



2015/3

# free flight fibre



**T**HE SAFETY OF OUR OPERATIONS IS OF PARAMOUNT IMPORTANCE TO ALL OF US. We receive training and guidance on safety issues through our Flight Training & Safety Committee. Our annual safety report provides an opportunity to share experiences and develop best practices in our club operations. Still, we need to continually look for ways to improve our operations. This year, SAC/ACVV is introducing a new initiative, the *Safety Improvement Grant* program, that will provide funding directly to clubs to help them implement some of the improvements they have already identified. Under the program, SAC/ACVV will provide a total of \$120,000 directly to all clubs (\$40,000/year for three years) to be distributed pro-rata based on SAC/ACVV membership. This is estimated to result in about \$45/member being paid directly to the clubs under this program alone, with a minimum of \$500 each year for our smallest clubs. Keep in mind that regular SAC/ACVV membership fees have been reduced to only \$80 (or \$40 depending on category), so this is a significant financial commitment.

How is this possible? Over the years SAC/ACVV has accumulated about \$1.6 million in assets and continues to enjoy positive earnings on those assets. Much of this is in funds restricted to specific purposes but we also have unrestricted assets available for the current purposes of the association. The Board has determined that it is time to return some of these assets to the clubs and what better way to do it than to help fund projects that improve safety. Over the next three years our clubs can make and implement longer term plans that will have a positive impact. We all recognize improvement can be made in our club operations but I don't think it controversial to suggest that when limited funds are spent in clubs, we tend to direct our funds to things like aircraft, grass cutting equipment, clubhouse improvements, and the like – things that make our clubs more fun to be at and keep the operation going. It is easy for spending on all but the most critical safety-related items to fall towards the bottom of the priority list. It is now time for all clubs to make a concerted effort to make improvements that will benefit us all through safer operations.

So here's how it will work: each year, the \$40,000 program funding will be allocated to clubs according to membership records received by SAC/ACVV by 30 June. People continue to join our clubs after that date but all clubs are in the same boat in that regard so the proportional allocation should still properly reflect club size and contribution to SAC/ACVV. In July, each club will be contacted with its allocation for the year. Club allocations will be carried forward until used. Continued access to the program in the next year of the program will require that each club submit their safety report for the year by the normal deadline of 1 December each year. As part of that report we want to share success stories describing how safety improvements supported by this funding were implemented and the impact these investments had on club operations.

What counts as a safety improvement? It is impossible for us to provide a complete list of eligible items nor would we want to. Instead, we ask that the clubs use common sense and if in doubt, contact the FT&SC for guidance. In principle, safety improvements can include flying operations, ground operations, specialized training and facilities generally. It might mean the purchase of FLARM units for club aircraft or something as unexpected as a much needed railing on a clubhouse deck. It is up to you to find these opportunities in your club, priorities and make plans. In your club discussions, we encourage you to make contact with your Zone director or an FT&SC member for any assistance you need.

Speaking of Zone directors, we still have an opportunity for any member in the Pacific Region to join the national Board. Currently, the position is vacant and we would very much like to have some representation from British Columbia. Contact the SAC/ACVV office or any member of the Board if you would like to contribute. No experience necessary – after all, it is an amateur sport!

# free flight

vol libre



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

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This is a great photo of a K-13 and a very suspicious-looking sky. However, it has been sitting in my photo file so long it has lost its provenance. If the real photographer will come forward, I'll let *Free Flight* readers know who you are.

The pdf copy of this issue is in colour on the SAC free flight web page.

## DEPARTMENTS

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# We are what we do

“Culture eats strategy for breakfast” – Peter Drucker

I AM A BIG FAN OF THIS QUOTE and its underlying message. In short, it is saying that regardless of policies and procedures, it is culture that will drive the situation. With that in mind, I would like to share a great definition of culture I recently came across: “... the pervasive patterns of behaviour (conscious and subconscious) in response to situations.”

Culture is, quite simply, how we behave. Different situations will elicit different behaviours. In the context of aviation we put processes and procedures in place to improve safety, checklists and the like, but what is our culture? Do we exhibit the behaviour of respecting and following those procedures or are they an inconvenience that gets in the way of launching? What is your behaviour when you are rushed? Do you ensure that you complete your checklist or do you take that launch spot and get into the air sooner?

Take a moment to ponder these questions. Remember to answer with what you actually do, not what you were told to do by your instructor or what you tell people to do, but what you actually do. It is very easy to justify our short cuts when we have experience and skill but let's not forget who is watching and that they will follow what we do (culture) not what we say (procedure). A few years ago we noticed our students were landing very close to the beginning of the runway. This was not what we taught. After some discussion the reason became apparent, the more experienced pilots were landing short to reduce the time and effort needed to return the glider to the line for the next flight – a demonstration of skill to “put it on the numbers”. Although we taught our students to land a little down the runway to give them a safety margin, the *behaviour* was what they followed. As soon as we realized the cause, we asked all experienced pilots to refrain from landing short and the behaviour stopped as quickly as it had started.

A good culture is one where we not only operate within our skill, but operate with consideration for actions in the larger context, one where we follow the proper procedure regardless of our experience or skill level.

**David Donaldson,**  
SAC Safety Officer



## 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 organization representing Canada at the Fédération Aéronautique Internationale (FAI), the world sport aviation governing body composed of the 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.

**free flight** is the official journal of SAC, published quarterly.

Material published in *free flight* is contributed by individuals or clubs for the enjoyment of Canadian soaring enthusiasts. Individuals and clubs are invited to contribute articles, reports, club activities, and photos of soaring interest.

Send e-mail contributions as an attachment in Word or a text file. Text is subject to editing to fit the space available and the quality standards of the magazine. Send photos as unmodified hi-resolution .jpg or .tif files.

*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 communicate with their Zone Director.

Material from *free flight* may be reprinted without prior permission, but SAC requests that both the magazine and the author be given acknowledgement.

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**10** March, June  
September, December

## 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 véliques 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.

**free flight** est le journal officiel de l'ACVV publié trimestriellement.

Les articles publiés dans *free flight* proviennent d'individus ou de groupes de véliques bienveillants. Tous sont invités à participer à la réalisation du magazine, soit par des reportages, des échanges d'idées, des nouvelles des clubs, des photos pertinentes, etc.

L'idéal est de soumettre ces articles par courrier électronique, bien que d'autres moyens soient acceptés. Ils seront publiés selon l'espace disponible, leur intérêt et leur respect des normes de qualité du magazine. Des photos, des fichiers .jpg ou .tif haute définition et niveaux de gris peuvent servir d'illustrations.

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

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

Pour un changement d'adresse, communiquez par [sac@sac.ca](mailto:sac@sac.ca). La revue est disponible gratuitement, en format "pdf" au [www.sac.ca](http://www.sac.ca).

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# WSPA news

Eva Dillon, York Soaring

**O**VER FORTY PARTICIPANTS from the USA, Canada, Germany, and Israel converged on Minden, Nevada this year for the 38th annual *Women Soaring Pilots Association* seminar. Minden is well known for its mountain wave, and seminar participants were not disappointed with wave flights to 17,000 feet on the final two days and excellent thermalling conditions throughout the week.

Several participants had attended last year's seminar at York to develop the usual soaring skills, experience flight in David Bax's beautifully restored 1942 Slingsby T21, and undergo unusual attitude and aerobatics training. These pilots continue to build on this soaring and aerobatics training, facing the risk of mountain wave rotor with confidence, and using some of the altitude gained to practise aerobatics.

Our US colleagues are still talking about the seminar at York last year and how impressed they were to see neighbouring clubs SOSA and Great Lakes Gliding come to the rescue when all three towplanes were taken out of service the Saturday before the seminar started. Several brag about their thrilling aerobatic flights with Manfred Radius, renowned aerobatic pilot and York Soaring instructor who worked closely with other aerobatic instructors from York and SOSA using the Grob 103 Twin Acro, ASK-21, and DG-500 for a total of 49 flights to 5000 feet during the four flyable days.

York started its aerobatics program a few years ago with some help from SOSA and has hosted several aerobatic weeks including visiting pilots from other clubs. Training includes ground briefings on Canadian air regs with respect to aerobatics, parachute inspection and use, aerobatic theory, pre-flight ground briefings, and in-flight lessons consisting of 5000 agl tows with aerobatic maneuvers above 2000.

Valerie Deschamps from Central Alberta Gliding was awarded the \$750 WSPA "Flying Montague Scholarship" and attended the 2014 seminar to take advantage of spin training in the 2-32. While spin recognition and recovery are both included in gliding training, many clubs don't own trainers that will readily spin or maintain a spin until recovery techniques are applied the way a 2-32 does. York welcomes visiting pilots who want to take advantage of spin training or aerobatic training that may not be offered by their home club.

WSPA awards several scholarships annually to women and girls who are both pre- and post licence. Few applications are submitted annually for these awards, and several were not awarded in 2014 and 2015 due to a lack of applicants. Information on the scholarships is available on the WSPA website <[www.womensoaring.org](http://www.womensoaring.org)> and clubs are encouraged to encourage existing or potential new members to apply for scholarships in May.

Special thanks to Tracey Brake, Tony Firmin, John Brake and Charles Petersen for organizing more than twenty seminar volunteers/instructors from York and SOSA to deliver the soaring/cross country and aerobatic training for 2014 seminar participants and showing them what the soaring community in Canada has to offer. If other Canadian clubs are interested in hosting a future WSPA seminar they can submit an offer to WSPA two years in advance.

The 2016 WSPA seminar will be held in northern Italy! There will be a limited number of spaces available so interested parties should register early to avoid disappointment. Men are also welcome to attend the seminars and/or join WSPA. ❖

# 750 km – in a Jantar!

Chris Gough, ESC



Chris Gough

**A**FTER FLYING a 672 km triangle in Edmonton Soaring Club's ASW-15 last year, I knew there was still plenty of room to improve on a long triangle flight out of Chipman. I had made numerous attempts at a 750 km flight while I was a towpilot at the Gliding Club of Victoria in Benalla, Australia but came up short every time. On my closest attempt, I flew 725 km before outlanding in their Mosquito.

In the off-season I spent a fair amount of time fitting 750 km triangle flights into *SeeYou*. I made about ten different routes that could take advantage of the best area of weather. I figured the ASW-15 could make the flight but I looked around for a different glider that I could also fly at the Nationals in Netook. Carol and John Mulder very graciously loaned me their Jantar for the season and the Nationals. After picking up the glider and readying it for cross-country it was just a matter of waiting for the right day.

This year the ESC executive decided to have two soaring weeks in the middle of May to exploit our best soaring conditions. The weeks started with mostly blue conditions. Bruce Friesen had a number of great flights in the blue with his Austria and Discus. The days were slowly heating up until the final weekend with *XCSkies* showing 12,000+ ft cloudbases. I saw this pattern often in

Australia. Saturday, I was on the instructor schedule so I had to take a miss on long distance flying. The conditions were spectacular – Bruce flew a 400 km speed triangle record at 134 km/h! On a flight with one of my students I had a climb to 12,500 at about 8 knots. On Sunday, Bruce and I both declared 750 km triangles. I chose the Senlac-Finnegan triangle as it kept me mostly in Alberta where the conditions were looking the best.

I usually like to get started by 11 am but it felt very still at the airport until about 11:45 am. The conditions started very quickly, much like Saturday. I got a launch just before noon and found a 5 knotter up to 8000 ft. I then crossed the start line over the field and found a 7.5 knot thermal up to 12,500 ft. Cloudbase was a little bit higher but we are restricted to 12,500 ft by Class B airspace over about half the task area. There was a long streak of cloud with virga dropping down from it so I stayed just north of track on another developing cloudstreet. The virga essentially made the base of the cloud several thousand feet lower. I got a couple 10 knot thermals on the way and the run to the first turnpoint at Senlac was pretty good at 112 km/h.

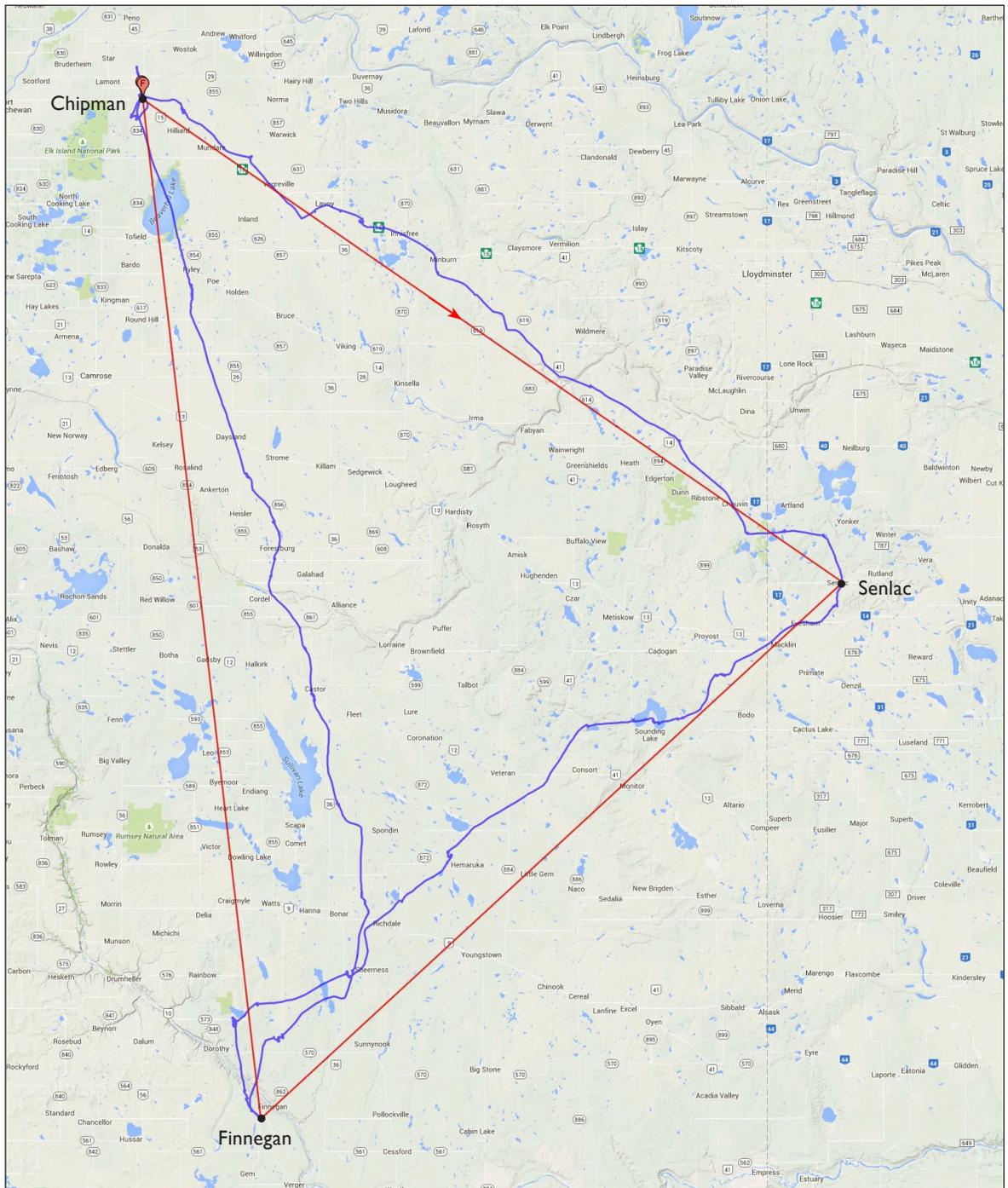
After Senlac it got a bit more difficult. Senlac was in the blue and the only clouds enroute to my next turnpoint again had virga coming from them. I decided to push

underneath the virga. The base was about 9000 and I found a good path of weak lift that let me hold my altitude. When I crossed the virga I found myself under a very large dark cloud that looked to be building into a storm. It was snowing and I soon felt small pellets of snow through the air vents; a bit lower it turned to rain. I was getting worried as I hadn't hit any lift for a while. Not until I got to the very edge of the cloud did I find a thermal. I found 3 knots which I took to keep myself from getting too low, then went a little more on course and found 5. After that it was similar to the first leg – back to strong lift up to 12,000 feet.

Getting into my second turnpoint at Finnegan, I took another deviation to get around virga. Coming out of the

turn, the sky completely blued out on course. I decided to head east to go around the hole and struggled a bit to find good lift. It took a bit of scraping to get going but I eventually connected with some good cloudstreets.

The good lift was becoming a bit harder to find compared to earlier in the flight. It was 6 pm by now and I still had 200 km to go. Bruce checked up on me over the radio to see how I was doing. He had run into the virga clouds and abandoned his task earlier. I was optimistic but not 100% confident I could make it. At the end of the cloudstreet, still over 100 km away it completely blued out and I was short of final glide by a couple thousand feet. The air became very smooth so I slowed down quite a bit. I saw one cloud in the distance almost on ⇨ p21



# Fast and furious (lift)

Bruce Friesen, ESC

**W**HEN THE WEATHER FATES ALIGN, the soaring conditions from Chipman can be outstanding day after day. Such was the case for the ESC flying weeks. The weather conditions were unusual, with east winds and blue thermals, but with strong convection aided by the long northern days.

Saturday, 23 May promised yet another excellent day, but with two new wrinkles – cumulus cloud and a late start. Another aspect was the fact this was to be my first cross-country flight with water – well, baby steps, half water – in the wings of the Discus. For years my little niche in the soaring world has been to fly as long and as far as the day would permit. Launching well past noon has not been my style but this was the day to put the emphasis on fast rather than long.

Pulling out my trusty “Field of Dreams”, my list of current Canadian records with the low-hanging fruit marked up, colour coded by glider (Standard Austria and Discus), I surveyed my options. A 400 km triangle seemed best, a fairly compact declaration but not so short as to squander the strong day. An FAI triangle task of 433 km already in my computer looked fine – Chipman/Kitscoty/Forestburg/Chipman, with its light breeze for the first leg and the prospect of a freshening tail-wind for the run home.

Launching at 1245, and initially getting low, within 20 minutes of release I had worked my way up to 11,600 (over 9000 agl). Woo-hoo, that was encouraging, and thanks again Nav-Canada for the relaxed airspace restrictions around Chipman! Mindful of the possibility of weaker conditions by the time I

returned, and not being in a rush to start, I made a quick out and return to the northwest then passed through the start at 9600 feet at 1320. There is not a lot to tell about the flight, really. It was just a great day of really strong convection, and a pilot determined, for just this once, to keep moving along as he should.

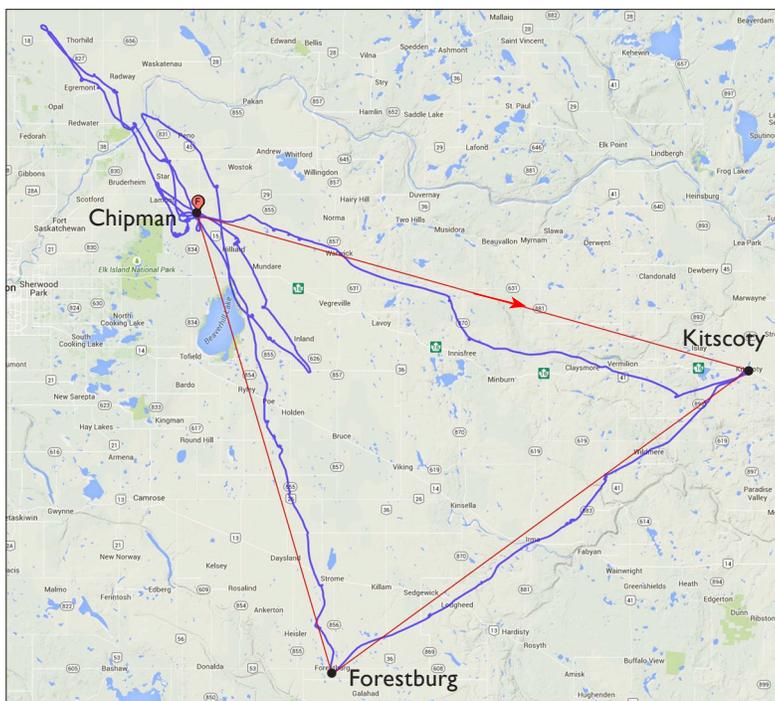
The first leg consisted of a nice glide, an 8 knot thermal, another fast glide with a dogleg 45° diagonal about 10 km off the course line at the end to connect with a line of clouds, then dolphin flying for a while. Another transition, through sink, to another cloudstreet and more dolphin flying. Wow, that was a rush! Probably the strongest thermal of my soaring career! *SeeYou* says 9.9 kt average from roll in to roll out, topping out just over 12,000.

After flying a good line of lift into the first turnpoint, I harvested it again for a while on the way out, and heading down the second leg, I did a bit of mental arithmetic and concluded an average speed of 80 km/h the rest of the way would be sufficient to secure the record. Slow down and minimize the risk? Nah. Keep pressing, leave this 5 kt thermal and find something better – and, indeed, the next two each averaged about 8 kts.

I was on final glide from about 12,000 and 60 kilometres out. But meanwhile, back at the ranch, the folks at Chipman were busy shutting down the operation and stuffing the gliders in the hangar. An ominous-looking storm cell was approaching the field from the northwest, with heavy rain already established. I could see it, but what could I do? Speed up? Slow down to conserve height so I could fly through rain to the finish? I settled on about 90 knots indicated, ground speed of 175 km/h, and hoped for the best. Slowing down, braced for hail as I passed under the leading edge of the storm, just a few drops of rain hitting the canopy, I got that welcome beep from the flight recorder, made a sharp left turn and skedaddled out of there. That was close! The finish was at 1634 and about 7200, about 900 feet higher than necessary.

A radio call to my OO, Chris Gough, confirmed he would be sticking around and had no objection to my staying up. There was plenty of lift around yet, and another 300 OLC km to be flown before dark. My thanks go to Chris for his OO duties, to Roger Hildesheim for his work on record claims, and to all my friends at the Edmonton Soaring Club who make it possible for me to challenge the skies around Chipman to these games of aerial chess.

I note the speed for this triangle, 134 km/h, is the fastest speed for any declared flight over 100 km flown over Canadian soil (at least those for which a record claim has been submitted), and also it bests the current records for triangles at both the 300 and 200 km distances. ❖



# the 2015 Nationals

Dave Springford, Todd Benko, Al Hoar, Tony Burton

**T**HE WEATHER FEATURED A LOW PRESSURE located at the northern Alberta-Saskatchewan border with an associated frontal wave which positioned a cold front north of the contest area for many days. The contest period would be dominated by instability from cold air aloft. Usually the question was, would conditions be conducive to getting away from the Netook airport? Multiple tasks were developed for temperature/lift conditions.

The Netook airfield north of Olds, operated by the Alberta Air Cadet League, was an excellent venue for the competition, and we were given every assistance to bring and run the event there, and the two local squadrons enjoyed the exposure to all those "cool" gliders.

**Todd 10 June, Day 1** The contest area remained within a single air mass and general forecast was calling for a mix of sun and cloud with a high of 23. The air mass was much cooler than the previous day and winds had subsided to less than 10 knots with a soaring-favourable flow from the south. The tephigram showed a trigger temperature of 20.5° and temperature rose quite rapidly to the target near noon only to drop back down to 19. After a short but agonizing wait the temperature rose back to trigger and the fleet was launched. The wind at thermal tops proved to make the day very challenging after the initial downwind run to the first turnpoint. The winds increased to 10-20 knots making thermalling and progress a challenge.

**Tony** The start was late, about 3 pm. Some cu, lift hard to find, cloudbase 7000 (3700 agl), so not much margin for missing lift which is why everyone but Dave landed out. (*All heights are agl unless specified asl.*) Anyway, the first leg northwest to Caroline was downwind which helped most pilots get their minimum distance in, however it was the turn back to an easterly into-wind leg that shot most down, more sooner than later.

With all but one pilot flying with FLARM, there was now help in picking up other gliders as thermal markers. I was below 1000 and heading for my chosen field when I got some bumps and turned to find the thermal. About then I got a FLARM signal from a glider approaching from behind and 250 feet below me. It was Branko in the other Russia and we were able to climb away to cloudbase. Nice.

**Dave** The first task of our contest was a 3-hour Turn Area Task (TAT) with the top of lift around 4000 feet when the gate opened. I started around 4000 with reasonably good looking clouds heading into the first area. The tail-

wind helped and I was able to move quickly along the first leg. Turning to the second leg, it was a long 136 km run into about a 15 kt headwind to the centre of the next area. Things started to go poorly early along the second leg and I found myself down to about 900 feet and had to dump my water ballast and found a weak 1.3 kt climb that I eventually centered into 2.7 and that got me back up to 3000.

As I headed east, there were no good cu on course, so I deviated south of track to try and stay with the clouds. I worked a band from about 2-3000 with the occasional dip lower. At some point along the leg, I realized that there was no way I could make the task in the three hour limit and started to think that it might be a distance day so I worked hard to keep moving forward towards the second turn. I also thought that once I made the second turn area that getting home via the third area would be a lot easier with the tailwind. I turned the second area around 3000 with most of the cu now disappearing and headed crosswind for a short 16 km leg to the edge of the third area. I arrived there about 1500 and it did not look like there was much in the way of lift ahead.

I soon found myself low and selecting fields for the inevitable outlanding. I inspected my field, lowered my gear and started to turn and felt a little lift. After about four turns and a 1.2 kt average climb rate I raised my gear and kept climbing while keeping within glide range of my field. I slowly climbed back up to 1500 and went off in search of a better climb. A couple of kilometres later I found a 1.8 kt climb that took me to 2500. During the time it took to work myself back up, I had drifted 12 km downwind and 10 km closer to the finish gate. Now 34 km from the finish and 2500, I set off at best L/D towards the gate. Achieving a 58:1 glide angle with the tailwind, I was able to cross the finish line 100 feet low (550 feet) and become the only finisher on a very challenging day. It took me 3:41 hours with an average climb rate of 2 kts and overall L/D of 60:1. It was a day that took a lot of patience to work every scrap of lift and to keep moving forward to what seemed a certain landout. I was very happy to have my 18m wings.

**Todd June 11.** The public forecast was calling for sun with increasing cloudiness and a high temperature of 25. A shallow low depression had developed in the area and an upper trough would provide a colder upper atmosphere. The tephigram indicated cloudbases of 12,000 asl. What more could anyone ask for? It turned out that hope of an ideal day never became a reality because



Oyes, oyes! – the Olds town crier opened the festivities and the contest is on. He even added some of the history of gliding for onlookers.

Lynn George

cirrostratus triggered by mountain lee wave arrived and shut down any hope of escaping from the airfield.

12 June. A low spawned both a surface frontal wave and an upper frontal wave over the contest area overnight. The forecast and tephigram were showing the cold front passage would occur before noon but the instability to develop into cloudy conditions with rain and possible thunderstorms in the region. The day was going to be a wait and see. Showers did start just about the time to consider launching the aircraft and shut down the lift for the day.

13 June. The low with frontal wave features was in Saskatchewan and moving into Manitoba by the evening. The graphical area forecast didn't really show much for weather features over the contest area other than a band of cloud linking back to Alberta. The forecast was continuing with probability of thunderstorms developing late in the day. A second pilot meeting at noon confirmed conditions were not conducive to soaring so the day had to be cancelled.

**Tony** 14 June. Here we are – three days in – wearing all the clothes we own, huddling around the camp. There's another pilot meeting at 1230 to see if the cloudbase will get above 2500 feet, but another shower (one of several) is just crossing the field. Today's high was only 13!

**Todd** 15 June, Day 2 A high pressure ridge moved into the contest area and the frontal surface reset into northern Alberta, providing clear skies in the morning and a forecast high of 18°. The graphical area forecast was only calling for broken cumulus with bases 4-6000 asl. This was strange because the tephigram was showing a trigger temperature of 14° and initial lift to 7-8000

asl and possibly up to 10,000 by mid-afternoon. By the time the pilot meeting started the sky was filled with cu. Looking at XCSkies, the tops of the lift agreed with the tephigram, however it was showing weak soaring conditions to the east side of the contest area from noon to 3 pm. The conditions resulted in a late start but at least it provided flying after so many cancelled days.

**Dave** We finally awoke to a blue sky and the first low cu forming around 9 am and a 3 hour TAT was called. By launch time the top of lift was around 4000. I started at 2 pm and had a good downwind run to the first turn area, but once again after making the turn and heading upwind things slowed down. I found myself below 2000 six times on the second leg. There was a lot of cu, but many of them lied and it was difficult to find good lift under them. I found some 3-4 kt thermals, but most were in the 2.5 kt range and this made for slow going into a 15 kt headwind.

I was getting really frustrated at not being able to find good climbs under what looked like good clouds. After turning near the centre of the second area, the frustration continued along the third leg and I eventually found myself descending through 1500 feet so I started to dump my water. I finally found a weak climb at 1300 feet of 0.9 kts but could feel there was something better close by. After climbing 500 feet, I finally was able to find the core and climbed at 3.5 up to 4000. Moving further east the conditions improved significantly and the next climb was 4.5 kts up to 5400 just before entering the third area. From there to the fourth turn area was a 28 km glide followed by another glide out ending at 2000 and then a 7 kt climb to 4600 feet 22 km from Netook and finally a high speed glide to the finish. I landed thinking that I had a

terrible day with all my low points and poor climbs, but it turns out everyone else had similar problems on task and I was just a little faster around the task.

**Todd 16 June, Day 3** A continental Arctic/Polar frontal wave was setting up in northern Alberta giving rise to an advancing cold front over the contest area. The forecast high was 22° with a supercooled atmosphere and potential for extreme overdevelopment conditions that could spawn cumulus to over 35,000 feet. Conditions also indicated cloud-bases rising to 10-13,000 asl, indicating good soaring conditions out away from the thunderstorms. The day's task needed to be launched as soon as conditions permitted. The day warmed up to the forecast high before noon, however, cirrus and cirrostratus clouds again appeared overhead. This shut down local lift development and delayed departure until much later than anticipated. Cu developed to the west, north, and south of the airfield but any near the field dissipated soon after forming. Eventually a sniffer launch found launchable conditions and by the time the last glider had launched a thunderstorm had developed west and descended onto the field only 5 minutes after the last launch. The soaring conditions were generally very good out on course but the thunderstorm at the start and subsequently at the finish time period made the day's flying tasks very challenging to complete.

**Dave** The launch started around 1330 after the second sniffer of the day reported convective activity. By launch time a thunderstorm had approached Netook and was dropping rain just to the west. Everyone was able to climb in front of the cell and my start gate opened at 1425. With a maximum start height of 8000 asl, I was able to climb to 9000 in front of the cell and then fly around the north end of it and nick the start zone while at the same time descending to

below the max start height for the required two minutes. I headed directly on course for the first area on a 2-1/2 hour Turn Area Task.

After moving far enough east away from the cell, my first climb came 20 km along the first leg at 2300 feet. I took a 2.9 kt climb up to 3300 and then moved a little further under the cloud and found 3.5 kts for another 800 feet and then moved a little further under the cloud and found 5.6 kts the rest of the way up to 6000. At this point, with the high cloudbase and strong conditions, it was flaps fully forward, nose down and run at 100 kts to the back end of the first area. I decided to go deep into the first area because my speed was good and I could see that conditions looked better further east. At the back of the area I now had a nice line of clouds running south to the second area. The second leg went well with 5 kt climbs up to 11,800 asl. As I was on the second leg, I was watching the weather to the west on what would be my leg home. I could see a grey sky and lots of rain to the northwest and one line of cu running from the second area back towards Netook. This was the obvious path home. I turned in the second area 110 km from Netook and started to follow the clouds home.

About 70 km from Netook, I came to the last cumulus on course and ahead, the sky was grey and I could see a line of rain about 40 km ahead. The only option was to climb as high as possible and head for the finish. I climbed to 11,900 asl and then set off about 1800 feet above a 3 kt final glide. As I flew into the shade, the air was smooth and I was not losing too much height. As I approached the storm, I could feel more turbulence in the air and I headed for a gap that looked to have the lightest rain and sunshine on the far side. Then for the next 9 km I

2015 CANADIAN NATIONAL SOARING CHAMPIONSHIPS			10 June				15 June				16 June				20 June				total score
			DAY 1				DAY 2				DAY 3				DAY 4				
CLUB CLASS			3 hour TAT				3 hour TAT				2.5 hour TAT				2 hour TAT				
1	Branko Stojkovic	Russia 5M XYU	1	-	119.2	480	2	73.6	276.3	859	2	-	289.6	562	2	-	117.1	356	2257
2	Chris Gough	Jantar JJ	6	-	60.0	b242	5	-	227.5	500	1	86.6	237.7	c592	1	65.2	132.0	573	1907
3	Tony Burton	Russia 4C E2	3	-	80.1	323	1	76.9	258.7	886	4	-	224.7	531	3		dnc	0	1740
4	Russ Flint	Discus CS 1W	2	-	82.4	332	4	57.5	194.6	671	6	71.7	189.9	c472	3		dnc	0	1475
5	Jay Allardyce	ASW-19 DX	7	0	0	d0	3	64.4	217.8	752	3	-	226.9	537	3		dnc	0	1289
6	John Mulder	Genesis 2 2J	4	-	65.7	265	6	-	77.2	170	5	-	208.7	494	3	-	0	a0	929
7	Trevor Finney	ASW-20 TZ	5	-	60.5	b244	8		dnc	0	8		dnc	0	3		dnc	0	244
8	Peter Timm	Taurus GW	7	0	0	a0	7	0	61.3	b135	7	0	0	a0	3	0	0	a0	135
FAI CLASS			3 hour TAT				3 hour TAT				2.5 hour TAT				2 hour TAT				
1	Dave Springford	ASG-29 F1	1	56.0	206.7	c635	1	68.8	219.6	957	1	93.0	241.1	850	2	-	116.5	403	2845
2	Stevenson/Ince	Duo Discus ZH	4	-	72.5	b184	2	65.1	219.0	905	3	-	209.1	516	4		dnc	0	1605
3	Phil Stade	DG-1000 NIM	5	-	69.7	b177	4	58.1	278.6	809	5	0	0	d0	1	54.2	131.0	c587	1573
4	Dennis Vreeken	LAK-17A ST	3	-	100.9	256	5	48.6	180.5	677	4	76.3	229.3	cd496	4		dnc	0	1429
5	Mike Thompson	ASG-29 M1	2	-	102.0	259	6	-	174.6	394	2	-	224.4	554	4		dnc	0	1207
6	Bruce Friesen	Discus 2B LL	9	0	0	d0	3	61.1	201.7	850	5	0	0	d0	4		dnc	0	850
7	Leo Deschamps	Nimus 2C 2B	6	-	44.7	b113	7	-	139.8	316	5	0	0	d0	3	-	67.3	b233	662
8	Steve Hogg	ASW-20B 1	9	0	0	a0	8		dnc	0	6		dnc	0	4		dnc	0	0
Handicapped values shown			Penalty codes:	(a) distance <1/2 minimum	(b) distance under minimum	(c) finish height under min.	(d) no or bad start	(-) landout	(dnc) did not compete										

flew through rain and big sink and lost all the extra height I had. On this transition through the rain my achieved L/D was 12:1! I exited the rain about 17 km from the finish at 2400 feet. Now flying best L/D, I had just enough height to cross the finish line about 100 feet high. Except for the rain at the start and on the final glide, this was the best day so far with strong lift and high cloudbases and I was able to run the task at high speed.

**Tony** I'm back from my retrieve now – Al crewed for me. It was supposed to be a great day with a high risk of tcu and showers later in the day and an early start before all that happened. Naturally the cu which were supposed to pop quickly didn't, so we had to hang around for an hour on the grid. Meanwhile, a big development grew to the west and bore down on the field. Lightning. The sniffer said there's lift in the blue, and we launched while the high cloud flowed in overhead. It was quite a start with climbs under the grey sky and big mammatus, but with nice cu developing to the east. I got to the 8000 asl start height but had to fly 3 km back to the field and right to the edge of the showers to get into the 5 km start ring, then gratefully scooted away northeast.

The task had been reduced to 2-1/2 hours – Stettler / Three Hills with 20 and 30 km circles. Once on course to the north-east and into the sun and cu it was a great day – 5-8 kt lift and the bases went up to 11,000. Whoopee! I turned somewhere close to Stettler then south, the fine cu had me going to the east of Three Hills. There was a huge hole back towards Netook so I had to keep going south to try and pick up a line that was pointed home, but the sky was totally

overcast that way. I had a long glide towards some sunshine near Three Hills hoping for a climb that would connect me with the edge of a grey band that might get me home. Not to be, no thermal – it was a long straight glide from there to a field that happened to be owned by an old guy who turned out to be a former helicopter pilot. Nice to talk to a farmer who asks intelligent questions about gliding. So, Day 3 done. Happily, the four days of rain and cloud has changed a little – a cold front is going through tomorrow and there might be a Day 4 for Thursday. Here's hoping.

**Todd** 17 June The polar frontal wave feature moved south again to lie right over the contest area and become a quasi-stationary frontal feature. The day was filled with low cloud, rain and drizzle through the day.

18 June, we woke in the morning to overcast conditions and rain showers. The surface frontal wave retracted further north but left an upper frontal wave parked right over top of the field. The morning was dominated by an upper warm front feature. After it moved through, cloud-bases rose but still left high overcast conditions. The evening found the cold front change and retreat as a weak warm frontal feature. The skies cleared in the evening, and some club instructional flights were made.

19 June, pilots were greeted to clear skies and sunshine this morning and was greatly appreciated. However, mid-level instability was triggering cumulus and towering cu development by 1130. Shortly after noon a sniffer

**Al Hoar, CD** I had challenges as a first-time Competition Director for these Nationals. Why and how did I become CD? Well, I knew that the organizing committee was still looking for someone, and realizing that I would be having a late start to my soaring season anyway, I offered to give the job a try for the Netook contest.

John Mulder had collected a group of great people and assigned areas of responsibility to each. I was away on holiday for a month and when I got back, I joined the group and found that they had already taken care of most things. Every time I thought of something that might have been missed, I was told, "no problem, that has been done." Weather analysis (Todd Benko), ground crew with vehicles (Brian Davies), tow-planes and towpilots, scoring (Carol Mulder), retrieve desk and more (Val Deschamps), meals and more (Judy Soroka) – all these details were handled without any input from me. There were social events and meals sponsored by the local air cadet squadrons and others on all but five of the days. Thank you John for your great organizing and all your helpers for their work. The title of CD suggests a limited responsibility, and this was entirely correct thanks to John's organization.

This contest was a real challenge. A challenge for the pilots and a challenge to find opportunities to make each contest day work. The weather did not cooperate. Many days would start off overcast and then rain just as we were ready to launch. One day we launched but no one could climb above launch height. Another day we needed to launch just in front

of, and then fly around thunderstorms. We finally did get four days of competition by agreeing to fly an extra day on Saturday the morning after the final banquet. That day turned out somewhat like the others. We had to launch quickly at noon, with a thunderstorm threatening. To make the FAI Class start possible I extended the start circle to 10 km (by radio) as the normal 5 km start circle was covered by the storm. Further east the soaring was okay in some areas, dead in others. While contestants were returning to finish, another storm blocked access to Netook from the east. I called a 20 km safety finish circle. The coordination and information provided to retrieve crews by Val was great, on this day and all the others, with Carol Mulder generating a custom Google road retrieve map to each crew.

The task committee was Todd Benko for weather, two competition pilots Bruce Friesen and Branko Stojkovic, and me. I found it very important to have the input of the competition pilots when figuring out tasks to assign. We did try an open MAT on one marginal day, but no one achieved minimum distance. It turned out that we used Turn Area Tasks for the four days that counted. Another example of how challenging the conditions were.

My overall impression was of a super well-organized contest, which would have benefited from double the number of entries as well as better weather. It was fun to contribute my small part as the CD and especially good to get to know the organizers and contestants a bit better. Congratulations to Dave Springford in winning the Wolf Mix trophy in the FAI Class and to Branko Stojkovic in winning the CALPA trophy in Club Class.



Tony Burton

was launched, but a thunderstorm southwest of the field changed track and was now bearing down on the field. The decision was to scrub the launch and get all the gliders safely stowed in their trailers due to a cell tracking directly for the airport. Shortly after the thunderstorm passed, the gliders were rigged again and cu were filling the sky within the hour. The instability in the atmosphere allowed for a complete grid launch and to set out on task. Unfortunately the little remaining energy in the day did not sustain flight far enough to make it a successful contest day.

**Tony** Possible flying forecast by Todd this morning depending on how fast the cold front sitting on the Rockies moves east. 1230 grid, 1300 launch. Everyone watched the cbs getting closer to the field, then a big anvil cut off the sun. Now 1245, it looks really angry and launch is delayed till 1500 if lift re-develops after the frontal passage. Al is getting a real education in being a CD. There's a threat of hail so everyone derigs. Sitting in the pilot meeting room at 1325, I watched the sun on the west side of the cloud get closer but there was no hint of a cu behind it. Later this afternoon prior to our evening "no awards" banquet, an absolutely evil looking supercell developed just to the north of Netook as the photo attests. On the drive to the dinner, it got so dark I had to turn on the headlights to read the speedometer.

**Todd 20 June, Day 4** The morning greeted pilots with clear skies and low wind. In essence, the day was a repeat of yesterday without any upper cold frontal issues. The forecast high temperature was only 16 degrees for the day yet the tephigram and moisture in the atmosphere projected higher cloudbases than the previous day. So the day tasked as a contest day. The grid was set and gridded by 1130 and there were cumulus clouds visible as far as the eye could see. A local flight revealed the bases were about 2500 feet above ground. Unfortunately there was a thunderstorm building to the west of the field. The entire grid launched by 1200 and just barely in time before the shadow of the thunderstorm started to shut down lift close to the field. The cumulus clouds in the direction of the task allowed most contestants to set out on course.

**Dave** Due to poor weather we had to use the reserve day to get our fourth official contest day after we were unable to meet the minimum distance requirements yesterday. This took place the day after the scheduled end to the contest, so some pilots had to head home and did not fly the last day, leaving only seven.

At the morning briefing the weather looked like it was going to produce another interesting day and a 2 hour TAT was assigned. We started the launch around 1145 and got away just before some shade and rain arrived. Clouds were about 3000 and I was getting 2-3 kt climbs (dry). On the first leg there were a few patches where the rain from the previous days left pretty large holes in the sky to go around. Getting to the first turn area was okay, working 2000-3000. Towards the second turn I got up to about 4000. On the second leg I could see the rain moving in, and probably should have headed home and arrive under time, but I wanted to make the minimum time so I extended further into the second area before turning home.

Things were still okay until I arrived at the wall of rain about 32 km from Netook. I back-tracked about 7 km until I got a climb back up to about 4000 and started to head south around the storm, but it looked too far to get around so I decided to go around the north end only to then see another wall of rain running east-west and blocking the path to Netook. So I went back to the east of the storm again and ran the leading edge towards the south, but now the storm had pushed further east and I was 40 km from Netook. I found a gap in the rain and dove through, but lost so much height that I couldn't make it home and landed out 20 km from Netook. The west side of the storm had nice blue skies, but the ground was completely saturated and there was no lift. Phil Stade in the DG-1000 did what I had considered and headed home sooner and was able to get around to the south of the rain and was able to finish the task. I was well over the required minimum distance, so we finally had our fourth official day and an end to the contest. ❖

# Acceleration

Bill Daniels, from SOARING

How dangerous is a high acceleration at the start of a launch?

**E**VERY WINCH LAUNCH begins with an acceleration phase. Exactly what happens within that phase is one of the more important aspects of a winch launch. It's a subject I had to cover. Being an iconoclast, I'll give it a try using first principles.

Let's review some elementary physics. Weak link strength and Sir Isaac Newton's second law of motion ( $\text{Force} = \text{Mass} \times \text{Acceleration}$ ) set a hard upper limit to acceleration. To find this limit, divide the weak link strength called out in the operating manual by the glider's flying weight. For example, the ubiquitous Grob 103 Twin II's max gross weight is 1279 pounds and its manual specifies a 1662 lbs-force weak link, so the maximum possible acceleration is 1.3g. An ASK-21 flown solo by a minimum weight pilot might hit 2.38g. (To an acrobatic pilot, these are small numbers.) Most good winch operations aim for 1g.

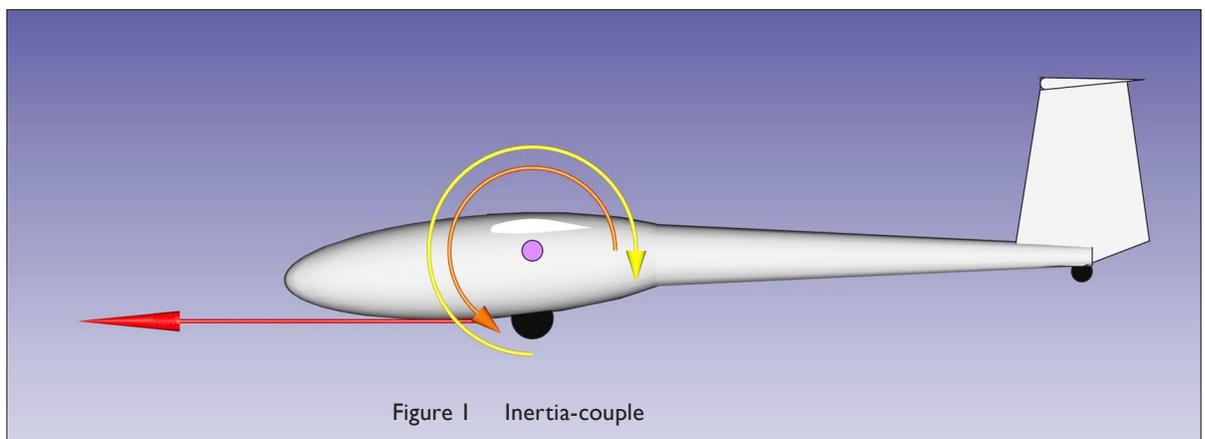
Small numbers though they are, it's an article of faith to some that, since the location of a glider's cg hook will always be some distance below a glider's cg, a glider's nose will pitch up uncontrollably if the acceleration (rope pull) is "excessive". An illustration such as Figure 1 is used to explain this phenomenon – usually accompanied by dire warnings about "excessive acceleration". These diagrams show a glider which has been levitated into the air at what appears to be Minimum Controllable Airspeed (MCA). A strong "cable pull" (arrow) is then applied, causing the glider to pitch up (clockwise arc), rotating about its cg (dot) with a force greater than the down elevator authority available at MCA (counterclockwise arc), causing the pilot to lose control as the glider pitches up, stalls, and crashes.

Taken at face value, illustrations such as Figure 1 are terrifying to those considering winch launch – especially when pilots realize they have absolutely no control over acceleration. They certainly would have scared me away had I seen one before attaining a better understanding of winch launch. Iconic illustrations like this are sometimes beautifully made and visually compelling but, like many icons, cracks appear when carefully examined. They always fail to say what airspeed or acceleration is being depicted or how or why a glider would be lofted high into the air at MCA.

The most plausible scenario is not "excessive acceleration", but *interrupted* or *unsteady* acceleration where a glider is slowly pulled into the air, rope tension falls and the pilot recovers to a glide at MCA, then rope pull resumes violently, causing an uncontrollable pitch-up. Uncommanded pitch-up could only happen at very low speed since elevator effectiveness increases with the square of airspeed – a few knots more on the ASI and elevator authority would be enough to control pitch-up.

An amazing video (<https://www.youtube.com/watch?v=z4Zd72WLFMo>) shows both extremely high ground roll acceleration and a pause in rope tension after the K-13 is airborne as indicated by the open, falling parachute. The pilot is able to deftly handle the pause because airspeed (elevator effectiveness) was more than adequate. The action starts at 19 seconds.

A search of official USA accident databases covering more than 20 years looking for accidents where "excessive



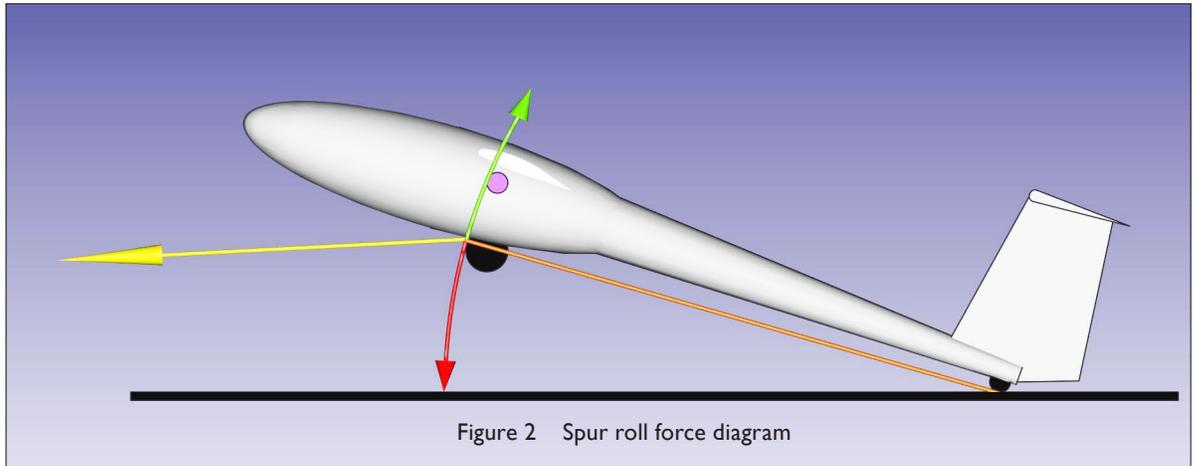


Figure 2 Spur roll force diagram



acceleration” was listed as the primary or contributing cause found none. Absence of evidence, while suggestive, is not evidence of absence, which is why we need to look at the physics.

Why is this subject important given the lack of accidents? Illustrations such as Figure 1, with dire warnings against excessive acceleration, are widely distributed convincing many they should be using slow acceleration which, I sadly suggest, is a major cause of accidents.

Slow acceleration increases the risk a wing will drop before aileron control is attained, resulting in ugly ground loop (cartwheel) accidents, which do appear frequently in the accident record with some resulting in injury and even death. Slow acceleration may well be a contributing factor in rotation stall accidents which the accident record lists in slightly lower numbers. I think the following will show that high acceleration is distinctly safer than low acceleration.

Many observers have seen accelerating gliders with their main wheels in the air while their tail wheels are still rolling on the ground (Figure 2) and assumed this was due to “excessive acceleration”. However, unlike the inertia-coupling in Figure 1, a glider lifting its main wheel into the air while the tail wheel is still on the runway is rotating about the tail wheel, *not* the cg. This means the cg and hook are swinging up along the same arc so the height of the cg above the hook has no effect. This is a distinctly different phenomenon from Figure 1.

I have flown sets of launches where rope pull in the acceleration phase was so high it sometimes broke the weak link, proving acceleration was as high as it could be, and yet have never observed any tendency for acceleration induced pitch-up. To the contrary, gliders under high acceleration tend to leave the ground in fast, flat, low angle-of-attack trajectories rarely greater than that depicted in the photo, while those launched under low acceleration exhibited slow, steep, high angle of attack departures.

How could this be? To understand one has to look more closely at the “spur roll”. Figure 2 is a simplified force diagram of the spur roll. The horizontal rope tension vector, extended through moment arm to the tail wheel, is being bent upwards at the cg hook by the wing lift. Opposing this is a downward straightening force generated by up to 2248 lbs-force of rope tension. The resultant forces reach equilibrium at a deck angle determined by rope tension. The higher the acceleration (rope tension), the lower the deck angle.

The powerful nose-down moment generated by rope tension in the spur roll acts in opposition to the inertia-couple nose-up moment but only when the tail wheel is in contact with the runway. Clearly, the inertia-couple causes pitch-up only when the tail wheel is airborne and then only at low airspeed. High acceleration results in a low deck angle, which delays tail wheel liftoff until airspeed (elevator effectiveness) is sufficient to control the inertia-couple effect. In fact, at 1g acceleration, the tail wheel doesn’t leave the ground until the glider is approaching 50 knots when nose-up rotation becomes desirable, effectively bypassing inertia-couple induced pitch-up entirely.

Glider airspeed will continue to increase until it stabilizes at about 60 kts, but as rotation begins, rope speed has reached its peak and falls sharply afterwards so 50 kts is effectively the end of the acceleration phase. Once the glider is into the main climb, the rope pull vector at the cg hook aligns with the glider’s cg, eliminating the inertia-couple.

Low acceleration ( $< 0.7g$ ) allows both wheels to lift off at about 38 knots, leaving approximately 12 knots of air-speed still to be gained in an airborne acceleration ⇒ p21

# Two firsts!

Martin Sanderse, York

IT LOOKS LIKE IT MIGHT BE SOARABLE, so I make sure the club will be open, then studiously examine the chicken entrails found on the weather sites. If it looks good, I use the NOAA tephigram as a final check on what to expect. Generally, it works well. Sometimes I am wrong, and then I sit in my office moping like Winnie-the-Pooh's friend Eeyore while everyone else launches on 400 km flights.

The 4 June forecast on the popular sites predicted a flyable day, but the final teph predicted weak lift and solid cloud cover by 3pm. I had taken the day off, and the field beckoned. It looked like it was going to be a difficult day, but three other pilots who regularly fly hundreds of kilometres were already rigging. We discussed the weather; they made light of the tephigram.

I make my own decisions whether to fly. I don't like gaggles or pairs that put me in a position where I feel pressure to go beyond my personal safety zone, which has prevented landouts so far. I am the PIC, it is my flight, and I can do what I like up there – that is the freedom of flying. However, expecting that I might be wrong about the weather, and fearing another day on the ground moping like Eeyore, we launched about noon. That was a first – I went flying because I didn't want to be like Eeyore!

Conditions weren't that bad, and everyone else was out of sight. Conditions in Southern Ontario are usually not very strong, and often days with 2 knots on the average is good enough for a pleasant day of flying. Off I went for a 100 km task so I could be back before 3pm (I'm slow). The first thermal took me to 4200 feet; the next one to 4500. Then I looked down – in just ten minutes, the space between cloudbase and the ground had become murky, and after dropping 500 feet, I saw that the sky had filled in early. There was no sun on the ground anywhere. It was time for my first landout, and I had only gone 20 km!

Fortunately it is not difficult to find a good field around here in June. Thanks to the Bronze badge checklists and Tom Knauff's TLAR circuit method, a few minutes later I was sitting in a field of 3" high corn. EASY! That was the second first. I hope landouts are always this stress-free.

After I called the field for someone to come and get me it was then time to find the farmer. A short walk took me to what was a three-room Mennonite school on the property beside the field. The principal told me that the field belonged to his great-uncle, and that he would take care of it. I had only knocked out three plants.

The principal had helped me pull the glider onto the meadow from the cornfield so the entire school could gather for a lesson on weather, geography, GPS, airfields, and gliders. What an amazing group! The students were polite, listened attentively, had very good questions, and were already quite knowledgeable about lats and longs, relative humidity, and physics. I am sure that with a bit more time and a chalkboard, they would have mastered the tephigram. The principal later mentioned that some students would not be allowed to watch the soaring DVD I left at the school, which probably explained the absence of the usual iStuff in the group.

The first pilot up that day had to use his engine twice to get home. The second landed out, and the third joked that I should have paid more attention to the teph!

The day provided two firsts of great benefit! The landout dissipated my unreasonable fears. If I had completed an outlanding earlier in my flying career, I probably would not have been compelled to accomplish some unsafe low saves, much more dangerous than the outlanding would have been. Fortunately, in this case, making a decision to fly based on poor criteria had benign and pleasant consequences. It made me see that using my own evidence and intuition is better than emotional thinking. Now I will not feel so bad about sitting on the ground after I have made a decision – even if I am wrong. ❖



Charles Petersen

# Sampling the spin

Dan Cook, chairman FT&SC

**T**HE STALL/SPIN CONTINUES TO BE THE LEADING FATAL accident factor in many countries. Training is improving with better understanding of lethal situations (spin awareness) and efforts for prompt recovery at the wing drop at the stall before the spin develops (spin avoidance). Unfortunately we are still having problems with the spin recovery. This may be more of a factor of how high performance single seat gliders enter spins versus the characteristics of most dual seat trainers that are used to perform training exercises.

**Case 1** The Puchacz, for example, has a reputation for many fatal accidents in North America due to its characteristics of performing like a single seat glider in spin entry and recovery. It is almost unique in the fact that most two seat trainers resist spinning as easily. In addition, if two pilots are on the controls it may be impossible to recover at critical heights. However, it makes an excellent spin trainer for this reason, but can create a stress reaction in the uninitiated pilot. The Perkoz is reported to have similar but more benign spin entry characteristics. Contributing factors include stress reactions (inability to process information to react appropriately), seating positions preventing knees bent (can't use quadricep muscles), and soft-backed seat cushions (compress when pilots lean back preventing adequate forward control movement).

There have been recent fatalities in USA and Canada. How do we disseminate this information to aircraft owners? Articles and alerts are passive and do not guarantee the message is getting out to pilots who fly this aircraft!

**Case 2** Some glider types have unique spin recovery methods in the Aircraft Flight Manual (AFM) that must be used if different than the standard method. Pilots may not be paying enough attention to this detail and the requirement to practise before becoming a test pilot at low altitude spin entry. For example the L-23 2002 manual states in Item 3.5 on page 3-2 for spin recovery:

*Rudder: Apply full deflection opposite to sense of rotation. Return to neutral when rotation stopped.*

*Control Stick: Push forward slightly simultaneously as rudder is neutralized after rotation has stopped.*

"A test was conducted with two pilots approximately 70 kg front 80 kg rear seat, following the L-23 AFM to the letter for recovery technique and it did not stop rotating with only opposite rudder, with stick held back against the stop and centralized ailerons! Rotation did not stop until the stick was moved forward similar to the CS-22 method of standard recovery." Other clubs have raised a similar observation when the front pilot is of lighter weight. Others report the L-23 had minimal height loss when rudder

was applied with simultaneous relaxed stick (off the stop) within the first rotation. So, do you know how your L-23 performs (or any other glider you fly) with various cg situations (you in the front seat solo, with passenger, with you in the back seat)?

**Case 3** There have been some recent incidents/accidents reported, *I Crashed* (in SOARING magazine), two ASW-27, and a Lak 17, where the glider has been slowed on final approach (about 300 feet agl) when wind conditions were gusty and the result appeared to be a wing drop stall or stall/spin related scenario. In two of these cases a wing drop recovery was made after the loss of approximately 300 feet resulting in hard landings. In one ASW-27 incident, the pilot stated the reason he slowed on approach was that aircraft flight manual recommended that the glider be slowed to 54 kts to apply full flaps because there would be less aerodynamic loading on the flap lever and would be easier to set.

In addition, the pilot must be able to reach the field before selecting full flap. However, the manual also states that full flaps should not be used if there is significant headwind or gusty conditions and the appropriate approach speed selected. There is also a caution in the ASW-27 manual: "*violent applications of rudder or aileron near the stall speed result in a wingover followed by spiral dive, spinning, or side slipping, depending on the cg position.*"

This may be unavoidable in turbulent shear conditions as the pilot may react with full control movements to keep wings level and be close to the stall! Extra speed above the stall speed is required for rapid loss of airspeed.

One of the ASW-27 pilots stated, "Basically I rolled level, lined up with runway 07 at 300 feet and 57 kts, then started pulling the flap setting to 5 (somewhat between 4 and Landing) – the glider lost at least 18 kt in 3 seconds in a gust and stalled with a wing drop. I lost 270 feet."

In this case, winds were estimated to be 17 kts, gusts to 20 kts. A minimum no-flaps approach speed calculation for high performance gliders ( $V_a + 1/2 V_w + \text{gust factor}$ ) should have made the approach speed more likely around 68-70 kts to protect against shear and slowing nearer to the stall speed.

These incidents/accidents are with mostly high time pilots (some national champions) flying a relatively new type to them, or they had significant experience in the aircraft but perhaps not in gusty conditions? Are other clubs seeing a similar situation or pattern? If so, what can be done about it? The warnings about slow flight in gusty conditions have been well emphasized and education does not seem to be working.

Ask yourself if your training has been adequate and you are satisfied you won't make the same mistakes other experts have made. If not, do something about it now, not after your incident/accident!

## Safety at the Nationals

Several documents were posted to the safety section of the web page for pilot reference: contest checklist, gaggle flying, heat stress, fatigue, and an emergency plan.

On Day 1, hazards were minimal, but still identified for the pilots: deer and geese anywhere, fences and ditches at the ends of both runways, plus a railroad track at the end of runway 32. The fence off 14 was specifically described as being a 6 ft high, 7 line fence, with each line being a 1/4" steel cable, stretched tight (believed to be once a bison enclosure). This fence was a particular hazard for tow ropes. The runway was 4400 feet long, so there was lots of room to land long. There still existed the temptation to land short so that the back-taxi could be shorter, and two approaches resulted in a rope hitting the fence once and the road once. One Tost hook was lost as a result. Non-standard rings, bought at a hardware store and slightly bent, were discovered on the towplane end of the tow ropes, and were immediately switched out for Schweizer rings.

On Day 2 the following issues were brought up and discussed: mass landing, landing in

gusty conditions, gaggle flying, and identifying available medical/emergency people. Two incidents were a sideways swing of a glider and release on the start of tow, and a near miss with a small flock of geese at about 50 feet when a glider was landing.

A short talk was given on the idea of monitoring oneself periodically during flight – “Am I stressed, fatigued, dehydrated, hypoxic, hungry, thirsty, hot, cold, making good decisions, daydreaming, or otherwise distracted”. “Do I need to eat, drink, whiz, or concentrate”.

On subsequent days:

- Chris Gough, the Edmonton Soaring Club SO, gave a talk on gaggle flying.
- Dave Springford explained the Safety Finish.
- Mark Dobrodski, SO from the Central Alberta Gliding Club, talked about competence vs confidence and the associated risks.
- Dan Cook spoke on PowerFLARM drills.
- A few issues were mentioned: one tow rope hit the road, sign your gap tape, and turn on your SPOT.
- Volunteers were reminded to stay off the runway when aircraft traffic is using it, even though it is a wide runway. Also Tost rings should be used with Tost hooks when mov-

ing the committee that enables the SO to make a difference. In the role of SO, I see myself as a facilitator, in particular to facilitate a conversation amongst the club Safety Officers across the country as well as a broader conversation with instructors and pilots. To make this work and hence maintain and improve our safety culture we all need to participate.

The invitation is open: contact me, by phone or email. I will be reaching out to all the clubs across the country and inviting not only the Safety Officers and instructors to the table, but everyone who wants to contribute. By having this discussion I am confident we can make a difference. Bear with me as we work out the logistics, it will not be quick. We are looking to build on the great work done by previous SOs, leveraging what is working well and enhancing it by opening the conversation more widely. Together we can learn from our collective experience.

Fly safe, **David Donaldson**  
[David.Donaldson@greatlakesgliding.com](mailto:David.Donaldson@greatlakesgliding.com)  
Cell: 647 407-2621

ing gliders to prevent damage to the hook, and Phil Stade gave a short talk on personal minimums. On the last day, it was mentioned that circling on downwind, base, or final is discouraged at most airfields, except where gliders are winch launched.

In a philosophical statement, I said that at least three things contribute to a safe flying operation: training, group culture, and individual behaviour. The participants in this year's National Contest were obviously well trained, a safety culture emerged, and there were no cowboys, or hot dogs, flying in the competition. As a result, I was very happy to be the Safety Officer for this occasion, and not be called to action for any very serious issues.

**Guy Blood**

## How times have changed

It is remarkable how gliding training has changed over the years. In the 70s and 80s, most students trained, then went solo in a 2-33 or similar. At Cu Nim, several solo flights in the 2-33 were required before graduating to the Blanik! Flying a top-of-the-line Jantar required more flights after that. Progress to licence was so slow that some members quit.

Some clubs were seriously affected by the grounding of the L13 Blanik. It was probably a good thing for Cu Nim as it forced a serious look at a fleet upgrade as well as the training philosophy. Crossing its financial fingers, Cu Nim bought a DG-1000 and a ASK-21, and it has become one of the best decisions the club has ever made.

On 9 July, Jordan Lewis made his solo flight in the DG-1000. How times have changed!

## Common glider accidents in training - avoiding midairs -

The following information is primarily aimed at instructors but all pilots can benefit. Most of this information is covered on the current SAC instructor courses.

Based on the major accidents over the last decade in Canada, FT&SC has prepared a list of training points that instructors can use to mitigate the chance of having similar accidents with a student or will help students avoid similar accidents when the student is solo/post licence. These points should be reviewed each spring by instructors.

A further good reference for these points is Derek Piggott's *Gliding Safety and Understanding Gliding*, available at most glider pilot supply sources.

- Understand the limitations of the human eye and eyesight (see CFI for the PowerPoint file on Collision Avoidance).
- Practice and Teach correct scan technique to overcome many of the limitations.
- Demand a correct scan technique from students before all maneuvers by stopping execution of a turn if scan was not done adequately.
- Teach the seven types of lookout.
- Use all available eyes and establish dialogue with student/passenger by alerting each other about traffic and state out loud "clear right/left" when making turns to indicate the pilot has not seen a conflict.
- Avoid the third glider trap (once a glider is located, don't assume another threat is not present).
- Monitor and use a radio correctly and avoid temptation to turn off or down the volume so you can't hear it when teaching.
- Use the radio for position reporting (follow MF discipline) and your intentions especially if executing non-standard pattern of maneuvers.
- Identify high risk collision areas for your students including airline traffic lanes and below your flight path in the circuit and how to look there.
- Teach proper look out for thermal entry/exit procedures and thermal etiquette before first solo.

- Use PowerFLARM to identify conflicts and react appropriately when collision imminent (no reaction will result in collision).
- Use 126.7 MHz for cross-country position reporting and switch to the 123.4 glider frequency only when you wish to chat.
- Although not avoidance, wear a parachute for when-all-else-fails. Remember the area around the aerodrome and circuit are the most dangerous.

**Dan Cook**



Phil Strade

## Maitriser le vol à voile

*Maitriser le vol à voile* vient de paraître. Ce beau livre de près de 400 pages abondamment illustré est la première traduction française du livre *Advanced Soaring Made Easy* de Bernard Eckey (3e édition).

C'est la référence ultime pour tous les pilotes de planeur qui souhaitent améliorer leurs performances par l'autocoaching, dans des domaines aussi variés que la météorologie, l'exploitation optimale des thermiques, de l'onde et du vol de pente, la préparation mentale pour être fort psychologiquement, l'atterrissage en campagne ou autres aspects techniques pour améliorer la performance de votre planeur. Découvrez l'abondance des sujets traités avec rigueur, mais dans un style très divertissant, par un passionné du coaching en pilotage de planeur, en visitant [www.future-aviation.com](http://www.future-aviation.com). Ouvrage recommandé par la Fédération française de vol à voile.

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## Champlain fête ses 50 ans Champlain celebrates 50 years

L'Association de vol à voile Champlain fut fondée le 18 juin 1965 à Saint-Jean-d'Iberville. Basée d'abord à Saint-Jean-sur-Richelieu, l'AVVC s'est ensuite installée à Saint-Antoine puis à Roxton Falls pour retourner à Saint-Antoine (d'où le surnom à l'époque de Gipsy Club) avant d'élire finalement domicile en 1990 à l'aérodrome de Saint-Dominique-de-Bagot où il devena enfin propriétaire.

Le Club de vol à voile Appalachien, jadis basé à l'aéroport de Sherbrooke, a fusionné avec l'AVVC en 1994.

Le Club des Outardes jadis basé à St-Charles-de-Mandeville (St-Gabriel-de-Brandon), puis à St-Esprit et finalement à Bromont à joint

l'AVVC vers la fin des années 2000. Champlain a une moyenne de 60 à 70 membres.

The Association de vol à voile Champlain has celebrated the 50th anniversary of its founding on 18 June 1965 in Saint-Jean-d'Iberville, QC.

First established at Saint-Jean-sur-Richelieu airport, it then moved to Saint-Antoine-sur-Richelieu and then to Roxton Falls before returning to Saint-Antoine before establishing and buying the permanent home in 1990 at the Saint-Dominique-de-Bagot airport.

The CVV Appalachien joined AVVC in 1994 and CVV Outardes joined AVVC at the end of 2000. Champlain now has an average of 60 to 70 members.

## The Frozen Tow Pilot

*As I sat down one evening in the old airport café,  
A forty year old waitress to me these words did say:*

*I can see that you're a tow pilot, and not just a common bum,  
Because nobody but a tow pilot stirs his coffee with his thumb.*

*My lover was a tow pilot, not like any you'd find today,  
If you put two wings upon it, he could fly a bale of hay.*

*He never used the primer, no matter how cold the weather,  
He'd just blow his whiskey'd breath deep into the carburetor.*

*One winter he tried to tow me - t'was on a windy day,  
He flew me through a rotor cloud that broke three vertebrae.*

*Well he kissed me ere he departed so hard it broke my jaw,  
That I could not speak to tell him he'd forgot his mackinaw.*

*I saw my lover take off, and climb through the blinding snow,  
Setting his heading homeward at forty-eight below.*

*Well the weather it tried to freeze him; it tried its level best,  
At a 100° below zero, why he banked and turned to the west.*

*It froze clean through to China, then it froze to the stars above,  
And at a 1000° below zero it froze my tow pilot love.*

*They tried in vain to thaw him, and if you believe it sir,  
They made him into prop blades, to cut the flyer's air.*

*And so I lost my lover, and now to this airport I come,  
And here I'll be a waitress till someone stirs his coffee with his thumb.*

The Bald Eagle

## World Junior Gliding Championships coming to Australia

J'ai le plaisir d'annoncer que j'aurai l'honneur de représenter le Canada aux prochains Championnats du Monde Juniors de Vol à Voile qui auront lieu du 1er au 12 décembre 2015 à Narromine en Australie. J'ai eu une très bonne expérience lors des derniers Championnats Juniors en Pologne en 2013 et j'ai hâte de voler à nouveau avec les meilleurs pilotes juniors de chaque pays et de profiter des conditions de vol incroyables de l'Australie. J'ai l'intention de m'y rendre en novembre pour la compétition nationale qui aura lieu à Lake Keepit, près du site des Championnats Juniors. J'aurai ainsi l'occasion de me familiariser avec le planeur et les conditions de vol locales. Pour l'instant, il semble que je pourrai voler dans un Cirrus, comme en Pologne. C'est un très bon planeur dans sa catégorie.

Je commence à me lancer activement dans l'organisation de cette compétition, à rechercher des commandites et à organiser une campagne de financement. Je vais bientôt mettre en ligne un blogue que je tiendrai à jour durant la compétition afin de tenir informés les gens qui voudront me suivre de près. Plus d'informations suivront sur la progression de mes préparatifs pour l'Australie dans la prochaine édition du *Vol Libre*.

I will have the honour of representing Canada at the next Junior World Gliding Championships that will be held in Narromine, Australia from December 1-12. I had a great experience at the last Junior Worlds in Poland in 2013 and I am really looking forward to fly again with the best junior pilots from several countries in the booming conditions of Australia. I intend to arrive there in November for the National contest in Lake Keepit, which is close to the site of the Junior Worlds. This will give me the opportunity to become familiar with the glider and the local soaring conditions. It looks like I will be flying a Cirrus, the same kind of glider I flew in Poland. It is a good glider in its class.

I'm starting to get really active in the organization of the contest, in the search of some sponsors and in fund raising events. I'll soon be putting online a blog that I will keep up to date during the contest for people who will want to follow my progress. More information about my preparation for the contest will follow in the next edition of *Free Flight*.

Emmanuel Cadieux

course that had promise; I was not sure if it would be there when I got to it though. I then saw a couple little clouds form directly next to it. When I arrived, I flew a course to test them all out. The first couple did not work but the original one that I saw redeveloped and gave me 2 knots. I took it to the top to ensure I had some buffer. It was a relief to know I could make it home now.

It was a long glide home and I called Chipman Ground to let them know I was coming. After I crossed the finish line I started to head north to use up my extra height and lengthen my triangle a bit. To my surprise after flying in still air for a while I found a weak thermal just north of the field under overcast. I took a few turns in it but only went 8 km past the field – it made the task a little bit bigger for OLC.

The OLC distance for the flight was 813 km, the declared triangle was 750.2 km and the free triangle was 777.1 km – all personal bests for me. I beat my Canadian free triangle distance records from last year and also beat the club 750 km & 500 km speed triangle records and declared triangle distance. I think Chipman has really proven itself as one of the best soaring spots in Canada. I encourage everyone to come and try it for themselves.

### Sharing the sky with Chris

Bruce Friesen

Saturday, 23 May 2015, bestowed outstanding soaring conditions on us at Chipman. Chris Gough, tethered to the back seat of a trainer, acted as my official observer as I completed a very fast flight. That evening, with the promise of even better conditions on Sunday, Chris stated his intention to declare a 750 km triangle. Well, I thought, that's next for me too; might as well go for it. Off we went.

My decision point came part way down my second leg. Flying through a long band of

virga straddling the course line went fine; what I saw as my view of the sky opened up once through the rain was the problem!

Ahead, a big blue hole, and beyond that a mess: showers dotting the sky, spreadout clouds from over-enthusiastic convection, and shreds of totally disorganized middle-level cloud. To the right of my course line was the Wainwright army base, where they throw big things way up in the air. Restricted airspace. To the left, about 20 km distant and 60° off course, was the closest flat-bottomed cloud, and even so no obvious stepping stones beyond that. I could turn right, with good prospects of working my way back to Chipman, or I could press on down the "back side" of the restricted airspace, accepting no "off ramp" for the next 50 km and a minimum 300 km retrieve if the messy sky yielded little lift. I turned right.

Later in the day, idling around, I headed south from Chipman about 70 km, to meet up with Chris on his final leg and spot him a thermal perhaps, or provide encouragement at least. He was dawdling though (translation – trying to stay airborne down around his second turnpoint). So I got bored and called it a day.

In short, faced with challenging conditions, I opted to go home, settling for a 700 point OLC flight. Chris carried on, to earn his 750 km Diploma, several Canadian records, and the highest scoring flight in Canada in the history of the OLC. Naturally, I have replayed my decision hundreds of times. Could I? Should I? Of course, Chris was one tow and 10 minutes ahead of me, and we had slightly different first turnpoints, mine being more northwest than his, so I didn't see exactly the same sky. What I know for sure is Sunday, 24 May, was not a day for simply choosing the best cloud streets and pushing hard. Well done, Chris!

On the perfect day, a 1000 km triangle can be flown out of Chipman. I would be amazed if Chris does not have 17 routing choices already stored in his computer. ❖

phase where the glider is vulnerable to inertia couple effects. The larger deck angle at liftoff means the glider enters this vulnerable phase at a higher angle-of-attack, thereby increasing the risk of rotation phase stalls.

For all the reasons above, acceleration should be high enough that the acceleration phase runs to completion with the tail wheel still in contact with the runway. This requires at least 1G acceleration starting right at the beginning of the takeoff roll. Acceleration should be strong and steady without oscillations, sags, or surges as might be caused by erratic engine or automatic transmission behaviour.

A fair question is why some people are firmly convinced "excessive acceleration" produces uncontrollable pitch-up? A likely suspect can be found in the FAA safety brochure, *Spatial Disorientation*. This document describes many ways the human vestibular system can confuse and mislead pilots, but the one of greatest interest to this subject is the "head-up illusion" described on page 7 of that brochure. The head-up illusion is so powerful it can temporarily overpower one's other senses, such as vision.

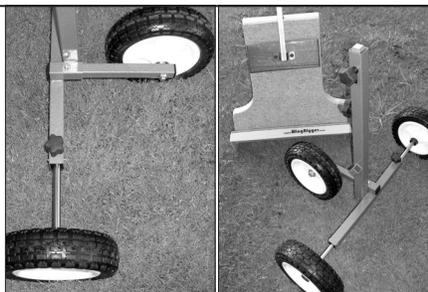
Under 1G acceleration, fluids in the vestibular system, and the sensitive hairs they contain, slosh toward the rear of a pilot's skull creating a powerful sensation that local "up" is tilted 45 degrees forward from the vertical. This, your senses insist, could only be true if the glider had suddenly pitched up 45 degrees. It's reasonable that high adrenaline levels would be present, imprinting this illusion indelibly into memory. (It is said that the memory enhancing effect of adrenaline is such that one always remembers where they saw a snake.) Thereafter some may be convinced, despite all subsequent evidence, they had experienced acceleration induced, uncommanded pitch-up when it didn't actually happen. Those convinced in this way may go on to draw terrifying diagrams – or at least believe in them.

The good news is most pilots acclimatize after a few 1G launches and the head-up illusion goes away. That's one purpose of dual flight training. Most come to think of winch acceleration as fun.

None of the above is to say that premature rotation stalls or ground loop/cartwheels can't happen and, if they do, result in severe accidents. But it does strongly suggest that high acceleration in the ground roll distinctly reduces the risk. ❖

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These badges & badge legs were recorded in the Canadian Soaring Register during the period 24 November 2014 to 13 June 2015.

### 750 km Diploma

10 Chris Gough Edmonton

### SILVER BADGE

1092 Ray Troppmann Edmonton  
1093 Simon Paquet Quebec

### DIAMOND DISTANCE (500 km flight)

Dan Daly Gatineau 511.3 SZD-55 Julian, PA

### DIAMOND GOAL (300 km goal flight)

Robert Zachemski SOSA 306.7 SZD-55 Rockton, ON  
Mike Maskell Winnipeg 317.1 Jantar Starbuck, MB

### GOLD DISTANCE (300 km flight)

Mike Maskell Winnipeg 317.1 Jantar Starbuck, MB

### SILVER DISTANCE (50 km flight)

Robert Williams Gatineau 50.7 ASW-24 Pendleton, ON  
Ray Troppmann Edmonton 60.7 ASW-15 Chipman, AB  
Simon Paquet Quebec 63.3 LAK-12 St Raymond, QC

### SILVER/GOLD DURATION (5 hour flight)

Daniel Pelton Vancouver 5:24 L-23 Hope, BC  
Ray Troppmann Edmonton 5:13 ASW-15 Chipman, AB

### SILVER ALTITUDE (1000 m height gain)

Robert Williams Gatineau 1300 ASW-24 Pendleton, ON  
Guy Theriault Champlain 1520 L-33 St Dominique, QC  
Ray Troppmann Edmonton 1437 ASW-15 Chipman, AB  
Jacques Rousseau Quebec 1660 L-23 St Raymond, QC

### C BADGE (1 hour flight)

3045 Robert Williams Gatineau 2:18 ASW-24 Pendleton, ON  
3046 Donald Henry Gatineau 1:25 L-33 Pendleton, ON  
3047 Philip Kerrigan Gatineau 1:26 L-33 Pendleton, ON  
3048 Norman Wong Gatineau 1:32 L-33 Pendleton, ON  
3049 Jacques Rousseau Quebec 2:22 L-23 St Raymond, QC

## soaring services

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The following record claims have been approved:

**Pilot** Bruce Friesen  
**Date/place** 23 May 2015, Chipman, AB  
**Sailplane** Discus B, C-FZHT  
**Record type** 400 km triangle speed: Open, 15m, Club  
**FAI category** SAC  
**Speed** 134.2 km/h (Open & 15m), 124.8 km/h (Club)  
**Task** Chipman/Kitscoty/Forestburg/Chipman  
**Previous record** Jerzy Szemplinski 102.7 km/h (Open - 2013)  
Luke Szczepaniak 97.3 km/h (15m - 2013)  
Tony Burton 103.3 km/h (Club - 2003)

**Pilot** Christopher Gough  
**Date/place** 24 May 2015, Chipman, AB  
**Sailplane** Std. Jantar, C-GXTS  
**Record type** Free triangle distance: Open, 15m, Club  
**FAI category** 3.1.4d  
**Distance** 777.1 km (Open, 15m, Club)  
**Task** Chipman/Senlac/Finnegan/Chipman  
**Previous record** Chris Gough – 672.4 km (Open, 15m, Club) 2014

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## magazines

**GLIDING AUSTRALIA** – the bimonthly journal of the Gliding Federation of Australia. <[www.soaring.org.au](http://www.soaring.org.au)>. International rates for on-line access.

**SAILPLANE & GLIDING** – the bimonthly journal of the BGA. £41.50/yr airmail, £25.75 surface. <[www.gliding.co.uk/sailplaneandgliding/subscriptions.htm](http://www.gliding.co.uk/sailplaneandgliding/subscriptions.htm)>.

**SOARING** – the monthly journal of the Soaring Society of America. Subscriptions, US\$52. Credit cards accepted. Box 2100, Hobbs, NM 88241-2100. <[feedback@ssa.org](mailto:feedback@ssa.org)>. (505) 392-1177.

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Pendleton A/P  
www.gatineauglidingclub.ca

MONTREAL SOARING COUNCIL  
Hawkesbury A/P (613) 632-5438  
www.flymsc.org

RIDEAU VALLEY SOARING  
35 km S of Ottawa at Kars  
club phone (613) 366-8202  
www.rvss.ca/

## Southern Ontario Zone

SOSA GLIDING CLUB  
NW of Rockton  
(519) 740-9328  
www.sosaglidingclub.com

YORK SOARING ASSOCIATION  
7 km east of Arthur  
club phone (519) 848-3621  
info (416) 250-6871  
www.yorksoaring.com

GREAT LAKES GLIDING  
NW of Tottenham  
www.greatlakesgliding.com

LONDON SOARING CLUB  
between Kintore & Embro  
www.londonsoaringclub.ca

TORONTO SOARING CLUB  
24 km W of Shelburne  
www.torontosozaring.ca

## Prairie Zone

PRINCE ALBERT GLIDING & SOARING  
Birch Hills A/P, SK  
www.soar.sk.ca/pagasc/

REGINA GLIDING & SOARING CLUB  
Strawberry Lakes, SK  
www.soar.regina.sk.ca

SASKATOON SOARING CLUB  
Cudworth, SK  
www.soar.sk.ca/ssc

WINNIPEG GLIDING CLUB  
Starbuck, MB  
www.wgc.mb.ca

## Alberta Zone

ALBERTA SOARING COUNCIL  
asc@stade.ca  
Clubs/Cowley info: www.soaring.ab.ca

CENTRAL ALBERTA GLIDING CLUB  
Innisfail A/P,  
www.cagcsoaring.ca

CU NIM GLIDING CLUB  
Black Diamond  
club phone (403) 938-2796  
www.cunim.org

EDMONTON SOARING CLUB  
North of Chipman  
www.edmontonsoaringclub.com

GRANDE PRAIRIE SOARING SOC.  
Beaverlodge A/P  
www.soaring.ab.ca/gpss/

LETHBRIDGE SOARING SOCIETY  
Lethbridge, AB  
Ed Kalau edkalau@shaw.ca

## Pacific Zone

ALBERNI VALLEY SOARING ASSN  
Port Alberni A/P, BC  
http://avsa.ca

CANADIAN ROCKIES SOARING  
CLUB  
Invermere A/P, BC  
www.canadianrockiessoaring.com

VANCOUVER SOARING ASSN  
Hope A/P, BC  
club phone: (604) 869-7211  
hope.gliding@yahoo.com



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