safely? Many people were doubtful.

So the engineer felt he had to convince NASA's director at their Flight Research Center (now Dryden) that it was practical to conduct a flight test to determine if such an idea was feasible. He built a model of a lifting body similar to a shape that had been tested in the wind tunnels at NASA Ames Research Center. Then he built a model of a towplane and proceeded to tow the lifting body shape with the model towplane in the halls of NASA. Since the Director of NASA at that time was the well-known altitude record setting sailplane pilot, Paul Bikle, this technique was acceptable and received enthusiastically. As a result of these activities, another engineer was assigned to the program to look into the possibilities from a theoretical point of view. I had the good luck to be that engineer.

Milt Thompson and the "flying bathtub" on Edwards Dry Lake in 1963. Length 20 feet, height 10 feet, width 13 feet, weight (with pilot) 1140 lbs. photo: NASA–Dryden

Soon the decision was made to construct a lifting body based on the M-2 shape that had been tested at Ames and used in the model flown in the halls of NASA.

The design consisted of a steel tube inner structure with an outer frame of plywood in the M-2 shape. A cockpit was fitted with a plexiglas canopy. In addition, a plexiglas nose was installed as the vehicle would need a high angle of attack during the flare. The nose window allowed the pilot to see in front of the aircraft when the nose was at a high angle. The wood shape was constructed by Gus Briegleb of Briegleb Aircraft Company, a glider manufacturer located at nearby El Mirage.

Further analysis, wind tunnel testing, and simulations were conducted. The actual flight vehicle was tested in the full scale (40'x80') wind tunnel at NASA Ames. The aerodynamic data obtained from these tests was used in a flight simulator so the pilot could have some experience with this strange shape prior to the first flight. It was planned to air tow the unpowered vehicle, but it wasn't known exactly how to simulate the aerotow prior to flight. Guesses were made at the parameters involved and checked out with aerodynamic input from a 1-26A sailplane owned by one of the engineers. In addition, a simulation engineer was taken for a ride in a sailplane and allowed to fly on tow so he could compare the actual flight towing with the simulation. When he got into trouble on tow and the back seat pilot took over, he said she was like a reset button! Eventually a realistic simulation of the 1-26 on tow was developed and then applied to the lifting body.

The next problem was to determine how to make the first flights with the M2-F1 (M2 for the shape and F1 for the first flight vehicle). It was decided, as with many new sailplanes, to try ground tow first so the pilot could get somewhat used to the handling characteristics prior to making an aerotow to altitude. But, what to use for a tow car? It had to be powerful, and preferably a convertible. NASA thought that the choice of a Pontiac Catalina convertible with a high power engine and roll bar might not be considered a prudent selection as an automobile for a government agency. So the order for the Pontiac was placed as the "lifting body power plant". (With a hot-rod gearbox and racing slicks added, it could tow the 1000-pound M2-F1 to 110 mi/h within 30 seconds.)

At last the day for the first ground tow arrived. The first series of tests were flown by Milt Thompson. Everyone assembled on the dry lake, the pilot climbed aboard the M2-F1, the chase vehicles were prepared (a motorcycle and a NASA van), the Pontiac was in place. The ground tow started and the M-2 barely lifted off the ground. The vehicle appeared unstable in roll so a centre fin was installed. (It was later determined that the instab- ⇨ **p21**

High blood pressure or diabetes?

– not the end of your soaring career

Dr. Richard Lewanczuk, SAC Medical chairman

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WE ALL AGE whether we care to admit it or not, and with aging certain medical conditions can develop. Among these, two of the most common are high blood pressure and diabetes. In fact, by age 65, 50% of people will have high blood pressure, and we all have a 25% lifetime risk of developing diabetes. The good news is that with appropriate medical treatment neither condition necessarily precludes one from gliding.

High blood pressure, or hypertension, is a blood pressure that consistently exceeds 140/90. High blood pressure is of concern both generally, as well as in aviation medicine, because it is associated with an increased risk of heart attack or stroke. Unfortunately, most of us will some day succumb to a heart attack or stroke, as cardiovascular disease is the leading cause of death in Canada. The trick is to make sure that this doesn't happen while gliding! Transport Canada has established that an acceptable level of risk for medical incapacitation is 2% or less per year. This correlates with an acceptably low risk for a fatal aviation accident.

If you develop high blood pressure, medical certification for gliding can still be granted as long as one's blood pressure is less than 160/100, although a value of less than 140/90 is preferable. It is acceptable to be on blood pressure medications if you are a glider pilot, although certain medications are preferred and others are prohibited. You will likely be asked to have a periodic electrocardiogram (ECG) or even have a stress (treadmill) test. You or your physician should check with a certified aviation medical examiner (CAME) or with the Civil Aviation Medicine branch of Transport Canada.

You can expect that the aviation medical examiner will want to ensure that you have no other risk factors for cardiovascular disease such as high cholesterol or smoking as these could lead one to exceed that annual 2% risk threshold for incapacity that could then ground you.

Diabetes is a higher risk condition than high blood pressure. Most adults who develop diabetes have type 2 diabetes, previously known as "non-insulin dependent diabetes" or "adult onset diabetes". This is the most common type of diabetes – the body produces insulin but is resistant to its effects. Normal glucose entry into cells is impaired, leading to a back-up of glucose in the blood and the diagnostic high blood glucose levels of diabetes. Type 1 diabetes, previously known as "insulin dependent diabetes" or "juvenile diabetes" is caused by damage to the insulin producing cells of the pancreas. This results in a deficiency of insulin thereby also preventing glucose entry into cells. In type 2 diabetes, a change in diet plus healthy living habits often reverses the process. If not, there are a variety of medications that can be prescribed. In more advanced cases, or after a number of years of diabetes, insulin injections may become necessary.

From an aviation medicine perspective, diabetes is problematic. First, it is associated with a much increased risk of cardiovascular disease and other complications which can affect safe flight. Some of these complications can include eye problems or nerve damage.

The other aviation risk with diabetes, paradoxically, is too low a blood glucose, or "hypoglycemia". Over-treatment of the diabetes, or taking medications to lower blood glucose in the absence of sufficient food can lead to a low blood glucose. When this happens, confusion or even unconsciousness can occur, a serious consequence should one happen to be flying at the time. Most people with diabetes are able to tell when their blood glucose falls too low – they develop symptoms such as hunger, sweatiness, shakiness or headache. However, over the years these symptoms can disappear, and an individual with diabetes may lose consciousness due to hypoglycemia without any warning. If this state is reached, it is grounds for loss of medical certification.

So, can one maintain one's glider pilot licence with diabetes? The answer is "yes", with certain conditions. The concern of the aviation medical examiner will be to ensure that the cardiovascular risk imparted by diabetes is not excessive, that there is no hypoglycemia unawareness, and that there are no diabetic complications which would interfere with the safe operation of a glider. Accordingly, if your diabetes is at a stage where it can be managed by diet alone, provided there are no significant diabetes complications, you will be considered fit to fly.

If you require medication for your diabetes then you must demonstrate the following:

- No hypoglycemia that has required outside help within the past 12 months.
- A stable dosage of anti-diabetic medication.
- Stable and controlled blood glucose values as measured by a laboratory blood test, as well as self-blood glucose meter readings which are consistent with a low risk of hypoglycemia.
- No significant diabetes complications which could lead to incapacitation while flying.
- A yearly eye exam by an ophthalmologist or other vision care specialist.
- A stress (treadmill) test at age 40 and then every 5 years to age 50, after which you will require ⇨ **p21**

2005 Accident Summary

Dan Cook, SAC Safety Officer

WE HAD EIGHTEEN ACCIDENTS reported in 2005, one involving 2 fatal injuries and the write-off of 4 aircraft. Reporting was somewhat sketchy to non-existent in some cases (four SAC reports received). However, a few clubs had sent their annual accident reports to SAC and this has provided some valuable insights. Thanks to those who participated in providing information by filing an individual accident report or annual club report. For the purpose of classifying accident damage, major damage indicates repairs approximately $10K or more, substantial damage $1K to less than $10K, and minor damage less than $1K.

Accident Events

1 Fatal A Puchacz was observed flying in the circuit to land. It was then seen to make an abrupt turn towards the circuit and appeared to enter a three-rotation spin. Both pilots were killed in the steep nose down impact.

Lessons The Puchacz has a surprisingly fast entry into a spin and this combined with the steep nose down entry and ground rush from circuit height it would be a psychologically difficult situation for most pilots. One must definitely move the stick forward to recover the Puchacz from a spin and this would be difficult against instincts to raise the nose. Often in two-seat trainer accidents, it is difficult to determine who was attempting the recovery. So close to the ground perhaps both pilots were on the controls? In general, who is PiC and would initiate a recovery must be well understood between pilots before the flight. Lastly, this accident emphasizes three aspects of spin training: recognition, avoidance, and recovery. All three need emphasis.

2 Write-off After a normal take-off, at 200 feet the Citabria towplane banked steeply and the glider released. The towplane appeared to stall and plunged nose first into the trees. Weather was very hot and humid and the pilot had been towing 4–5 hours. Pilot suffered serious injuries. No mechanical factors were described.

Lessons Not having more detail in the report, one must surmise that heat fatigue/dehydration may have been a factor in this accident. Do you have a water bottle in your towplanes/at the flightline? Are your tow pilots encouraged to take regular breaks every couple of hours? Again, stall/spin recognition/avoidance training cannot be overstated.

3 Write-off Blanik L-13 crashed during a winch take-off. The glider was being launched with a "Y" bridle attachment. At the start of the launch the wing dropped into grass initiating a yaw. Pilot attempted to raise wing with controls. When release was initiated one side of bridle did not release yawing the glider further. The winch operator did not respond to stop command on radio and the pilot successfully did egress. Glider continued to climb to 250 feet then back-released and entered a turn down to 50 feet where it spun into the ground inverted.

Lessons Bridle attachment for launching gliders has been abandoned in Germany for winch launching for many years now. This method should not be used in Canada. Communication methods should have visual backup systems and/or alternate ability of flightline to communicate with winch operator. Grass cutting continues to be critical high-risk area for glider operations. Lastly, pilots must release immediately when a wing drop occurs.

4 Write-off DG-100 was ground looped on landing when wing caught crop in off-field landing attempt. The pilot was attempting 500 km flight but when lift decayed a known field was selected for off-field landing. Thermalling was attempted under a nearby cumulus cloud but strong winds drifted aircraft from selected field and a poorer alternate with crops was used.

Lessons Pilot fatigue and preoccupation may have been factors. The temptation to move towards downwind clouds in strong winds when an outlanding seems imminent will bite you most often unless you are lucky. Good technique is to keep looking for lift until committed to the downwind leg, but the search area should be upwind in strong winds. Keep luck out of it.

5 Major damage Blanik L-13 wing hit tree on landing. During landing roll glider was turned off runway with too much speed to avoid tree.

Lessons Other options were available to the pilot to roll out straight ahead or turn in other direction (no obstacles). The habit of turning off runway in same direction can create tunnel vision (Human Factors). HF studies indicate that teenagers have more difficulty developmentally to assess risk factors adequately until they reach adulthood. Training emphasis with youth should be to develop options for critical situations and use scenario-based training to teach SOAR technique at every opportunity.

6 Major damage Citabria main left landing gear failed 10 cm from the fuselage on taxing to hangar. The wing and propeller were damaged by striking the ground. The pilot was observed making a normal landing.

Lessons All too common an occurrence with the Citabria when used in towing operations. Many clubs which operate this towplane use non-destructive testing (X-ray) annually to inspect the gear. Also a common factor is rough grass fields for tow operations. Has your club done a risk analysis of airfield hazards and come up with short term and long term risk-mitigation strategies?

7 Major damage Lark groundlooped on landing, damaging wing tips and tail wheel. Two instructors (one being checked out on type) ridge soaring, returned to the airfield to land in a steep wind gradient (3000 ft/30 kts – surface/15 kts). During the approach, the flaps are increased two more times and each time the spoilers are sucked out reducing the airspeed eventually to 50 kts on short final resulting in undershooting the threshold. During the flare the glider yaws due to the crosswind and the wing touches the ground and yaws the glider 60 degrees on landing.

Lessons Risks are greater in strong wind gradients and energy management is critical. In strong winds flaps are usually not necessary and at higher approach speed many gliders are susceptible to having the spoilers "sucked out". This should be part of the type check-out briefing before flight. Instructors need to stay ahead of the student and take control as soon as the instructor starts to get uncomfortable.

8 Major damage L-13 is damaged in a hard landing when student fails to rotate for the flare. On final approach the instructor twice verbally cued the student to raise the nose by giving the command "pull". With the student unresponsive the instructor had to forcibly move the control stick to rotate the glider before contact with the runway. This student had similar difficulty before (freezing) but had been flying well this flight.

Lessons Having a student freezing on the controls is a difficult situation for any instructor – some have even given up teaching as a result. Some students are petrified of flying or the landing situation. In this case, the CFI must decide if it is in the best interest for everyone to continue instructing the student. Often slowing down the training until they are more comfortable with the landing phase may be all that is necessary. Instructors must be aware the problem exists and not let their guard down. Easing the student into exercises can help (reduced approach angle, more follow-through practice).

Sometimes the problem is that the student is looking at the reference point on final but not moving their gaze up to the end of the runway for the flare. In the ground rush they cannot judge their height and freeze. Do you know how you react in high stress situations?

9 Substantial damage Grob 103 wing damaged when removed from trailer for assembly. No SAC accident report received.

Lessons Several of these types of accidents have been reported recently. Could standard operating procedures be used to minimize risks? Was there a rigging "team leader"? Were tires in place to reduce likelihood of damage? Were sufficient personnel used to complete the task?

10 Substantial damage DG damaged. Wind blew the wing stand over when pilot was using a one-man rigging system.

Lessons Labour-saving devices have risks of their own. Uneven ground, wind, and faulty mechanisms have led to similar accidents. Hangar location is the ideal setting to use these devices, otherwise more assistance is needed to be safe in other-than-ideal conditions.

11 Substantial damage DG motorglider propeller damaged. No SAC accident report received.

12 Substantial damage Standard Cirrus canopy damaged when pilot's head struck it. No SAC accident report received.

Lessons Previous canopy damage accidents have been caused by improper seat belt adjustment, use of too-soft seat cushions that compress easily in turbulence, and caps with a hard button on top.

13 Substantial damage PIK-20 groundloop in off-field landing. On final the pilot attempted to land glider much farther down intended landing field to reach an access road. The result of moving reference point up was an overshoot situation when the reference point was lost. The attempt to turn glider away from trees at the end of the field on the ground run with rudder resulted in dropping a wing.

Lessons As a rule, in off-field situations, it is better to get the glider into the field in the first third of the available space, land straight as possible into wind and minimize the ground roll.

14 Substantial damage ASW-15 gear up landing. Pilot modified the procedure for downwind checks to complete water/wheel item when approaching airport. Distracted by traffic closer to the pattern this item was missed. Once in the circuit gear was assumed to be down as it was habit to do so earlier in flight.

Lessons Modifying standard procedures have increased risk for failure. Always visually confirm handles are in the correct position if possible and/or get used to listening to the changes in wind noise created by down gear. Gear controls should be labeled "open" and "closed".

15 Substantial damage DG motorglider damaged in off-field landing with motor extended. No SAC accident report received.

Lessons Similar accidents in the past has led FT&SC to draft a checkout procedure for motorgliders with the aim to reduce the risks associated with this aircraft type. This document is available and will be on the SAC web site.

16 Minor damage ASW-20 overshot runway floated down landing field and over fence landing gear up in adjacent field. Pilot had pulled on the gear handle instead of air brakes. Wind was 10 knots at 050 landing on runway 14.

Lessons Confusion between air brakes and flaps cause similar accidents annually, usually with more serious consequences. There are ergonomic measures to deal with this such as different coloured levers and textured handles. Visually check if possible by looking at the air brakes on the wing when you move what you believe to be the correct handle. Get used to feeling the aerodynamic differences on the controls. Discipline yourself to make this a habit and also with your gliding students. Discuss this point at an instructor meeting.

Landing downwind increases the risk factors in this type of situation. Human Factors also indicates that when a pilot does not get the response they expect they can become mentally paralyzed into inaction (deer in the headlights). We are all susceptible to this and when we are surprised by an unfamiliar outcome we need to reassess. Practising similar drills in various scenarios has

proven to be a method of training ourselves out of inaction. In this case the brain goes into automatic mode and falls back to what was learned as a drill. No drill – no action.

17 Minor/major damage L-33 damaged during derigging. A maintenance inspection was planned on the spacers for the wing studs. The wing tip was dropped from about 3 feet.

Lessons Gliders are slippery in and out of the air. Although this may not have been a factor in this accident, as a general rule employ sufficient people to do the job and prepare the work site with tires underneath the wings to support and minimize damage.

18 Minor/major damage LAK landed on pavement gear up. No SAC accident report received.

Incidents

Several incidents reported included:

- Krosno spoiler and aileron controls improperly rigged by assembly crew (similar problem on Jantars).
- Puchacz trim cable wear near trim tab discovered by positive control check of trim controls.
- L-33 spar stub carry through brass washers can fall off when wings disassembled allowing fore/aft play on wings.
- Pilatus B4 kiting problem on take-off with CG hook and powerful towplanes or winch.
- L-23 crotch strap buckle falling into control sleeve blocking controls (also possible on Puchacz) passed to Technical committee.
- Inadvertent spin entry from thermal gust.
- L-33 CG hook used for aerotow instead of aerotow hook.
- Lark almost loses directional control on take-off when wing touches the ground.

Analysis

Nine accidents have training-related factors as a major element and most have significant operational factors influencing their outcomes. Club policies/procedures can have major impact to help prevent many factors that can help cultivate an accident environment. Grass cutting operations, airfield conditions, rigging standards in club, checkout policies, control/reception of visitors, etc. will mitigate risks. A club review of risk factors is needed to identify these latent conditions. Club training should also be reviewed for risk factors. Does your club train to release immediately if a wing touches the ground? Do instructors do this at your club or do they try to use their experience to save the launch?

Two areas for this report to focus on deal with stall/spin accidents and Human Factors judgement. The OSTIV Training Safety Panel has identified the stall/spin, air proximities and judgement errors as the three highest risk areas for fatal accidents. Air proxies are less in Canada as we do not soar in congested areas as much as they do in Europe, but this factor should not be discarded. Knowing risk areas, recurrent education, and understanding the limitations of sight and mental perception are required.

Our two most recent fatalities and tow accident relate to stall/spin situation and are our number one problem. Aircraft that spin easily will be around for many decades so our emphasis has to be education and training until technical solutions catch up. Spin recovery training is emphasized each spring but is only 1/3 of the equation. Recognition of situations that lead to stall/spin is also needed. This is best achieved in scenario-based training situations so that conditions leading to stall/spin are easily recognized and thus avoided. Spin avoidance also requires reacting to the stall before a spin has a chance of developing. The wing drop stall recovery (start of a spin) should be emphasized in initial and recurrent training. This recovery can be initiated at any altitude to avoid the spin. Lastly, in the event of a spin, recovery needs to be instinctive. Glass gliders typically require the stick to be moved forward to stop the rotation, which is not always typical in most of our trainers. How many pilots spin solo at altitude to practise? Does your club do wing drop stall recovery as part of spring checkouts.

Many of the accidents were related to Human Factors in what we can call judgement. If the aircraft does something we don't expect a pilot can become unresponsive/indecisive. Some argue that judgement is something we are born with, good or bad. All of us are susceptible to poor judgement at times, even instructors; it is the way our brains are wired. What can be done is to train for situations where we have predetermined courses of action or drills that we can use in emergencies. For automobiles it is called defensive driving – nothing more than drills (best practices) to rely on in driving situations. Pilots can do this with an instructor or practise for themselves, resolving several options for situations that could happen. Instructors also need to plan ahead and react as soon as they feel slightly uncomfortable with a situation. By this time the student may likely be very uncomfortable but silent. There is little skill training value present in emergencies.

More often than not, if one speaks to pilots who made the right decisions in a difficult situation, they will say at their darkest moment they went back to their training and did what had been drilled into them by their instructor! Judgement can be taught but not ignored.

Conclusion

SAC is about to introduce a Safety Management System (SMS) at the national level. This requires SAC to develop and improve its own program. This will require clubs to enhance their existing safety programs or develop new ones. This is simply a leadership-based safety program to manage safety. It will require analysis of risk areas in the organization and develop risk mitigation strategies. The program requires documentation to keep track of what we want to do and a means to follow up on our successes.

Training and student retention are often argued as conflicting requirements. They are not. Improvements to our training introduced by the FT&SC are intended to reduce injury and preserve aircraft. Problems with retention are more often related to how well people are treated and how well that training is delivered. Scheduling and instructor consistency are more important, not the number/content of lessons. The reason for SMS and more emphasis on initial and recurrent training can be answered by looking at the list above and in the past years' reports. Let's all pull in the same direction! ■

Grand Prix racing – the recent history

Bob Henderson, *from Gliding Kiwi*

THE GRAND PRIX event has been developed to provide a sailplane racing competition that is easy to organize and run and provide a simple event that is exciting for the public and media and that is easy for them to understand.

Classic sailpane racing is not particularly attractive to the media or the public. Many are the comments about watching a beehive of activity when the gliders are launched only to then have them disappear one-by-one across the horizon to return hours later. Even then the results are not known, with everyone having to wait until the gliders are all home before the results can be published.

The calculation of results also seems to be a mystery to the public — with 1000 points awarded to the winner unless the Day Factor reduces this amount or if the length of the task was too short or the speed too fast. The margins between gliders are difficult to understand and do not relate to the gaps between the aircraft when they arrive back over the finish line.

The idea for the development of the Grand Prix was started in January 2001 in Australia when a small field flew a trial "Grand Prix" in parallel with the Club Class World Championships at Gawler. *[Jim Carpenter won; see free flight 2/01.]* The gliders started off tow — with the towplanes lined up wing tip to wing tip above the airfield. Everyone could see the start and the gliders were obviously "racing". A short task was set each day and, at the end of the task the first glider across the finish line was the winner of the day.

Scoring was similar to Formula One, with the winner receiving nine points, second place six points, third four points and so on. Penalties were a challenge! In the end the way penalties were applied was to have a time penalty and to add the time penalties day-by-day. That way, if a pilot had enough time penalties they would lose a place to the pilot below them (on elapsed time) and so lose points. Scores were immediately available — everyone could score the day for themselves and the pilots enjoyed the close racing.

Refining the idea In 2003 a substantial trial of the Grand Prix concept was held at Saint Auban in France, again with a small number of pilots and an even smaller number of support staff. A number of changes were tried from the experience gained in the Australian event:

- The start was controlled by having all gliders in a start box that was controlled vertically and laterally for two minutes before the start.
- The start time was counted down on the radio and on the public address system.
- Tasks were kept very short and, on some days, the pilots were set a twice-around-the-task with the airfield as a turnpoint.
- The pilots had to call in when approaching the airfield turnpoint and descend to below 500m agl so that they could be clearly seen by the public
- Scoring was by elapsed time with those landing out being given a time penalty for the land out.

Because this event was an experiment to see how best to organize a Grand Prix, the pilots were asked that they allow the rules to be changed during the event to try different options. This was agreed and it meant that ideas could be tried and refined immediately.

On the last day at Saint Auban the French staff organized an airshow with glider aerobatics and radio controlled models entertaining the public while the racing gliders were out of sight. All the gliders carried tracking devices and their positions were constantly displayed on a relief map on a large screen. At the end of the last race the pilots were asked to roll through the finish line and up to the edge of the crowd barriers. As the first couple of gliders rolled to a stop, and the pilots opened their canopies, the crowd burst in spontaneous applause; something never seen before on a glider field! This showed us that the Grand Prix idea would be a success.

The 1st World Sailplane Grand Prix competition was held at Saint Auban, France, last year. Learning from the previous events we had a competition with twenty pilots. The start was still a "regatta" start, with the pilots being required to be behind the start line for two minutes before the start time. With the start line over the centre of the airfield and the glider altitude limited before the start, the beginning of the race was easy to see for spectators.

Speed tasks were set over closed circuit courses of approximately 100 kilometres, completed twice if appropriate. The turnpoints were the classic "beer can" 500 metre radius observation zones. Altitude was strictly controlled at each of the turnpoints to maximize public visibility of the sailplanes and the St. Auban airfield was also a turnpoint. The turnpoints away from the airfield were adjacent to ridges and hills where the public had road access to viewing areas set up alongside the turnpoint. The finish line was placed across the airfield to maximize public viewing.

Flight verification was by flight recorders with those who finished being scored on their elapsed time. The time was accumulated day-by-day so that the winner at the end of the week was the pilot with the lowest total time. Any pilot who did not make it home was given the time of the last finisher plus one minute for every kilometre between their landing position via all turnpoints to the finish line, assuming they would have flown home at an average of 60 km/h.

Tracking devices were carried by the gliders to provide a real-time display to the public, and for the internet. The competition was over one week, and being able to have more than one race on the same day provided a way of ensuring there were a good number of races – especially when weather forecasts were not good.

Ground organization for a Grand Prix is much simpler than for a world championship event. The num- ⇨ **p20**

Instructional technique cutting the apron strings

Question

Getting the student solo involves teaching two things successfully: mechanical skills and judgement. In the time close to solo, a student can "stall" on the judgement side of the training. Can a large part of this problem be the fact that the very presence of the instructor becomes a psychological barrier to further improvement in judgement?

Is there a point where getting the student on his own tells him that he can't rely any longer on the voice in the back – basically concentrating the mind and improving judgement thereby.

Some feedback

A quick disclaimer. I am *not* a flight instructor. I'm a human performance consultant, and having specialized in instructional design, I'm familiar with many scholarly publications. Boring ... let's talk about flight instruction.

First, "judgement" is a very difficult construct to pin down. Any pilot's ability to respond appropriately to an in-flight event depends (variously) on physical ability, the degree to which their actions are automatic, and the experience they have to draw upon. Judgement is mostly a resource born of experience. I'm not sure that instructors can teach judgement, but they certainly can nurture it, both inside and outside of the aircraft.

In the early stages of flight training, the instructor explains, demonstrates, then allows the student to practise. At that point, the value is in the instructor's direct feedback. The instructor also helps the beginner interpret feedback received from the glider as it responds to control inputs, surrounding air, etc. That early part of the instruction helps hone the physical part of the skills.

The judgement training comes from describing "what-ifs", drawing attention to important cues, relating personal experiences, and linking the events of one flight to any number of possible scenarios. Judgement, in essence, is the "thinking" part. It consists of assessing situations, selecting actions, and formulating possibilities. Needless to say, judgement also includes awareness of one's own limitations. Only an instructor can determine whether or not a given student has physical and judgement skills necessary for safe solo flight.

My experience and intuition tell me that the best instructors change the nature of their partnership with students as they progress toward solo. The scaffolding that supports learning is carefully taken away piece-by-piece until the student is essentially flying alone, even before leaving the instructor on the ground. If the student continues to rely on the instructor for judgement, perhaps too much of the scaffolding remains – there may be sufficient physical skill, but low confidence. Should you then send the student solo anyway? In my opinion, suddenly and arbitrarily

removing all your support may not be the answer. It may get past one barrier, but I do not believe it would be a suitable catalyst for developing judgement.

Some ways an instructor may avoid becoming an impediment to judgement and decision-making in the air is by:

- making fewer statements and asking more questions,
- posing more "what-if" scenarios,
- saying less while encouraging the student to express thoughts aloud on the flight,
- providing meaningful alternatives and supportive feedback.

Nearing solo and within the bounds of safety, the instructor *must* allow the student to make and correct more of his or her own mistakes. Brief, measured feedback aloft followed by a thorough debriefing on the ground will ensure the proper lessons are learned.

I recently returned to soaring after a ten year absence and have taken several hours of instruction over the past weeks. Naturally, I'm inclined to reflect on the nature of flight instruction – not to mention the degradation of my reflexes and psychomotor skills.

Carl Czech

One thing I want to see is how a pupil will cope when the workload goes up. There are lots of ways to get this; ending up out of position for the circuit, demonstrating something at the top of the circuit, sometimes just looking at the three gliders ahead in the circuit and doing nothing. What does the pupil do? Are his priorities correct? Will he happily land somewhere else? Does the handling stay good? If the pupil copes sensibly with something a bit more difficult, then you both can be more confident about going on your own.

Chris Rowland

There may actually be two questions at hand: (when does it become non-productive and when does it become counter-productive). The immediate answer to both is simple – the presence of the instructor becomes nonproductive beyond the point when the objective of his presence has been achieved, and counter-productive when it impedes progress toward that objective. The much larger and more complex question is, "What are the objectives of pre-solo training, and how does the instructor determine that they have been met?"

You suggested initially that the point of non-productivity may have been reached when the process of transfer of responsibility for safe outcome of the flight stalls over the student's deference to the instructor's presence. However valid that may be, for the instructor to step out of the aircraft on that basis alone is not only irrelevant to the training objectives, but also a "sink or swim" proposition with a real potential of the student failing to swim.

Eric Coleson

Flying the slopes

George Eckschmiedt, who flies with VSA at Hope, comments on slope soaring following the article that appeared in the last issue.

> I searched a number of books on slope flying practice. The emphasis in all the books was how to find lift, how to make the best use of it, *when the glider is the only glider in the air.* I was not able to find any reference to shared slope flying. I'm convinced the information is there, but hiding in local "rules and practices" at many flying sites ...

In days past, winds of 20-25 km/h brought joy to the heart of many glider pilots. It meant that they could fly for a long time, with relative ease and comfort, relying on the wind and mountain slope conditions to keep them aloft as long as the wind blew (or the bladder allowed) or, as in my case, the "commissar" (as opposed to the instructor) allowed it. A long row of gliders queued up to be bungeyed off or winched, joining as many as 10-15 other gliders already on the slope pattern.

Viewed from the ground it often looked like a giant aquarium with colourful fishes swimming around. It was like an aerial ballet; one colourful glider after the other, some with the sun glistening *through* the wings, dancing a ballet, all turning at the same point, only to retrace their path on the way back. It was a

delight to the eye to watch. Gliding was a spectator sport then — people took picnic baskets to the mountain tops to watch, just as you see some now at the end of the runways at busy airports. I'm glad I experienced that time, I had a chance to participate in it.

Now that the mountaintop launch sites have been left to the hang glider and paraglider pilots, and the different shapes and colours of gliders replaced by white fibreglass phallic symbols, all aiming for every flight to be 3–500 kilometres, the allure of just floating on the slope has also vanished. If a mountain flight is mentioned in contemporary literature it's usually related to some 1000 km speed runs somewhere in the USA, or a 2000+ km Andean wave flight you absolutely will not be able to enjoyably observe.

But slope soaring and mountain flying is still alive and well and it is practised at many places including our own Hope area. But now everything is bigger and better, even the mountains — our slopes are almost 5000 feet high. So, would you believe a 500 foot one a kilometre long with 12 gliders flying along it? Without colliding? Yes, I have been in it.

Do fishes collide in the water? Perhaps they do, but I have never seen it. Do ballet dancers collide? Did gliders collide in the air when slope soaring? Yes they did, but not as often as one would think. What is it that kept this aerial aquarium intact, without fishes or dancers colliding? How did they do it?

They knew the choreography – the slope rules – and obeyed them – and everyone knew the price of the alternative.

Slope flying is like a dance. Not the ones reminiscent of the random motion of molecules, but a ballet, where every participant knows the next step of their own and those of the other dancers. Look at the upsurge of the popularity of line-dancing. The constraint of doing something in unison allows the pleasure of doing a known something very well.

Order is preferable to chaos. Nowhere is this more applicable than in slope flying. Slope flying is just simply orderly flying. Like human behaviour, societies have their rules of conduct that constitute this order. At one time, every child was required to learn a certain etiquette, and etiquette books were quite popular. Try to find one today! Perhaps that is the very reason why there is so much randomness in human behaviour these days.

I recall that when I was a student in Hungary in 1952, all students ready for their "B" exam were required to pass an examination on slope soaring rules. It was taken *very* seriously. During my all-too-infrequent trips to Europe I was able to recover my original copy of these rules. Then much to my pleasure, I found a 1957 edition of the book, detailing all those rules I had to learn and listing some more ideas about slope flying. I have not find anything better since then.

The basis of the slope flying rules are self-discipline, courtesy, and predictability, thus allowing the other pilot to know what you are going to do. So here are the slope soaring rules. I maintained some of the starkness of the original language to emphasize that these were *rules*, not recommendations:

Slope soaring rules and etiquette

- Standard rules of the road apply; right-of-way on the right.
- When meeting head-on, both gliders must alter their course to the right.
- When flying on the slope, the glider that has the slope on its right has the right to stay in the lift along the slope; therefore, the one that sees the slope on its left *must* turn away from the slope by turning right.
- When gliders on the same track are closing, the one that is on the right of the other has the right of way. The one that *sees* the other on its right *must* give way by turning to the right or aligning behind the other glider.
- All turns must be made *away* from the slope.
- Gliders are prohibited from approaching each other closer than 150 feet.
- Passing is allowed only on the right. Diving under or pulling up behind is strictly prohibited.
- Gliders flying in the slope pattern are prohibited from:
  a. making turns steeper than about 25°,
  b. flying in circles,
  c. diving toward another flying object,
  d. doing any aerobatics.
- It is *compulsory* for all pilots flying on the slope, before the commencement of any turns to look into the intended turn to at least 100–120 degrees and may start the turn only after the look-in. After completing about 90° of the turn, the pilot *must look to the slope*, and may complete the turn only if no other glider is nearby. If many gliders are on the slope and the turn cannot be completed with the required separation, the pilot must not complete the turn and must fly straight ahead, even at the cost of losing the lift that necessitates landing.
- In the defined slope pattern with designated turn points, it is prohibited to break up the pattern, to turn before the turn point, and to cross the path of the glider that is at the turning point.
- When a glider follows another one on the slope, it is prohibited to turn before the glider in front turns.
- The pattern may be left only at the turning points.
- If a faster glider cannot pass a slower one on its right, the faster glider must appraise the situation during his turning point observation and, if the situation warrants, it may have to leave the slope pattern at the next turn and prepare for landing.
- A glider must not "anchor" itself on any point of the slope.
- A glider joining the slope pattern must join it at a turn point or only when the pilot views the slope on his left and the joining angle must be sharp.
- Every slope has a traffic saturation point. (On one slope about 600 feet of altitude and about 1000m long, the maximum number of gliders allowed was set at 12.)
- If the glider sinks below the predetermined minimum altitude, the pilot must land.
- Whenever a landing directive is issued to all gliders, all gliders must obey it. The glider with the lowest altitude must land first and all other gliders must follow in the order of their altitude.
- Gliders shall not circle at altitudes less than 200 feet above the crest of the ridge and only when this does not interfere with the gliders still flying the pattern.
- When two or more gliders are on the slope pattern, circling in the pattern is prohibited.
- In turbulent lift all gliders shall fly 8–12 knots faster than their minimum sink speed.
- When gliders are in a thermal, all pilots must turn in the same direction as the glider on the top of the thermal. Gliders joining other gliders in a thermal must assume the direction of the existing turn, regardless of the altitude they joined. ■

2005 Sporting Committee Report

Members: Jörg Stieber *joerg@odg.com*
Walter Weir *waltweir@ca.inter.net*
Dave Mercer *djmercer@telus.net*

Sporting committee at full strength again I want to thank Dave Mercer for volunteering to join the Sporting committee.

IGC Plenary Meeting I attended the IGC Plenary Meeting in March 2005 and delivered the Garmin presentation on the use of handheld Garmin GPS units for badge documentation, standing in for Larry Keegan who had to cancel last minute. The presentation was received well by the delegates. There was a general consensus that handheld GPS units had potential for documenting badge flights; however, their reliability and consistency needed to be established by generating and analyzing a number of flight files.

Agenda, key decisions and minutes of the meeting posted at: <*http://www.fai.org/gliding/meetings*>

I will be attending the upcoming 2006 meeting on March 3–4 in Lausanne (there will be no cost to SAC). The agenda, reports and related documents can be accessed at <*http://www.fai.org/gliding/igc_plenary06*>

2005 Nationals Rules In February 2005 an intensive Roundtable discussion titled *Nationals Rules 2005 and Beyond* was moderated. The discussion attracted 2787 views and 47 postings. Based on the feedback received from the Roundtable and from the contest pilot session during the 2004 Nationals, the 2005 rules were amended to incorporate the Area Task for TDT scoring as well as speed/distance scoring. Pilot Selected Task and Assigned Speed Task were eliminated as their features are covered by the Area Task.

Nick Bonnière who has maintained and supported the scoring software for many years was kind enough to adapt it to the amended rules. The Sporting committee thanks Nick for his efforts.

2005 Nationals The Nationals were hosted by the Alberta Soaring Council in Claresholm, AB. The 24 competitors were fairly evenly split in two handicapped classes, Racing class and Club class. Competition Director Dan Cook provided great leadership to keep the contest well organized, fair, and harmonious. Unfortunately, record rainfall inundated southern Alberta during the weeks before the contest. Following the start of the competition, several heavy thunderstorms kept the ground saturated. As a result, convective activity over the farm country was weak and conditions for off-field landings were difficult. Only four competition days, some of them with short tasks, were achieved in each class. The participation of Justin Wills, a veteran of international competitions and one of the world's top pilots, made the Nationals special. Justin provided valuable guidance to pilots and task committee. The winners were:

Racing Class:

1. Justin Wills 2868 points
2. Ian Grant 2171 points (Canadian Champion)
3. Dave Springford 2076 points
4. Ed Hollestelle 1893 points

Club Class:

1. Tim O'Hanlon 2095 points
2. Ron Cattaruzza 1897 points
3. Phil Stade 1671 points

These were the first Canadian Championships where the Area Task was used. A detailed explanation of this task type and a summary of the lessons learned can be found in *free flight 4/05*.

On behalf of the participating pilots, the Sporting committee thanks the Alberta Soaring Council, and particularly Tony Burton, for their efforts to make these Nationals happen. Thanks also to Dan Cook for volunteering his time, experience and skill as CD, and to the community of Claresholm for making the airport and facilities available.

2005 Seeding List The 2005 Seeding List was calculated based on the results of the 2005 Nationals. The top seeded pilots (>85%) are:

Dave Springford	96.1%
Ian Grant	95.8%
Ed Hollestelle	90.1%
Jörg Stieber	89.8%

Online Contest Canada - Canadian Decentralized Championships
The OLC Canada continues to be very popular.

- 180 pilots participated with 1959 flights submitted
- 423,011 cross-country kilometres were documented

Besides inspiring Canadian pilots to set higher goals, the flight statistics documented by the OLC are a very valuable tool in negotiations with NavCan and Transport Canada when it comes to access to airspace, etc. The Canadian Decentralized Championships 2005 are based on the OLC results. However, the CDNC score maintains the sub-category "pure gliders" of the OLC prior to 2005. This is in recognition of the fact that pilots of motorgliders have more opportunities to access good soaring conditions compared to gliders:

- launch opportunities from airports without gliding operations.
- launch timing independent of towplane availability.
- Inconvenience of landing out and availability of retrieve crew no factor.

For the 2006 season the FAI-OLC was introduced which brings back the scoring for FAI triangles. The FAI-OLC will run parallel to the regular or classic OLC. *Free flight 6/05* contains a detailed intro to the 2006 OLC rules by Ernst Schneider.

Unfortunately, the OLC organization was unable to continue our special Canadian rules which allowed flights in the USA by Canadian pilots in order to level the playing field between east and west. In my opinion, under the new OLC rules which accept flights originating in Canada only, a Canada-wide competition is not meaningful. Nevertheless, the OLC continues to be a great venue for regional competitions, club competitions under the OLC league and as an instrument for documenting flights. Going forward we now have the following options:

- Separate the CDNC from the OLC. Use the OLC as a scoring basis but determine the annual winners of the CDNC according to our own rules. For example:

- Maintain the status quo and continue to score US flights.
- Restrict US flights to certain sites (PA/Florida or eastern US).
- Allow all flights in Canadian registered gliders/motorgliders, independent of the region.
- Canadian flights only but with a territorial handicap (like the Barron Hilton Cup).

- Use the FAI-OLC. The focus on FAI triangles levels the playing field somewhat but I still have my doubts if we can have a fair contest.
- Just run the OLC as a series of regional contests. Maybe it is just not feasible to have a fair nationwide contest in a country the size of Canada.

In order to celebrate the FAI Centenary, special FAI Gliding Weeks – a global competition – were organized in the northern and southern hemispheres. The scoring period for the northern hemisphere was 9–24 July, 2005. Each pilot was scored according to her/his best flight within the scoring period in the respective FAI class. The Canadian rankings are:

Club Class:	Dick Mamini	494 points	Rank: 56 of 979
Std Class:	Jörg Stieber	681 points	Rank: 28 of 986
15m Class:	Ian Spence	528 points	Rank: 78 of 460
18m Class:	Hans Binder	781 points	Rank: 38 of 666

COTS GPS Garmin kindly made a number of GPS units available to proponents of COTS (commercial off-the-shelf) units for testing under realistic soaring conditions. It is the objective to log a statistically significant number of flights to prove that the COTS GPS data are sufficiently reliable for badge documentation even without confirmation by parallel barometric altitude data. The tests are ongoing.

29th FAI World Gliding Championships
The next Worlds for Standard class, 15m class, 18m class, and Open class will be held this year in Eskilstuna, Sweden, June 5–17. Their web site is <*http://www.wgc2006.se*>. ■

FAI BADGE SUPPLIES

Order through FAI badges chairman – Walter Weir

3 Sumac Court, Burketon, RR2, Blackstock, ON L0B 1B0

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

1	FAI 'C' badge, silver plate pin		$ 6.00
2	FAI 'C' badge, cloth		$ 6.00
3	FAI SILVER badge, pin		$45.00
4	FAI GOLD badge, gold plate pin		$50.00
5	FAI GOLD badge, 10k or 14k pin		
6	FAI DIAMOND badge, 10k or 14k pin and diamonds		
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35	SAC BRONZE badge pin *(available from your club)*	$ 3.00

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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SAC news

SAC insurance report

The renewal packages were sent out to each club treasurer or contact in late December. If as a private owner, you do not have your renewal yet, please contact your club Treasurer. The club treasurers are an integral part of the renewal process. Please make their jobs easier by forwarding your premium payment and paperwork promptly. We have had at least one instance where aircraft coverage has been in question due to late payment of the premium.

Don't endanger your coverage by not paying the premium on time.

Unfortunately, other commitments prevented me from attending the SAC AGM this year. Thanks to the Vancouver club for their work in putting it together.

For those with questions or comments, please use the SAC insurance committee address, <*insurance@sac.ca*>, as it is usually the quickest and easiest way to reach me.

1. After canvassing the available Canadian market, we were able to negotiate a renewal with our existing underwriter. For 2006, the average increase over the plan as a whole is 6.5%. The exact increase will vary by specific aircraft. Other underwriters were unwilling to provide a lower bid, or were only willing to underwrite a portion of the complete plan.

2. While our recent claims record has been improving, the available Canadian underwriters do not yet feel that it is a consistent enough record to negotiate a lower premium for the plan at this time.

3. Again, we looked at providing higher deductible levels, but the drop in premiums wasn't meaningful, balanced against the risk taken on through a higher deductible. In many cases, the higher deductibles carried by some power flight operations are because the insurers are unwilling to provide the lower deductibles.

4. Last year the plan rebated a total of $9659 to those owners with claims-free records. Unfortunately, $8261 was also levied in additional surcharges to those owners with recent claims. These surcharges will be used to pay claims-free rebates in the current year.

5. We have started to shift the insurance year away from 1 January with a goal to realign it with the SAC membership year (1 April) and the general start of flying season. This will ease some of the financial stress on clubs – in particular by bringing their insurance premiums closer to the start of the revenue streams. It will also move the renewal away from the busy Christmas period and its seeming inevitable personal bills.

I know the last thing I want to be thinking about between Christmas and New Years is my own insurance bill!

The shift will be done over 2 to 3 years so that we don't have to incur a "15-month year" insurance premium. For this year, we will have a 13-month insurance coverage year, making the renewal next year Feb 1 rather than Jan 1.

While the initial quote for 13 month's coverage would have been 8.5% on average over the complete plan, we were able to negotiate 13-month coverage for 12-month premium, yielding a premium savings of almost 2%. We are also still able to offer clubs and individuals a payment plan to spread out the premiums across six payments. Interestingly, very few individuals or clubs choose to take advantage of this payment plan.

6. The underwriter is continuing to provide $10,000/year to SAC for funding FT&SC initiatives. They see the long-term benefit in training and safety initiatives to promote a better safety record.

Here's hoping a fun, challenging and safe year of flying for everyone in 2006.

Keith Hay

SAC INSURANCE HISTORY, 1996 – 2005

	1996	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Insured Clubs	32	37	37	39	41	38	35	33	36	32
Total Aircraft	393	387	411	359	376	306	276	351	368	337
Hull Value ($M)	9.13	8.61	10.15	10.55	10.89	9.49	8.56	13.35	13.60	12.7
Hull Premium ($K)	247	241	267	289	306	300	287	399	473	446
Hull Losses ($K)	185	151	340	347	280	127	147	387	149	263
Hull Loss Ratio (%)	75	63	127	120	92	42	51	97	32	60
Total Premium ($K)	356	347	423	435	466	493	508	652	804	733
Total Losses ($K)	1616	1717	456	401	339	127	147	629	361	273
Total loss ratio (%)	454	495	108	92	73	26	29	96	45	38

2005 total no-claim bonus rebates – $9,659 claims surcharges levied – $8,261

Alberni Valley Soaring is back

We are pleased to announce that the Alberni Valley Soaring Association, the only club on Vancouver Island serving sailplane pilots, intends to recommence flying operations in spring 2006.

Initially, flying will be limited to members with access to privately owned sailplanes, with tows provided by the club's Pawnee, but we hope to have a two-seater available to support soaring operations some time in the 2006 season. I invite all interested and experienced glider pilots wishing to fly on Vancouver Island to come and fly their sailplanes in the great soaring conditions offered out of Port Alberni during the soaring season. Of course, we would appreciate help from pilots in setting up and running the new operation. If you are interested in learning more, please contact me (info on back page). I hope to see you soon!

Mark Harvey, president

SAC membership 2005

Club	10 yr avg.	2005 total	% avg
ACES	–	6	100
Alberni	14	0	–
ASTRA	10	13	130
Air Sailing	18	18	100
Bluenose	23	9	39
Bonnechere	7.8	6	77
Cantons de L'est	new	7	100
Central Alberta	12	20	161
Champlain	55	32	58
Cold Lake	11	0	–
COSA	25	0	–
Cu Nim	61	58	96
Edmonton	51	45	88
Erin	24	13	53
Gatineau	86	73	85
Grande Prairie	9.1	7	77
Great Lakes	22	30	138
Guelph	27	25	92
London	33	28	85
Montréal	96	97	101
Mont Valin	3.0	0	–
Outardes	25	14	55
Pemberton	9.3	8	86
Prince Albert	17	16	94
Québec	50	47	94
Regina	22	9	41
Rideau Valley	31	31	101
Rockies	24	39	165
Saskatoon	18	15	82
Silver Star	12	15	130
SOSA	158	158	100
Toronto	19	19	100
Vancouver	82	74	90
Winnipeg	60	45	76
York	98	96	98
Non-club	24	24	100
Air Cadet League	8.3	2	25
totals	*1245*	*1099*	*88.3*
membership in 2004		*1134*	

Vancouver AGM a success

Well, almost Vancouver – it was in Richmond near the airport – the sunny south part of the BC Lower Mainland on this AGM weekend.

The Vancouver Soaring Association, mainly in the persons of Dave Baker and Mark Mozel, organized a successful and enjoyable get-together featuring a range of interesting presentations and workshops that made choosing which of the parallel talks to go to a challenge at times.

As usual, the SAC Board and the Flight Training & Safety committee used the time to have their face-to-face meetings. The Flight Training & Safety committee reviewed 18 accidents in the SAC annual safety report and discussed lessons learned. Unfortunately few accident reports were received from clubs. The committee reviewed the new Safety Program requirements and the results from the first safety workshops that were well received in Red Deer and Winnipeg.

Phil Stade has turned over the presidency to John Toles, the Prairie Zone Director – John will have the interesting job in the coming year of exploring the possibility of integrating some of SAC's administrative work with other aviation organizations like COPA.

This direction arose at the AGM from passage of the motion that has been generating all the heat recently on the SAC Roundtable. This motion replaces a similar motion passed at the 2004 AGM. The intent is to investigate possible resource-sharing without losing autonomy. It was pointed out by several individuals that the motion is to enter into "discussions" and any changes recommended will require membership discussion and approval. Ian Oldaker stated that there are several European aeroclub models of operations that could be usefully studied. There was no interest shown in incorporating *free flight* into COPA's newspaper. Phil noted that the Board needs to address this issue in any case so it will be a good place to start. The vote was: for – 30 (this included those holding club proxies), against – 8, abstain – 2. The minutes of this AGM and all the director and committee annual reports for 2005 are on the SAC documents web page. Read them.

With the legalities out of the way, the remainder of the day was taken up with the lectures and workshops, for which there was a large turnout. The greatest interest was in Ernst Schneider's OLC update, Trevor Florence's talk on mountain flying at Invermere, and Bill Daniels outline on the current state of the art in winching and its economics. Bill, a member of the Mile High Gliding Club in Boulder, Colorado, has done considerable research on the subject for North American audiences. He was invited to the AGM specifically to lend substance to the discussions taking place at our clubs now.

The day closed with a very tasty awards banquet "wallpapered" with a long series of Cowley photographs and the keynote talk by John Lovelace, producer of the *"Wings Over Canada"* TV series.

Tony Burton

AWARE weather manual

SAC no longer stocks the AWARE (MÉTAVI) weather manuals. However, these manuals are available on the Environment Canada website at:
<www.msc-smc.ec.gc.ca/education/aware/index_e.cfm>.

Whoever thinks,
when strapping into their cockpit,

"I wonder what the accident rate is in gliders this year?"

Take no consolation in statistics when you fly. On this flight, your accident rate will be either 0% or 100%.

Assure the 0% by flying within your personal limits; you know what they are.

FAI gliding service awards

At the recent meeting of the FAI International Gliding Commission (IGC), the following awards for the year 2005 were made:

LILIENTHAL MEDAL

Ian Strachan (England)
for his outstanding record of eminent service to world gliding over a long period of time, especially for his work in developing motor-glider instructional techniques, identifying and publishing GPS-based turn points, and evaluating and approving flight recorders for records, badges, contests and everyday flying.

PIRAT GEHRIGER DIPLOMA

Martin Simons (Austalia)
for his services to the vintage glider movement and to the recording of the heritage of gliding. His three volume book is the most definitive and comprehensive coverage of the world's sailplanes for the period 1920 to 2000.

Fransois Van Haaff (Netherlands)
for his contribution to the representation of the international gliding community on questions of airspace and equipment.

FAI BADGE SUPPLIES

Order through FAI badges chairman – Walter Weir
3 Sumac Court, Burketon, RR2, Blackstock, ON L0B 1B0
Note: items 5 and 6 not stocked – external purchase approval is given

1	FAI 'C' badge, silver plate pin	$ 6.00
2	FAI 'C' badge, cloth	$ 6.00
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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

ARTICLES FAI POUR INSIGNES

Disponibles au président des prix de la FAI – Walter Weir
3 Sumac Court, Burketon, RR2, Blackstock, ON L0B 1B0
Les articles 5 et 6 ne sont pas en stock – permis d'achat externe

1	Insigne FAI 'C', plaqué argent	
2	Insigne FAI 'C', écusson en tissu	
3	Insigne FAI d'ARGENT	
4	Insigne FAI d'OR, plaqué d'or	
5	Insigne FAI d'OR, 10c ou 14c	
6	Insigne FAI DIAMANT, 10c ou 14c et diamants	
7	Certificat FAI de vol à voile (receuil des insignes)	
	Frais de services pour chaque formulaire de demande soumis	
36	Insigne FAI ARGENT, écusson en tissu, 3" dia.	
37	Insigne FAI OR, écusson en tissu, 3" dia.	

Disponibles au bureau de l'ACVV

33	Insigne FAI 'A', plaqué d'argent *(disponible au club)*	
34	Insigne FAI 'B', plaqué d'argent *(disponible au club)*	
35	Insigne ACVV badge de BRONZE *(disponible au club)*	

Votre paiement dévrait accompagner la commande. La livraison est incluse dans le prix. TPS n'est pas requise. Les résidents de l'Ontario sont priés d'ajouter la taxe de 8%.

Formulaires ACVV
Formulaire de demande pour insignes FAI, Observateur Officiel, trophées, records FAI, formulaire de déclaration de vol

Grand Prix racing

from page 13

ber of competing pilots makes accommodation, meals and scrutineering simple. Flight recorders made scoring simple. A "referee" adjudicates instead of having five stewards and a jury member. Communication of requirements and safety matters was a much easier exercise.

The future In 2006 there will be at least nine Sailplane Grand Prix qualifying contests worldwide. These events will be open to entries from all nations, with a maximum of twenty pilots permitted at any one. World and Continental Champions will have first priority. The IGC ranking list, or some other suitable selection procedure, will be used to determine the final entries if there are more than twenty preliminary entries for an event.

In 2007 the second World Grand Prix will be held with pilots qualifying by gaining a placing in a 2006 qualifying Grand Prix. The number of pilots eligible from each qualifying Grand Prix will be decided by the IGC Bureau. The maximum number of entries will still be twenty. Pilots will be restricted to only flying in one qualifying Grand Prix to gain entry to the 2007 World Grand Prix. The winner of the World Grand Prix will be awarded the title World Grand Prix Champion.

Having a two-year period to decide a champion provides interesting opportunities to develop a media "story" as the fortunes of the pilots are followed over the qualifying and then final events. This then creates real sponsorship opportunities as we would actually have something we can sell.

This style of event will not appeal to every competitive pilot. There are those who prefer the challenge of racing over the whole soarable part of the day — and of achieving massive distances while doing so. The Grand Prix is not intended to replace the classic glider competitions, it is designed as an additional style of glider racing that combines the speed and grace of the aircraft with an event that is attractive and understandable for the public.

Like many other sports, gliding is faced with the challenge of providing the competitive flying opportunities that our pilots have come to know and excel at but, at the same time, having a gliding competition that is attractive to the public.

The IGC acknowledges the initiatives and support provided by the FFVV, Roland Stuck and Terry Cubley (Australia) in the development of this exciting new style of glider racing and believes that the Sailplane Grand Prix series will become our premier sporting events for the media and the public.

Note: At the recent March IGC annual meeting in Lausanne, New Zealand won the bid for the 2007 World event to be staged at Omarama. ■

... improve safety?

from page 5

and strategies developed for preventing or lessening these risks. These strategies then become part of the club's operating policies or procedures for managing these risks.

Safety goals A club is rudderless without them. One goal is to identify risks in the club, the next is to develop strategies and take action on the most serious. This is what the SAC Safety Workshops are set up to do, to take people through the exercise of identifying hazards, assigning risk levels to each, and then developing strategies to reduce the most severe. Those attending the workshops will return to their clubs and set up group sessions of a cross-section of members (must include the club's leaders) to go through the same exercises and to update their safety program.

At the workshops we also discuss the subject of "performance measurement targets" and to set some generic targets. These could include:

- Increase incident/accident reporting within clubs and to the Association,
- Increase/improve safety feedback within the club,
- Increase participation by club members to support safety initiatives.

Summary The philosophy of our Safety Culture must be to minimize risk. Recognition that people make mistakes is a first step, but then we must minimize the consequences of a mistake and maximize the chances that the mistake will be recognized and corrected before it compounds. Here, the onus for safety is on the individual recognizing the error and correcting it, not on institutional rules or regulations. These help, but too many stifle individual initiative and should be looked at critically. Encouragement and acceptance of a review of all incidents are part of the Safety Culture. This minimizes the chances that problems will be omitted or neglected.

Are we guilty of a slow response to learning from our and others' mistakes? We should constantly talk about our flying, how we would handle different situations, whether to fly under the prevailing conditions, whether to push on or not, etc. But this should be done with care and responsibility bearing in mind the idea of a Safety Culture that will allow us all to improve continuously our own techniques and our training of up-and-coming pilots.

So, in answer to the original question — YES — all of the above go towards improving safety. ■

the state of the art

from page 7

The fact is, some of the highest performing flex wings are at the edge of stability, making them nervous beasts to tame. The young guns can make these wings perform, but old timers like myself start to fatigue.

Would I spend the coin to step up from a V to a sexy VR? ... not unless I won the lottery! I'm happy with my V (kind of like owning a good Standard class sailplane) and since I'm no longer participating in the competition scene, I don't feel the need to mortgage the farm to get that one extra point of glide. Actually, I've just recently gone the "other way" and started to fly a paraglider for its convenience. I will stick to the rigid in the big air of Chelan, WA, but in local coastal stuff I plan to get my airtime under the sack of fabric.

A final comment from Stewart Midwinter, who has his feet well-planted in both halves of our sport:

Readers will no doubt be asking, "why would I pay $20,000 for the performance of a 1-26?"

On a strictly economic basis, soaring in sailplanes can be quite cost effective. Considering the effective life span of a typical hang glider, or worse yet, a paraglider made of very thin and light sailcloth, the lowest cost per hour for soaring time will likely be the sailplane. And yet in many countries there are more people flying hang gliders and paragliders than sailplanes. Why?

It all has to do with culture. To fly a sailplane, you have to belong to a club (usually), and you can fly only at certain times, when the club is in operation. You certainly can't just go out by yourself and fly (unless you have a motorglider, of course). Then, too, there's the potential for boredom. How many times can you take off and land at the same field before you get tired of it? If you want to try out a new location, there's quite a procedure involved in moving your equipment. And travel internationally with your sailplane? Forget it!

With the foot-launched gliders on the other hand, there is a vast array of places you can fly, each with unique scenery. And if you tire of mountains, the wide open prairie road system provides unlimited towing locations. It's possible to travel internationally with a hang glider as excess baggage on an airplane, but the travel aircraft par excellence is the paraglider, which you can take as regular baggage. It's feasible to go on a vacation on every continent without getting ships and containers involved.

All forms of soaring require a trade-off, and the drawback to the foot-launched gliders is their narrower operating envelope. Pilots must be more discerning and selective in their choice of flying conditions. With sailplanes, you can be almost guaranteed of geting a flight any day you go to the field. With hang gliders and paragliders, less so.

PS. Glider pilots aren't the only ones getting older – the average age of Class 5 (rigid wing) pilots in the USA is now 53! ■

high blood pressure ... from page 9

one every two years. An ECG will be required yearly.
- In addition, you may be required to see a diabetes specialist in order to ensure that the above requirements are met.

In the past, pilots with diabetes requiring insulin treatment were ineligible for medical certification. Now, however, it is possible to hold a glider pilot licence even if you are on insulin, regardless of diabetes type, provided a number of conditions are met, basically set to ensure that there is minimal risk of hypoglycemia, excellent control of the blood glucose, and a good attitude toward management of one's diabetes.

Just as one can maintain a glider pilot licence in the presence of high blood pressure or diabetes, given certain conditions, so too can a licence be maintained in the presence of other heart conditions. For example, having a heart attack or coronary bypass surgery no longer ends one's soaring days. Six months after either event, again given certain conditions, one may be eligible for medical recertification. If you have other forms of heart disease, consult your CAME or Transport Canada Civil Aviation Medicine for further information.

Despite medical regulations, it is still incumbent upon every pilot to ensure that they are medically fit to fly safely before every takeoff. This includes making sure that you are not overly fatigued, stressed, hung over, or physically ill. Similarly, flying must be avoided in the presence of any medications which result in drowsiness or other mental impairment. Finally, any new chronic illness should be reported to your CAME, who can provide information regarding any regulations with respect to medical certification.

Many chronic diseases, such as diabetes or hypertension are helped, or even controlled, by a healthy lifestyle which includes adequate exercise. On every gliding field that I've been on, manhandling the gliders usually falls to the junior members. In light of the above discussion, perhaps it is the senior members who should be taking advantage of this form of exercise! ■

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definitely not a sailplane from page 8

ility was mostly due to the pilot's unfamiliarity with the vehicle). Typical glide flights with the M2-F1 lasted several minutes and reached speeds of 110 to 120 mi/h. More than 400 ground tows were carried out.

It was time for an aerotow. Initially it had been planned to use a Stearman as the towplane but it was later decided the NASA R4D would be more practical (also known as a DC3). The crew — lifting body pilot, R4D pilots, crew chief, mechanics, engineers, etc., assembled on the dry lake bed early one morning. The rope was attached, everyone was ready, the signal to start the tow was given. The lifting body started to move, lifted off the ground but before the climb could be started, the rope broke! You can imagine the reaction of the Director of NASA-Edwards, Paul Bikle, the experienced glider pilot. You just do not allow a rope break on the first flight of an experimental flight vehicle — especially one with such a strange shape as the M2-F1! But the pilot touched down safely and preparation began again for another takeoff for the first aerotow.

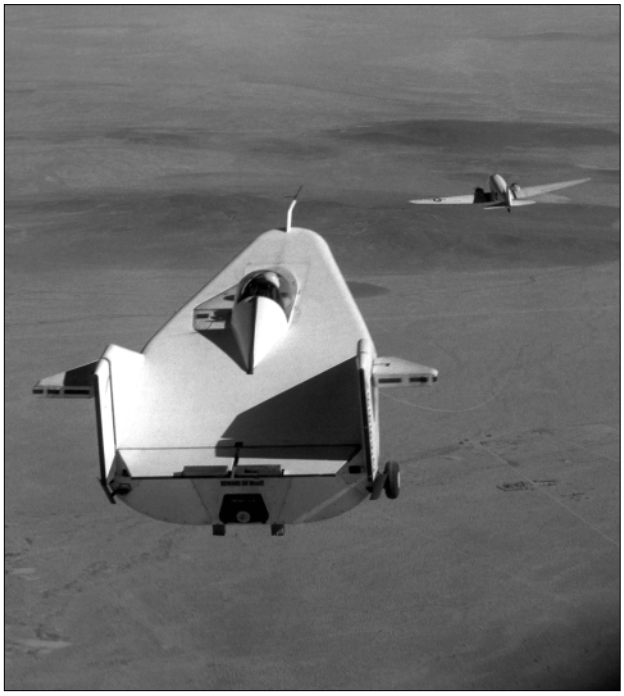
As the time passed, the pilot wondered — *perhaps we should wait for another day? It's getting late and turbulence may be developing.*

But soon everything was ready again. The R4D started moving and the lifting body followed, then rose into the air and flew successfully on tow to an altitude of 12,000 feet. After release, the average rate of descent was 3600 feet per minute giving the pilot only a very short time to learn to fly the strange craft before landing. The landing was "routine" and the concept was proven. Flight vehicles with an L/D as low as 3 can be safely flared and landed. Further tests were made, with 90 aerotows in the M2-F1.

Work continued with follow-on lifting body vehicles — a heavyweight lifting body of the same shape was built and flown (M2-F2 and M2-F3) and two other shapes (HL-10, X-24). These aircraft, powered by a small rocket engine, were launched from a B-52 at altitudes of about 45,000 feet. The HL-10 got to Mach 1.86 and 90,300 feet in 1969 and 1970.

New space vehicles designed to land back on earth are primarily lifting body shapes and are currently undergoing design and flight testing. The work of the 60s, based on glider technology, contributed the needed background data for this effort.

The M2-F1, now owned by the Smithsonian National Air Space Museum, is located at the Dryden Flight Research Center after being restored to display condition in 1977. An extensive and interesting set of photos along with detailed accompanying text is at: <www1.dfrc.nasa.gov/Gallery/Photo/M2-F1/index>. Tony ■



The M2-F1 on tow. The pilot is holding position above and to the side of the DC3 to stay out of its wake. photo: NASA–Dryden

SAC records

Roger Hildesheim

2005 Records report

Last year I asked everyone to try and fly an unusual task for their record claims. Well, this year definitely saw something unusual, only one claim despite the opening of two new FAI categories! Walter Weir has once again caught everyone sleeping and has slipped another record into the books (3 Turnpoint Distance, citizen – 756.4 km) and become the winner of the "Looking for Heros" contest that was announced this spring.

Pilot	**Walter Weir**
Date/Place	17 October 2005, Julian, PA
Record type	3 Turnpoint Distance, Open & Club, Citizen
FAI Category	3.1.4f
Sailplane	ASW-27b, C-GJSJ
Distance	756.4 km Open, 665.6 km Club
Task	remote start Howard2 PA, Cumberland 53/22 MD, Howard2, Cumberland RR, Howard2 remote finish
Previous record	New, unclaimed

2006 has started with a bang with three submitted and approved records:

Pilot	**Tracie Wark**
Date/Place	10 January 2006, Tocumwal, Australia
Record type	Triangle Distance, Feminine, Citizen
FAI Category	3.1.4h
Sailplane Type	LS8-18, VH-PNL
Distance	502.9 km
Task	Tocumwal (S35°48'38" E145°36'15"), TP#1 (S35°22'43" E143° 32'08"), TP#2 (S34°31'51" E144° 49'51"), and return
Previous record:	None

Pilot	**Tracie Wark**
Date/Place	10 January 2006, Tocumwal, Australia
Record type	500 km Triangle Speed, Feminine, Club, Citizen
FAI Category	3.1.4h
Sailplane Type	LS8-18, VH-PNL
Speed	112.9 km/h (Fem), 97.4 km/h (Club)
Task	Tocumwal (S35° 48'38" E145° 36'15"), TP#1 (S35° 22'43" E143° 32'08"), TP#2 (S34° 31'51" E144° 49'51"), and return
Previous record:	None

Pilot	**Spencer Robinson**
Date/Place	10 January 2006, Tocumwal, Australia
Record type	300 km Triangle Speed, Club, Citizen
FAI Category	3.1.4h
Sailplane Type	LS4, VH-XOK
Speed	98.0 km/h
Task	Tocumwal (S35° 48'38" E145° 36'15"), TP#1 (S35° 28'17" E144° 23'43"), TP#2 (S35° 04'14" E145° 23'07"), and return
Previous record:	Dave Springford, 92.0 km/h

† Patches the Rabbit

Patches passed away two weeks before Christmas after 6-1/2 fun-filled years. We all had a good cry. My daughter Sonia has put on a brave face but she really misses him… to some extent he really was part of the Canadian soaring family as well as ours. He kept me from going nuts on my solo drive out to Claresholm last summer. On that note Lucile, Sonia and I would like to again thank Tony and all the volunteers that helped make the 2005 Nationals such a great success. We have been going through all our photographs from last summer and many fond memories of Claresholm and our additional two weeks spent hiking and camping in western Alberta and eastern BC. From a flying perspective, I learned more from flying in the wave, ridge, mountains of the 2005 Nats than I have learned in my four previous Nats.

About three weeks ago we all decided that the house was far too quiet without a rabbit. We now have a young Holland Lop rabbit named "Tango". A new (different) adventure begins…

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 Gliding & Soaring Club.

HP-14T, C-FAXH, 1480h, glider & trailer in good 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 Gliding & Soaring Club.

PW-5, C-GBVS, 550h, great cond, all ADs (incl 2003 tension members upgrade). ILEC audio vario, PZL mech, Dittel FSG 71M radio, Sierra trailer with inside foam spray. At SOSA; if an Ontario buyer takes over the syndicate ownership, no PST. Photos: <*http://ca.geocities.com/jaimepinto@rogers.com/PW-5/*>. $31,000. (416) 505-1477, <*jaimepinto@rogers.com*>.

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.

Pik-20B, C-GDXT, 1976, 800h, good shape, carbon spars, Pik trailer, Security 150 chute, new seatbelts, wing-stab-fuse & canopy covers, tow bar and wing wheel, O2, 2 batteries, charger, spare main wheel, brake and gear doors. Dittel FSG50 radio/boom mike, Cambridge vario on TE + Ball 703 with audio, G-meter, T&B, slip-skid ball, gear warning. In Pendleton. Asking $26,000. Rémy. H (613) 736-7658, W (613) 952-4342.

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*>.

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

ASW-20A, GTRM, 1981, Borgelt 50 Vario, wired for Ipaq, Dittel with boom mike, Komet Trailer. Frank Pilz <*horst_pilz@telus.net*>, (604) 657-7241.

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.

suppliers

Canadian Soaring Supplies Borgelt instruments and soaring software. Svein Hubinette, 343 - 150 rue Berlioz, Verdun, QC, H3E 1K3, (514) 765-9951 <*svein@videotron.ca*>.

Flying High Parachute sales, repairs, repacking, and custom containers. Al MacDonald (403) 687-2225 <*www.flyinghigh.net*>.

High Performance Sailplanes Planeurs de grande finesse. AMS-flight DG ELAN Std class and 2-seaters. DG Flugzeugbau GmbH 15m, 18m gliders/motorgliders and 2-seat gliders. <*willem@langelaan.com*>

Invermere Soaring Centre Mountain soaring, camping, glider rentals. Mountain flying instruction in Lark or Duo Discus. Trevor Florence, Box 2862, Invermere BC, V0A 1K0, cell (250) 342-1688, ph/fx (250) 342-7228. Website: <*www.soartherockies.com*> e-mail: <*info@ soartherockies.com*>.

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

ZS Jezow PW gliders Today's technology, polyurethane finished, instrumented, type approved PW-6U and PW-5 from CM Yeates & Associates. Avionic trailers with fittings also available. Ph/fax (902) 443-0094. E-mail <*yeatesc@ns.sympatico.ca*>, or see <*www3.ns.sympatico.ca/yeatesc/world.htm*>.

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