ASCent

the journal of the Alberta Soaring Council

2021 Season

Notes from Jason

the ASC President's report

2021 was another year of change that the Alberta Soaring Council and our member clubs had to navigate. But through all the challenges we experienced this year, there were significant successes that we must acknowledge and celebrate.

I would like to thank all of our members and the club executives for their continued commitment to making our sport safe. It is reflected in our collective participation in the many club, provincial, and national safety initiatives that were available to us in 2021 and in seeing the large number of ASC members participating in the spring Safety Seminar that we hosted in partnership with David Donaldson (the SAC National Safety Officer) and the folks at the Gatineau Gliding Club in March. As we wind down our operations, this is a great time to reflect on our safety successes this year and to re-commit to addressing those areas where we all can improve. Share your ideas with your local Safety Officers/Safety Committees so we can turn our accidents/incidents into "lessons learned" that will benefit us all.

The COVID-19 pandemic continued to place evolving health restrictions on our clubs which kept some long-time members away from the sport. However, our collective experience with masking, disinfection and social distancing from 2020 helped ensure that we could operate safely and continue to attract new students and the public to the clubs this year. As vaccinations rolled out in the spring, we were able to ease restrictions and more members felt comfortable being out at our club and provincial activities. Many of our clubs reported significant increases in total flight counts and a rebound in membership for 2021. Thanks to all of you who worked tirelessly to ensure that we continue to keep our sport a safe recreational activity.

As you can see in the financial update on p17 by our treasurer, Gerald Ince, we continue to have some significant financial challenges resulting from the loss of our provincial sports funding since 2020. The ASC executive has had to put in place some temporary cost containment measures, including suspension of many of our club subsidies and adjustments to the towplane use policy. With these measures, we have been able to maintain ASC's financial health going into 2022 where we hope to benefit from stabilizing revenue from a provincial casino licence.

Our organization benefits from the enormous time and energy of our volunteers! Whether it is those who sit on the provincial and club executives, organize our provincial events, instruct, tow, or simply show up to help around the field. Our sport →20

ASCent

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My first experience in a glider was something I will never forget. My trusted pilot Wilf not only caused me to question the laws of gravity, at one point he passed me the reins and allowed me to forever tell friends and strangers that "I once flew a plane". My face says it all. *Kayla Brydon*

The Alberta Soaring Council is an alliance of Alberta soaring clubs supporting the Soaring Association of Canada.

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How to share class Β airspace

An ATC/ASC partnership making really big wave flights possible

Tyler Paradis, IFR Controller, Cu Nim & ESC
Chester Fitchett, Wave Lane pilot, Cu Nim

TYLER HERE – IT BEGAN FOR ME IN 2019 when I read online about a pilot from Black Diamond who flew over 1000 km in the lee-side wave of the Rocky Mountains in the fall of 2018. I happened to be working the radar at Edmonton Center the day of that flight, and while I was able to establish communication and issue clearances to Chester, I didn't understand the gravity of what he was dealing with. I reached out to him afterwards, and we started a conversation about what he was trying to accomplish, and how I could possibly help.

A lovely Valemount soaring camp in 2019 where I met a lot of Cu Nim pilots led the Paradis family to decide to join Cu Nim in the spring of 2020. This led to Chester and I finally meeting each other in person, and the first of many planning sessions to figure out a way to soar through the controlled airspace on the west side of Calgary International.

Chester had already done a few flights as far north as Banff, and as far south as Helena, MT so we had some data to overlay onto the sector charts from my work at the Area Control Center. It became obvious that there was a nice narrow "highway" of predictable wave that could be exploited. After comparing this highway to the controlled airspace, IFR traffic flows, and minimum IFR altitudes along the foothills, it looked like there might be a way to horizontally drill a path through the congested IFR traffic corridor between Calgary and the Lower BC mainland.

We knew we had one chance to get approval for "the big ask" from Nav Canada, and so we split the problem between the two of us. I knew all the controllers and their personalities who would be working the airspace, while Chester knew all the rocks and their personalities. Higher traffic density meant less real estate available.

It quickly became obvious that the main procedural challenge would be at the choke points where the good wave crossed the narrow corridors for IFR arrivals and departures for Calgary. The airspace is structured such that the departures are grouped together on the north side, and the arrivals are grouped together on the south side of an imaginary line called a "sector boundary". Knowing that it is very awkward to apply IFR separation below a glider that cannot maintain an altitude, and even more awkward without a transponder, we knew we needed to keep the soaring flight path close to Calgary (for radar coverage) but not too close (with the higher traffic density).

Once the general path was figured out, it needed to be segmented so that standard ATC procedures could be easily applied. This enabled us to give the project a name – the "Wave Lanes". Each segment/lane was numbered, starting with Lane 1 beginning at the south edge of controlled airspace near Pincher Creek, and increasing to Lane 6 that ended 45 nm SW of Rocky Mountain House. (We hope to add a Lane 7 up towards Grande Prairie to allow these procedures to extend to the uncontrolled airspace northwest of the T789 airway.) See the position of the lanes overlaid on the graphic of Calgary International's controlled airspace on the next page.

To simplify the approval process, the Lane 6 end point was determined by the extent of my immediate influence at the ATC Center. (By the way, in a later conversation with Tony Burton, he told me about a somewhat similar block system that was established with the Edmonton ACC in 1986 to allow flight in Class B airspace during the "Chinook Project", recording wave data for the University of Calgary with the Alcor sailplane – read the details about this in ***Stalking the Mountain Wave***.)

Procedures now needed to be drafted, and some existing 'Photo Flight' and 'Paradrop' procedures were used. A big thank you to Natasha Schwartz at the Edmonton ACC for writing the actual procedures document.

Controlled VFR clearances were defined for Chester to learn and utilize. It's a good thing wave flying is "easy" so that concentration can be focussed on ATC clearances… Next up was to test ZWW's transponder to be sure that the ACC had solid radar contact with the Arcus M above 12,000 asl. This was achieved in the fall of 2020 during a few notable 1000 km flights!

The rest of the effort was administrative, with Nav Canada Standards and Procedures department dissecting our plan to hurtle a glider through a virtual tunnel and not conflict

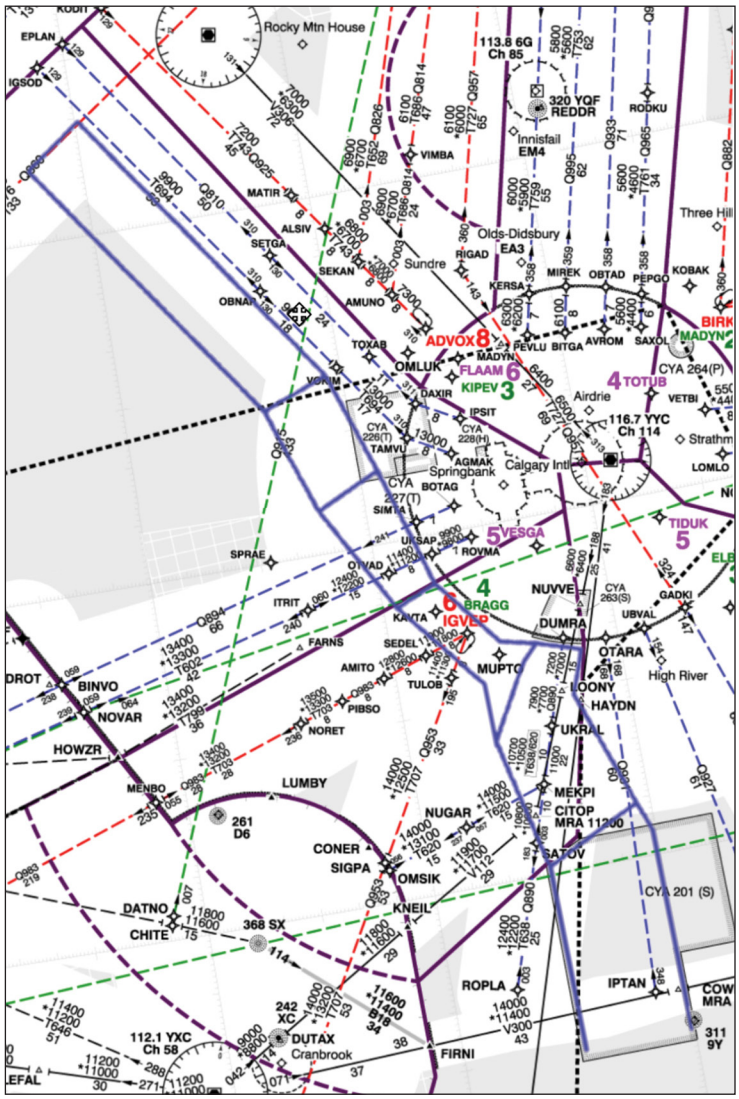
with 300,000 lb aluminum tubes full of people and cargo climbing and descending west of Calgary!

The airspace control problem

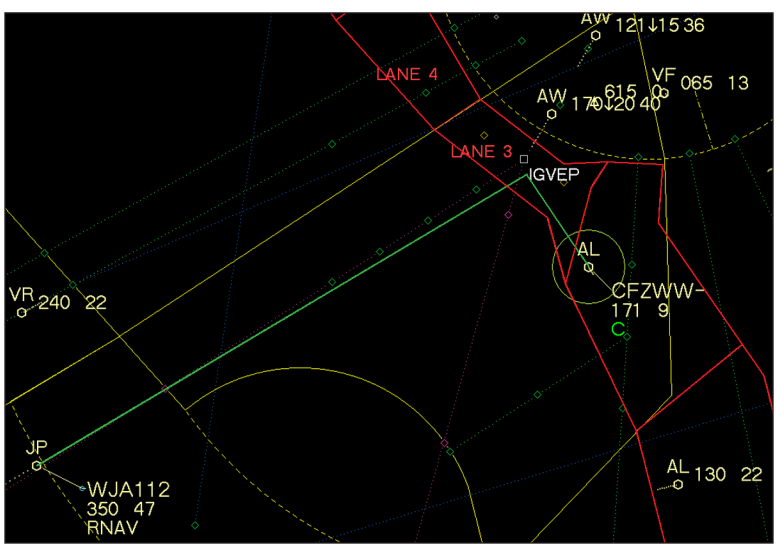
I was happy to be the ATC "translator" to convey Chester's priorities for increasing his operational safety, without cramping Nav Canada's ability to manage the safe, orderly and expeditious flow of air traffic around Calgary International. I could see a solution, I just needed to get it organized and captured so that the Standards and Procedures office could authorize the trial.

From a control point of view, the sectors that overlap Lane 3 and Lane 4 are a tricky bit of airspace to control even normally! The minimum IFR altitude (the lowest altitude a controller can assign to ensure terrain clearance) is 14,000 asl. That's the bottom – any IFR aircraft flying below that altitude, in our minds, is playing slalom with mountain tops! Calgary International's elevation is 3500 feet, and so arriving aircraft must descend about 10,000 feet in 20 miles in order to land at Calgary. Simultaneously, departing aircraft must climb 10,000 feet westbound in 20 miles in order to reach the minimum IFR altitude prior to the Rockies.

When ZWW is cleared into the lanes, the top of its altitude clearance (ideally 17,000 feet) becomes the new "floor" for arriving aircraft, they can't be cleared below this until it is ensured that the arrival will always stay more than 5 nm away from ZWW, and departures must climb to at least 1000 feet above this (FL180 – a climb of almost 15,000 feet) in 20 miles. That's a big task for a Dash 8-300 series!



On the left is a radar image of the situation facing the controller on 16 October at 1:45 pm. The inbound Westjet 737 (WJA112) is 80 miles from the IGVEP fix. ZWW has been given a clearance to fly northwest at 17,500 asl and below.



There are some "tools" on this radar image – the green lines extend ten minutes into the future on the selected target's present speed and track, and the circle around ZWW has a 5 nm radius. An arrival typically has to cross IGVEP at an altitude of 13,000 feet. ZWW, with a clearance to maintain "17,500 and below" is, from the controller's point of view, a vertical cylinder moving through Class B having a radius of 5 nm and a vertical height of 3500 feet (from the minimum IFR altitude to the top of its vertical clearance). In ten minutes, ZWW and WJA112 are predicted to

be in the same place at the same time, so WJA112 needs to stay above (which is awkward for the eventual descent into Calgary) or to the side of ZWW's protected airspace.

Chester must maintain a straight track while in Lane 3 or 4 – turning would make control of IFR traffic almost impossible otherwise. Typically, there are five to six of these arriving aircraft, all "in trail" by about 7 miles, forming a line of arrivals for Calgary. Once past the train of arrivals, Chester would be crossing the path of several departures climbing westbound in Lane 4. The easy solution for a controller would be to force Chester to loiter outside of Lanes 3 and 4 until the arrivals and departures have cleared the lanes, so I had to impress on the controllers that there is only so much daylight, and Chester needs all of it on task and at V_{ne} to break records.

As this trial progresses, we are finding that when wave conditions are at their best, Calgary International is operating on Runway 17 left and right, which adds significant flexibility for controllers to integrate Chester into the Class B beside Calgary Terminal.

In the future, when a course is organized and deliverable, and the trial becomes an agreement with Nav Canada, the airspace will be available to a broader group of pilots. At the ACC, after listening to me describe how amazing the sport of soaring is, and what Chester is trying to achieve, the controllers in Southern Alberta have risen to the challenge to carve out some real estate, both vertically and horizontally in real time, to guide ZWW through a very congested corridor of IFR traffic.

... story now continued by Chester ...

Christmas 2018 came early for Gerald Ince and me that 22 November. I had a flight the day before with Guy Peasley in ZWW, and we attacked strong blue wave but got thrashed around in rotor until the engine quit from fuel exhaustion and Guy's lunch wanted out. With the benefit of hindsight, the next day was a wave unicorn – perfectly stable humidity and wind direction as good as it gets.

The painful bit of flying cross-country from Cowley is leaving the golden handcuffs of Center Peak. Down to Waterton isn't too bad but northbound is really painful, dropping all that precious altitude to get under Class B airspace, just as the wave weakens at Chain Lakes. You need to stay under Class B if you want a long enough leg to get a 1000 km flight, and you need to do this three times as the air heats up throughout the day and the wave weakens.

We must have requested a clearance (likely V300?), and all of a sudden, Gerald and I had a friendly voice at ATC who said we could go anywhere we wanted in Class B, up to 15,000. We were frozen but jubilant (who needs toes anyway?). There were more big flights, including a 1000 km with my wife, Marta.

I love to explore wave, but Calgary's airspace limitations make the best wave days marginal. If we had an ally at ATC, we could come up with procedures (or at least improve mutual understanding) to minimize the disruption to Calgary's air traffic, and maximize clearances for wave flying. The big step forward was an email from Patrick McMahon that our mysterious ATC benefactor had reached out. Little did I know what this engagement would free up for the Alberta soaring community. It turns out Tyler and his wife Melanie are both glider instructors from cadets, and they had promptly got back into gliding in a really big way…

Progress slowed for a bit. Covid got in the way, I spent a summer getting the Cu Nim snow removal fleet ready for winter launches. Nav Canada in Ottawa got involved in the process of creating, then approving, our pilot project for the wave lanes. Unbelievably, the day arrived – on 23 September we signed the Wave Lane trial agreement, and there was nothing to stop me from requesting clearance into the shiny new wave lanes as a matter of routine when the forecast was good.

So what does it take for a glider pilot to access this new procedure? Cu Nim has agreed to create and deliver training and regulate access into the Wave Lanes. Here is an initial list of requirements, by no means complete yet:

- a transponder.
- a radio, able to communicate at V_{ne}.
- high performance batteries to support cold, long flights. (lead acid batteries won't cut it).
- a backup handheld radio.
- a moving map flight computer with airspace that can handle −30C.
- a good oxygen system.
- credible plans for landing out.
- many dual flights to demonstrate familiarity with ATC procedures.
- a system for managing clearances and frequencies – I use a kneeboard.
- familiarity with forecasting and flying wave.
- a relief system.

Once a pilot is approved by ATC for solo flight into the southern Lanes 1 and 2, they can build experience racking up 1000 km flights in our local "bunny hill" wave space. However, the transit within Lanes 3 and 4 west of Calgary and heading north is a much more serious undertaking and will need a second approval.

Dealing with Calgary's airspace is the price we all pay for living in a major city, with the convenience of a local gliding club. Pilots in California will spend a day commuting to the Sierra Nevadas. Imagine hauling your glider to the Andes? Few of us will ever make that commitment. Alberta doesn't have the best wave terrain in the world but we probably have the best balance of excellent terrain, weather, and easy accessibility. ❖

1601 km !

Chester Fitchett, Cu Nim

Simon Youens

Prepping at 0-dark-30 is sort of required when you have 1000++ km late season wave flights in mind.

ON 16 OCTOBER THE FORECAST LOOKED DECENT – wild swings in humidity, but at least the air is generating wave all day, not even weakening in early afternoon. But I wasn't sure I wanted to go flying that Saturday.

My previous flight on 30 September had been painful. I got stuck well north of Calgary over a big sheet of cloud, taking slow climbs in wave. Every time I rolled the dice and spent 5000 feet to look for stronger lift, I got very little to show for it. There were still open patches to the ground, but I needed to make a decision. Do I head north to Hinton, and try to get home tomorrow? Do I push south, hoping to make it home today? Land at the Ram Falls or Red Deer Forestry – well maintained forestry strips, camp out, and hope for wave tomorrow? Or punch east, and trailer home from north of Calgary? Eventually, I opted to fly home in terrible rotor, and had to use the engine to drag ZWW the last 10 km. To add insult, the weather forecast had clearly shown that questionable airmass, but I chose to go force a flight anyway …

Getting going for a wave day can start at 3 am in the summer, if you want to maximize the day. I'm almost looking for excuses to not go flying – leaving the house at 7 am. The nice folks at the Edmonton Flight Information Centre (FIC) have a transponder code ready to go when I call in, and I launch at 9 am.

I've already lost 90 minutes of daylight. The nice thing about wave in southern Alberta is even if I don't have the nerve to push north of Calgary, the consolation price is a comfortable 1000 km flight over well understood, forgiving terrain between Highway 40 west of Longview and the US border.

I easily connect with wave at 10,000 southwest of Turner Valley. For the last year, I've been working on connecting with the secondary, rather than just motoring to the primary. There was far too much cloud to transit west of Calgary, so I start working on my consolation prize and head south. The southern wave lanes are easily granted by Edmonton Center, but I stubbornly transition to the primary and move down to Cowley below 12,500 feet before requesting high clearances.

It was a casual trip to the US border. Chris Gough has written an airspace file for the US border, which makes flying at the border way less stressful. There is no question I'm being watched – Edmonton checks on my intentions and relays my plans to Salt Lake ATC. If you are like me and don't enjoy being shouted at by ATC, I highly recommend Chris's amazing (and accurate!) airspace files here – ***https://soaringtasks.com/canairspace/***

Back at Highway 40, there is no sign of a corridor through the clouds to the north. So down to the border and back up to Highway 40 again. The sky is drying out. I steel my nerves for the transit through Lanes 3 and 4, hopefully ask for 17,500, and get it. I'm now committed to flying straight and fast for about 75 km. Part way across, ATC asks if I can commit to staying above 16,000. This means Calgary outbound traffic will be flying under me shortly. I tell them that I'll try, but can't guarantee. After a minute, I call them back and say that this is a bad idea, and offer to lower my eleva-

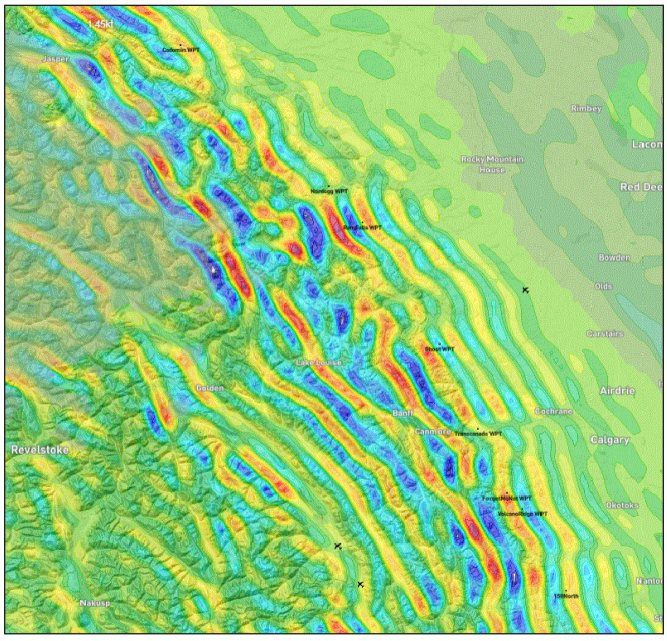
tion so traffic can fly over. ATC lowers my clearance to 17,000, and I promptly find myself at 15,500. So, lesson learned again – glider pilots should never commit to maintaining altitude.

As I'm approaching the northern end of Lane 4, ATC comments that Calgary Terminal is impressed with my ground speed of 240 kph (130 kts). That feels good!

2:11 pm, headed north, the wave is strong. Lanes 5 and 6 are low stress with ATC, with amazing landout options. A radio repeater is broken, which causes some communication issues, but the wave is generous, so little problems are easily handled. A little voice that says, "It's 3:00 pm – why are we still going north?". But the day is now awesome, so it's easily ignored.

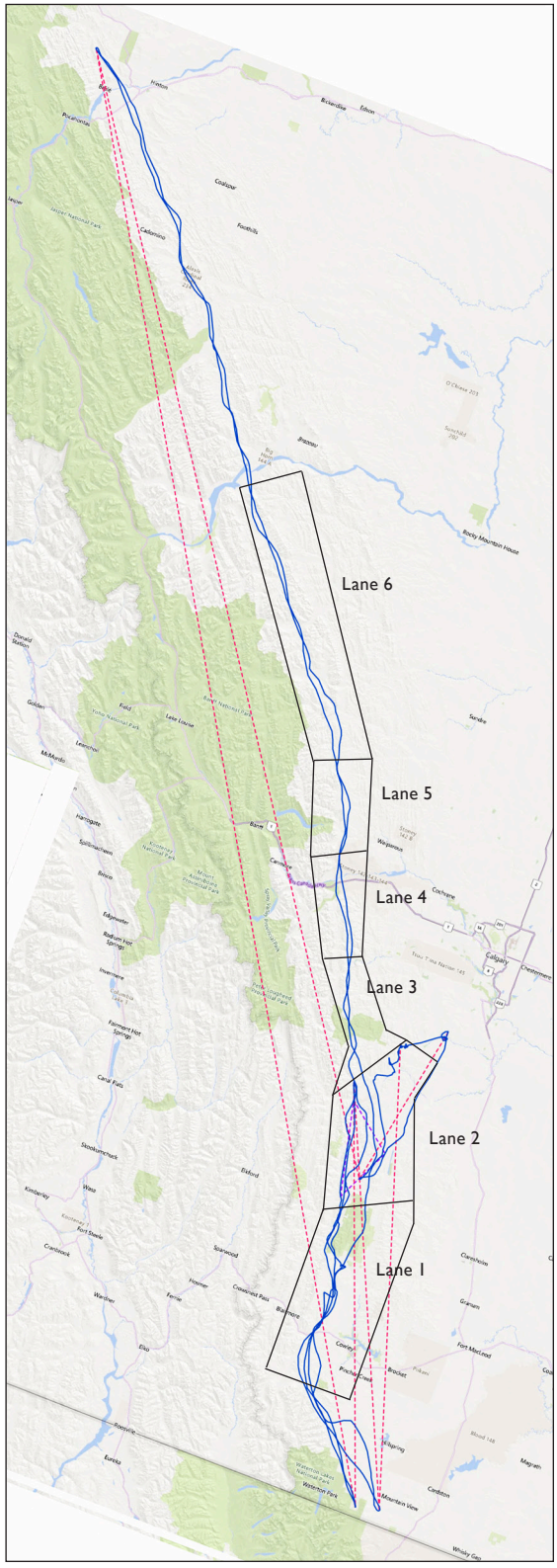
3:56 pm – now north of Hinton. The wavelength to the north suddenly triples, and the primary is way out over the boreal forest to the east. The decision to turn around is easy. The LX Nav shows 215 nm (398 km) to Cu Nim, and the sun will go in less than three hours. The trip home is fast, and I realize I may have a really big flight in the bag. Crossing Lanes 3 and 4 is blazing fast – 19 minutes, and ATC is really supportive. Driving from Hinton to Black Diamond would take 6 hours and I've just flown it in 1:40.

Getting back home, I still have an hour of flight and try to use it to add miles to the south, but the airmass south of Cu Nim has gone completely blue. 5000 feet disappear in a few minutes, and I'm down at 11,000, limping home and hoping not to use the engine. Eventually I realize that I shouldn't fly 90 kts when there isn't any lift. ATC says goodbye, I botch the circuit on landing.



Wave forecast from skysight.io – red is lift, blue is sink. After a flight is over, you can import your .igc file and see how accurate the forecast was. You can also create waypoints directly on the forecast map. Pro tip – don't put your turnpoints in the sink.

60 kts is *really* slow. The icing on the cake is the phone call to close the flight plan and the FIC wants to hear all about the flight. ❖



FIGHTERS & GLIDERS – the love of flight

Patrick "Peanut" Pelletier, ESC

I was asked to write something about the difference between flying fighters for a living and what I fly for fun. I hope this article will help explain why I like gliders and fighters equally. Let's have a look …

Aesthetics

I appreciate the looks of both and I understand why they look the way they do. The similarity here is that both are designed to give the best performance possible for their roles – form aesthetically follows function.

Modern fighters are 16 tons of fire breathing, screaming hot metal and composites designed to provide the best performance out of an airframe for it to perform its role of fighting its way into enemy territory, deliver a lethal payload and fight its way back out to come home for tea and medals. I certainly appreciate and love every aspect of that machine, which is built and designed for me to easily do my job, and having my prospect of mission success and coming home be pretty good.

Modern gliders are equally sexy, but certainly nowhere near 16 tons. We all know what they are designed for and we all love them for what they are designed to do. They keep us safe, and as we gain experience, we try to go further and further and quickly realize that our chances of coming back home are also pretty good at the end of the day, however, coming home in this case, means not landing out.

Mental

Until I was asked to write this article, I had never thought about or looked beyond this actual point as to why I like cross-country gliding so much. I love flying gliders because it engages my brain in a way that is similar to what I experience while flying fighters. In both types of flying, I experience the same level of concentration, I continuously evaluate and re-evaluate game plans based on what I see, what I feel and what I hear. This continuously occurs from the moment I start the jet to the point where I shut it down. I get into this "zone" that is purely centred on achieving the mission. In the glider of course, getting into the zone usually occurs when I put on the glider and ends after landing when the straps come off.

Physical

Fighters and gliders both carry their own challenges regarding how each will punish my body while I fly them.

The heat For both, summer heat is a challenge leading to dehydration and exhaustion. Nothing to like here.

- **Fighters** Our flights are generally short, but we are required to wear some bulky equipment. A helmet and oxygen mask, a flight suit with fire-retardant long underwear, a survival vest filled with equipment, a g-suit, which essentially wraps our legs and abdomen in a plastic bladder. The combination of all this contributes to dehydration and the risk of heat exhaustion when combined with the physical demands of air combat on a hot summer day. It is not uncommon for me to have lost 5 to 10 pounds in sweat after a 40 minute flight of intense air combat.

- **Gliders** A hot summer day is a hot summer day. We generally start out spending our entire morning in the sun and then hop in our machines already slightly dehydrated. The greenhouse effect of a closed canopy contributes to the punishment. I got to fly gliders in Texas while I was stationed there and I also realized the heat was there to provide you with bonus punishment whenever I got low and

struggling to regain altitude. The other challenge I had in Texas was that it was necessary to rig in the "cool" early morning air at 28C so I wouldn't be exhausted by take-off time which usually occurred at 40-44C on some days.

The G-forces Most certainly different.

• **Fighters** Spending between 40 minutes and an hour anywhere up to 8g certainly is punishment unique to fighter flying, and if you're losing a fight, you get the bonus punishment of looking over your shoulder while pulling that same amount of g. Despite this punishment, I absolutely love pulling g every time I go up to fly and fight!

• **Gliders** I really have nothing to talk about here when it comes to g force. In general, g is short-lived and of little significance and I absolutely love the lack of extreme g! My neck gets a break on weekends.

The high-altitudes While both machines are capable of flying quite high, some significant dangers exist with gliders, especially with the heights I have been reaching over the years.

• **Fighters** The dangers are the same as with gliders, except that my engine provides bleed air to pressurize my cockpit. I would only be exposed to this danger if my engine or pressurization quits. Hypoxia is further mitigated by the oxygen mask I wear, combined with a pressure demand oxygen system. I certainly appreciate that my machine keeps me alive in a very unforgiving environment.

• **Gliders** It's cold and unpressurized at high altitude. Hypoxia is the number-one killer, closely followed by some risk of decompression sickness when flying at heights above 25,000 feet. There is nothing for me to love here. I am very aware of the deadly risks I take every time I go up above 25,000 feet unpressurized.

Speed

When it comes to speed, I love both ends of the spectrum.

• **Fighters** Who doesn't love going fast. I don't specifically enjoy the feeling of speed although I do appreciate watching the scenery go by real fast whenever I am flying low-level at 420 knots. On a few occasions, I have flown well above 600 knots at low level and looked at my shadow only to notice that it had supersonic shockwaves extending from it. That was a pretty unique sight! You have to experience it to really understand it. The real reason why I like the speed of fighters is that it keeps my brain busy. I have to think about what will happen 8 miles ahead of me, because it will happen in a minute. In certain air combat situations, I have to think 16 miles ahead, also a minute away. Intercepting opponents 100 km away approaching head-on means that we will meet in 3 minutes. During this limited amount of time we must maneuver and fire missiles, while the enemy is beyond visual range if possible.

• **Gliders** What can I say? Nice and relaxing… Who doesn't love nice and relaxing? I do enjoy that feeling of speed when ridge soaring in Cowley, which is why you'll find me polishing the rocks all day long sometimes on those east wind summer days. But I don't do ridge for the speed, I do it because I enjoy looking at the details in the rocks and the trees, and I enjoy finding wildlife on the mountain.

Control

Both fighters and gliders require pilots with good hands and feet. Both platforms require pilots that are in touch with their machines, although in somewhat different ways. I enjoy the fact that both aircraft types continuously challenge me to continuously sustain a high level of skill if I am going to be successful at doing what I set out to do.

• **Fighters** I'll start by saying that rudder pedals are generally there to be used as foot rests, although there are certain regimes of flight that the CF-18 does require the use of the rudder in order to effectively employ it in certain dogfight situations. We fighter pilots need to be in touch with our machine to fly it frequently at the absolute maximum of its performance. This means that while fighting or aggressively maneuvering, we are required to continuously fly at a regime where pulling a little bit too much on the stick means the difference between sustaining our energy and burning it all off needlessly. In order to master this, we must develop a feel for the aerodynamic buffet around our aircraft. A light buffet generally means we are in an energy sustaining turn, we are not gaining or losing airspeed. No buffet means that generally we are regaining energy in order to accelerate to a target speed that is appropriate for the type of fight we are doing. A heavy buffet, which sounds like sitting in the middle of a tornado, means that we are cashing in some energy to put us in a position to threaten

our opponent. All these subtle or less subtle differences require a level of finesse on the controls and each of these levels of buffet felt on the machine only require a fraction of an inch of movement on the stick. Being in touch with our machine is of vital importance.

• **Gliders** We glider pilots need to be equally excellent at flying our machines at a flight regime that is best for the task at hand. We must fly coordinated at all times and we must master attitude flying and listening to the sound of the wind in order to not have to look inside every few seconds to confirm the aircraft performance. Mastery of attitude flying also promotes lookout, which in turn decreases the chances of mid-air collisions. If you can fly your aircraft coordinated and at the speed you want without ever having to look inside at your instruments, you have mastered controlling your aircraft.

Complexity vs simplicity

I must say that I enjoy the simplicity of gliders. It is nice to give my brain a break on weekends.

• **Fighters** We are generally working several aircraft systems at once: two radios, a data link system with two additional voice radio systems within the link, a radar, and employ various weapons demanding varying workload levels depending on the weapon being employed. On top of that, we must memorize pretty much the entirety of our checklists, containing hundreds of checks, plus all the emergency responses requiring immediate action. All memorized items must be carried out without fault every single time. Very intensive training is required to get all this done *perfectly* and it is quite a challenge for fighter pilot students – they must have this down before their first flight as they solo on fourth flight on type. Even though I am an experienced fighter pilot, the pressure doesn't come off. I must continue to perform as well or better than the first day I flew the jet.

This of course is only about checklists. We are expected to perform at this level because from this point on, our tasks become increasingly challenging as we must execute various tactics against increasingly complex and cunning opponents while we operate our aircraft. This must be second nature if we want to effectively employ tactics and ensure victory. I certainly enjoy the constant challenge that doesn't allow me to ease off if I want to continue in this business.

• **Gliders** CISTRSCO – SWAFTS. A breath of fresh air for my brain! What's not to love?

Artistry

Both fighters and gliders require a certain level of artistic flying to achieve success and I appreciate the art in both.

• **Fighters** Air Combat is an art. Although dogfighting does require the pilot to fly his aircraft in a well defined flight regime appropriate for the type of fight he is in, he must continuously assess and reassess if this regime is appropriate for the situation. If the fight has stagnated, the fight must change, otherwise the loser will be the first to run out of fuel, which can be just a few minutes away when afterburners are used. If the fight is being lost, some very creative jinking may be required to avoid bullets, racing towards the ground in the hopes your opponent will either hit it or if not, the ground removes a dimension of maneuvering for both, you can no longer descend, and going back up is extremely difficult. If this is done properly, a few small follow-on moves may turn the tables on the fight. When a change is needed, it frequently requires a level of calculated improvisation that will put the pilot in a more advantageous position. This may mean initiating some form of on-the-spot abstract semi-aerobatic maneuvre which will usually result in the opponent reacting to that change in the fight, which in turn may require yet another on-the-spot maneuvre, and so on, and so on...

• **Gliders** Soaring successfully is an art. Cowley taught me early on that in order to be successful, I must go to places others don't. Sometimes I fail horribly, sometimes I am pleasantly surprised, the important part is that I went looking that way because I saw something and asked myself "what-if?". As part of the art, continuously taking into account the clouds, the sky, terrain, birds, mountains, winds, asking myself "what-if?" and creating a game plan out of what I see is simply an art form that builds on itself as I gain experience.

Conclusion

At first, I thought I only liked gliding because it kept me in a state of mind similar to when I fly fighters as my brain stays engaged with constant reassessments of conditions and game plans. Each have unique differences, but the most significant similarity that I enjoy in both gliders and fighters is that both keep me in that "zone" that I greatly enjoy.

Oh, and we both have the best views in the world, thanks to our large canopies! ❖

Patrick is a fighter pilot with 30 years of service who started flying gliders in 1983 with the Air Cadets. He joined the RCAF and has flown the CT114 Tutor as an instructor in the 1990s, the CF-18 Hornet at 425 Tactical Fighter Squadron in Bagotville Quebec, and as a CF-18 instructor pilot at 410 Tactical Fighter (OT) Squadron. He has flown combat air patrols over the Kosovo and Bosnia-Herzegovina region. He also flew the CU170 Heron Unmanned Air Vehicle and has 600 hours combat time over Afghanistan. He flew the T38 Talon as an instructor pilot at Sheppard Air Force Base in Texas, and the BAE Hawk in the UK and Saudi Arabia while out of the RCAF for a time. Patrick is currently an instructor on the Hawk at 419 Tactical Fighter (Training) Squadron at Cold Lake.

The Genesis of the Geoid

the story of the 7 level-headed scientists

Alan Murphy

A little tale for the topographically-challenged GPS owner

1 In the beginning there was a great **Mathematician** who invented the sphere – a massless figment of his imagination.

2 He soon grew bored with the sphere and wanted a more challenging shape for his deliberations. By making one axis shorter than the other two he created the ellipsoid. The points at which the axis crossed the surface he named the North and South poles. The line on the surface which was an equal distance from the poles he called the Equator.

3 Along came a **Physicist** who had been thinking heavily about mass. He filled the ellipsoid with a perfect fluid. However, in order to maintain the mathematician's ellipsoid shape he had to rotate the body at a uniform speed. He soon discovered that if he rolled an apple on the surface from the North pole to the Equator, he did no work at all. In other words he needed no energy, not even a bite from the apple!

4 He weighed the apple on a spring balance and found it weighed more at the pole than at the Equator even though it had not left the surface of the ellipsoid – a curious result. He explained that the centrifugal force created by the body's rotation had helped to move the apple further from the center of the body and against the force of gravity.

5 The Physicist needed a new word to describe this surface of different gravities but which had no "uphill". He called this surface equipotential and he was pleased to find it was identical to the Mathematician's ellipsoid.

6 A **Geologist** arrived on the scene, but thinking that all new words should begin with "geo", he coined the word geoid for the equipotential surface.

7 The Geologist liked big lumps of rock and so chucked a few into the rotating body creating local anomalies. The geoid was no longer an elegant mathematical shape, but it had bumps in the surface. The Physicist could still roll his apple over all the bumps without consuming or gaining any energy. However the equipotential surface was no longer identical to the Mathematician's ellipsoid.

8 Next came the **Chemist** who thought that the body would look much nicer covered with a sodium chloride solution, but because he had not stirred the solution very well, the liquid was not of uniform density. This meant that the liquid surface did not fit the geologist's geoid exactly. The new surface became known as the chemist's level (or C-level for short).

9 It was now the turn of the **Meteorologist**. He added winds, temperature differences, and lots of other nasty things. This changed the shape of C-level to the Meteorologist's Special Level (or MSL for short).

10 Not to be outdone, the **Oceanographer**, who had been circulating, then chipped in that he had just discovered currents (and because he discovered them, he called them Ocean currents) – but this just made the whole story even more complicated.

11 And the last to appear was the **Environmentalist** with his dire warnings of global warming. He spoke of melting ice and great changes to the MSL. He said that in 100 years' time everyone else would be wrong anyway!

That explains why the seven level-headed scientists are not the same height.
And if you want to know your height, it depends in whose shoes you stand.

the Bruce Friesen Fan Club – Vol 3, issue 1

Steve Chihrin, President and Editor-in-Chief of the BFFC

A Message from the President *While a lot has changed in the world since the last edition, Bruce continues to fly gliders well, and we continue to write and read about his exploits. Fan club members may already know of his great 6 June flight. We caught up with Bruce in Chipman, where he arrived in style for the first June ESC Fly Week of 2021, boasting a new glider and a renewed passion for (mostly) motorless flight.*

BFFC *Hi Bruce, I think I speak for all of us when I say welcome back to Chipman!*

Bruce It is always a huge pleasure, returning to Chipman and reuniting with friends old and new. The Zoom experience added complexity to the mix this year; having tried both I can state with certainty getting to know people in person is much, much better! Second only to the people is the prairie sky, the thunderstorms, the sunsets, and the carpets of cu. We are so fortunate. And I'm fortunate to be showered with accolades from the devoted members of the BFFC … I think … soon.

Before we get to your flying I must say, as always, your trailer continues to age like fine wine. But I have to wonder: how long did it take to de-winterize the jacuzzi? And it must have taken forever to polish all twelve place settings of the silverware and fine china?

The BFFC World Headquarters is indeed an esteemed landmark. A unique blend of mid-1900s modern design and quirky practicality, long may it remain rain and mouse proof. Clearly, the chimney, with its hint of inner luxury, is the defining feature. I find the greatest challenge at the start of each season is to convince the chimney sweep to reinstall the chimney cap at the correct angle.

Getting to the flying – did you do much last year?

Sadly, no. The 2020 season was a complete loss with respect to long and fast cross-country flying. It was, however, pretty good on the social side. I valued the opportunity to cross paths with Edmonton Soaring Club friends at Westlock for a few days, and participation in both Cowley camps was a real pleasure. Beyond that, as the Pacific Zone Director for the Soaring Association of Canada, I made the effort to visit all the soaring sites in that region and had the pleasure of flying and making friends at Alberni Valley and at Hope and Invermere. So, on balance, not much grounds for complaint.

You have a new glider as well, can you tell us about it?

I think I remember what I was thinking. Thinking? Well, something led me to place an order, and then everything flowed from there. My choice was to shift to a smaller glider, an "elderly gentleman's runabout", following the path plowed by Tony Burton and others, anticipating my future enthusiasm for flying would be greater with a small, light, easy to rig and fly airframe. Choosing to include the self-launch capability was a natural extension of that.

With that as background, I can describe the miniLAK as small and agile. The wings and tail are indeed light and easy to handle. The overall weight is about 100 lb less than the Discus I just sold, until the motor batteries are in place, at which point it is pretty much the same, and the same weight at launch as the Discus dry.

The wing is much smaller than the Discus wing, so the wing loading winds up similar to the Discus with some water on board. The flaps add performance, so in sum, on a strong day the cross-country performance competes well with larger gliders unless those pilots load up with water. I expect it will not be the best ship for a weak day.

Between the time I ordered it and the time it arrived, my understanding of the self-launch and sustainer capability of its front electric system improved. You can take that to mean I took off the rose-coloured glasses. I remain optimistic those capabilities will be very useful, albeit tightly constrained. For example, the self-launch is only available from the top half of the battery, for reasons of power output. My fantasy of motoring to an airport with a motel across the street, then launching into a carpet of cu the next day to complete the flight – well, it has now shrunken to landing with full batteries at an airport within gliding range, spending the night, etc, etc.

What have you learned so far from flying the new steed? What do you feel you still have to learn?

The biggy, off the top, yet to learn, is self-launch. I know, I know, I do realize most of the pilots in this world do it on every flight. But I felt the need to experience the airframe, the attitude on take-off, the sounds and feel of the propulsion system in the air, before assaulting my senses with everything in the go-and-keep-going situation. I had actually planned some "ground slides" as was done with the primary

gliders in the olden days. But I am now less keen to run the propeller except with the intent to climb away. No self-launch at Chipman this trip, as the first will be from a paved runway. Perhaps Valemount on the way home?

Pretty much new to me is flaps. I am learning to incorporate that tool in my flight optimization.

I have learned she is an agile aircraft, with the upside of responding quickly to the controls and the downside of being pushed around by the thermals. A totally different thermalling experience than the solid, stolid, almost majestic progress of the Puchacz. My expectation is that familiarity with the behaviour of the miniLAK will lead to an ability to anticipate, conform with and exploit the movements of the air. In the meantime, I am focused on coordination and on slowing down to an optimum thermalling speed.

Rumour has it there may be more than one new glider?

Oh, my new glider? Sorry. Would that be the L-Spatz 55 in my hangar? Or perhaps the Dagling primary glider which, although it technically belongs to the Canadian Museum of Flight, is the ***object d'art*** on the wall of my man cave at the Pitt Meadows Airport? It would be so much fun to get her back in the air!

The Dagling rests in parts in Pitt Meadows, soon to travel to Chipman to allow Bruce to compete in Proving Grounds with its suitable handicap.

If the border opens up soon, are there any plans for contests or big flights? Ephrata?

I have some residual hope for a trip to the USA this year to participate in the International Vintage Sailplane Meet in Elmira, New York. IVSM 2020 became IVSM 2021 due to Covid-19 constraints; it is going ahead this year with many commitments from owners of amazing vintage and classic airframes. I had this fantasy of soaring the ***Scarlet Lady*** to Winnipeg and then carrying on to Harris Hill in triumph with the first 1000 km wooden glider. Fantasy, perhaps, but waking up to the reality of having only one Covid dose so far, that July event has faded to only a glimmer now.

There is this rather intriguing opportunity, a blue plate special, limited time offer if you like. The 13.5m Class is new, so some of the world records for that class are definitely within reach with an outstanding Chipman day. We have them. When, we never know, but if a pilot is ready … The downwind dash potential out of Chipman matches anywhere, so the free distance and declared distance world records are possible. Even a huge triangle day. And now I happen to own what is currently – possibly – the hottest 13.5m ship around! Having said that, the relevant season from Chipman has already slid into 'next year' territory.

My fondest dream, now 20 years waiting for the perfect day, remains the long downwind in the Standard Austria.

We've all spent a lot of time hangar flying over the last year. Can you speak to one or two notable flights of others that caught your attention since we last spoke?

For me, the most interesting thing flowing from the pandemic constraint was the exceptional flying documented on the OLC. People who otherwise choose to fly fast in shorter competition tasks turned their hand to the OLC challenge of maximizing distance from the entire soarable day. Two flights stand out and are worth remarking on, both flown elsewhere. One was a 500 km triangle flown by Frank Pilz out of Hope. It was the first declared 500 closed course flight from that site, and was the culmination of years of exploration of difficult yet rewarding terrain by Frank. Some of us know Frank as the keenest nightly bonfire guy at Valemount, and it is great to see his progress and accomplishments in flying.

The other was a triangle flight of 805 km by Nick Bonnière from a Quebec club field. Outstanding. I had the pleasure of Nick's advice and expertise in his role as Canadian dealer for LAK sailplanes, and it was great to be connected to his flying success. In short, Canadian soaring has huge potential, and many excellent pilots both established and up-and-coming. Exciting times.

Well Bruce I am mindful of your time during these peak flying days. I hope we can catch up again after some undoubtedly excellent flights this coming spring?

That would be great. The excellent flights, I mean! My time at the just concluded early-June ESC flying week was wonderful, but the weather was pretty average. Perfect perhaps for practice in less-than-perfect conditions; good for the soul, so they say.

However, the last day of the week exceeded forecast predictions. I had the good fortune to make some lucky choices, placing me in the best parts of the sky at each point in the day. On a day *Skysight* calculated a "Potential Flight Distance" out of Chipman of 180 km, GOBF did 604 km including a 473 km triangle in 7:34 hours. You never know, you just need to get up and try!

GOBF flight report – 6 June, 2021

A long triangle is always a possibility out of Chipman. It has been done before, including the current Canadian record for free triangle distance. And, one can dream of a world record in the newly-established 13.5m Class ...

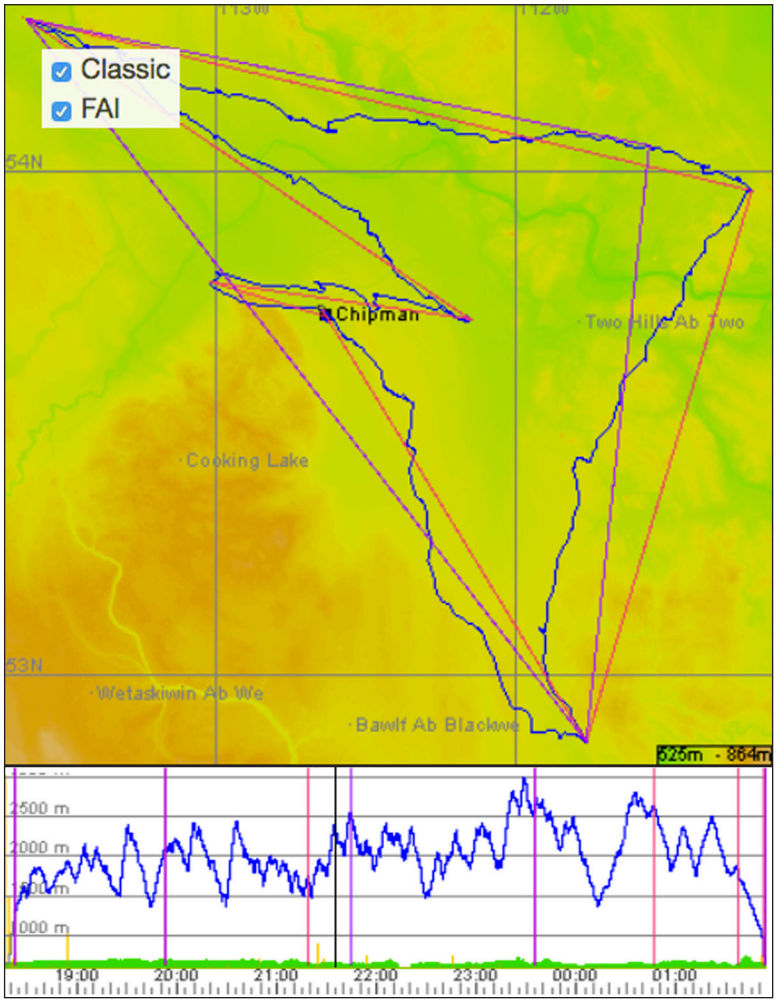
One of the opportunities I watch for in the weather forecast is a configuration of forecast wind in time and space conductive to a long triangle. As in, is there the prospect for a tailwind all the way around!? The forecast showed strong winds aloft from the northwest early in the day, and later in the day weak winds due south of the field, around Red Deer. I formed a tentative plan to go downwind, perhaps to the Saskatchewan border, as my first leg, then west to Red Deer (or more realistically Camrose) and finally north to home.

Off tow I drifted downwind towards the southeast, and effectively "started" with no effort on my part, so I was on my way (more normal for me is to sample two or three thermals before starting). My thermal had no cloud, but as I climbed, a few wisps formed above me. Downwind, to the east and southeast, nothing – not a wisp. Clouds to the north of me, clouds to the southwest of me, but, ahead on track, nothing. Normally, one can pretty much assume that if there are clouds around, then thermals are creating clouds; no clouds in a patch of sky means no thermals, at least in that patch. But, the sounding showed a strong inversion at about 5000. I thought there was a good chance there were indeed thermals to 5000 feet in that patch of sky, and, FES and all …

As I reached the top of that first climb, another wisp started growing to the southeast. Yay! One more! And so it went for the first half dozen climbs – drifting downwind, another wisp just in time, but dragging me south of my intended track. Further south yet on a line southsoutheast, was a beautiful, a glorious cloud street. I contemplated a 90 degree turn towards the southwest to connect with that cloud street as early as possible; it was evident my fate lay with that street regardless. However, with the continued arrival of new wisps along a southerly track, I held off on a sharp off-track diversion and reached the cloud street using the slow but direct route.

The cloud street lived up to its promise, and rapid progress ensued right up to the last cloud. The computer said 110 km back to Chipman and I figured, given the conditions, that was more than ample as the first of six legs for an OLC flight (perhaps a sequence like 100 + 150 + 150, etc.).

A very interesting sky at that point. The cloud street was all by itself. To the north and east, blue skies. To the south and west, a long rounded fuzzy band of mid-level cloud. My best guess is the cloud street was a line of convergence between two air masses, with some lifting, and the long roll-shaped cloud was connected to that somehow. Beyond the band of mid-level cloud, west, in the direction of my preflight speculation of a second leg, there was nothing, nada.



There seemed only one sensible course, and that was back towards Chipman, returning along that lovely line of cloud, still there and still working. Any hopes for a triangle, for the 30% triangle bonus on the OLC, would be set aside for later in the flight. While cruising northnorthwest, essentially "Chipman International direct", the skyscape to the north started to fill out with cu, and it was practical to bend the track north towards Vegreville and eventually northeast towards Saint Paul. On this leg, as throughout the day, there was considerable reward for patience waiting for the strong thermals, not settling for just anything bumped into. Given the moderate cloud base – less than 6000 feet on the first leg, rising to 7000 on the second leg – that selectivity took some self-discipline. At several low points, I wasted time on thermals of 3 knots or less, but was reasonably successful in moving along rather than getting stuck taking the weaker ones all the way to cloud base. The better climbs, and the longer climbs, were thermal averages of 5 and even 6 knots. Throughout the day, I found the thermal cores small, and frequently used bank angles of 45 degrees or more; recentering was constant.

Passing to the east of Saint Paul came a key decision-time. Turning and truncating the second leg, putting the upper limit on the potential triangle. *(An FAI triangle: "For triangle and free triangle courses shorter than 750 km, no leg may have a length of less than 28% of the course distance …)* When leaving the first turnpoint south of Viking, setting Saint Paul as the next waypoint on the flight computer, I had noted a leg length of 124 km. Let's see, 124 km as 28% of the total ... divide by, carry the one ... about 450 km. Probably all that could be hoped for on the day. (Oops. In the event, my triangle was only about 80% of the OLC six-legs flight distance. Good, but 90% would have been better and the opportunity was there, at Saint Paul.)

Pulling a pilot towards the third leg, towards the westnorthwest, was the wind direction, from 280 or 290 degrees, and still above 15 kts. Along the line of the wind, very enticing for the upwind leg, were lovely cloud streets. But – that meant angling that bit towards the north, angling that wee bit wide of Chipman, and, most important, angling such that the triangle would have one very long leg and two shortish (28%) ones. While I was contemplating the options, and the potential remaining in the day, and the geometry, one particular cloud street was shouting "pick me, pick me", and I did. Worked out okay too, achieving an average speed over the ground of 71 km/hr – into a 16 knot wind that is equivalent to 100 km/hr through the air which is not too shabby. The cloud streeting definitely helped with the remainder of the flight after Saint Paul.

At 160 km into that leg, I was confident my triangle wasn't going to get any larger. So then the considerations shifted; the emphasis went to flying in the best part of the sky versus the risk of the day dying completely 'back home' and getting stranded surrounded by great lift but no path to Chipman. Somewhere pretty much north of Westlock I turned for home, starting just the fourth of six legs of OLC scoring. Lots of opportunity left in my kit bag, but the triangle aspect was finished and done with.

Except for 'closing the triangle' for the OLC bonus points! As I returned from Westlock, I chose to follow a line of energy taking me north of Chipman. After all, I was only on leg four, which I could extend as far as prudent beyond Chipman, and still add OLC distance on that leg and on leg five and leg six. Having said that, at the end of the day it has been my practice to maximize OLC distance while getting back to within gliding distance of Chipman and stay tethered, to maximize the OLC total distance while accepting as a constraint 'do not land out'. Not worth it, that tradeoff.

Well! Having made a series of poor cloud choices, I found myself dropping below glide path back to Chipman. Up near Andrew, down to about 4600 feet and definitely out of gliding range, I was down to my last two prospects, "I will go there, and then if necessary there, and if no lift at either of those places, then ..."

Did I mention the FES? That has been an interesting change in the calculations of risk versus reward, that is for sure. However, had I started the motor and driven on home from Andrew, the consequence would have been pretty severe. Not as inconvenient as a landout and a retrieve, and all that, but it would have meant total loss of the 30% triangle bonus points. All that effort to plant one corner here, and then get another corner as far as possible over there.

All that passing up of lovely cloud streets up and down on which to zip, going instead cross-wind to make the triangle geometry. Out the window. In numerical terms, a flight that earned 726 points included 138 triangle bonus points. Fortunately, that second last chance was a good one. The first core I found yielded a thermal average of 1.5 kts, in itself not bad for low down at the end of the day. Shifting over got a better core at 2.3 kts average for the entire climb.

I carried on that fourth leg to Willingdon, then a fifth leg west to Fort Saskatchewan and sixth leg final glide home. All in all, the choice to extend the flight rather than settle for a direct return from Westlock added about 100 km to the OLC distance.

Coming back from Fort Saskatchewan was fun, as it was an opportunity to fly a true final glide. Watching the netto swing from positive to negative and back, watching the expected arrival height bleed off, and then recover, was fun. Particularly as a calibration exercise for the settings in the flight computer in the new glider.

At the end of the flight, at the end of the day, there were still tonnes of dark bottoms to the clouds north of the river. I strongly suspect another hour of flying was possible. But, the glide back? Risk and reward. ❖

the TST-8 Alpin

building an unusual two-seater

John Mulder, CAGC

Carol Mulder

I HAD BEEN LOOKING at aircraft at the end of a long list of projects starting with a straight tail C172, a 2-22 rebuild, the Zephyr overhaul, a Bergfalke III overhaul with a Lancair IVP and a BD-4 in the mix along with our regular maintenance projects. I was told "no more projects" by the boss (my dad). But when I showed him a complete ***TST-8 Alpin DM*** two-seat motorglider kit on eBay in March of 2008, with bidding starting at $2000, he decided maybe we could do one more. It didn't bid up very quickly and we won at $5000. Another $1000 for expenses to complete a road trip south to California with the Bergfalke trailer, and the kit was in our hangar in Red Deer on 10 April, 2008.

As we unpacked the boxes, we found most of the hardware well-sorted and marked, and the work done before our purchase had been completed professionally.

Originally, the aircraft had been purchased as one of three that were shipped in a sea container from the Czech manufacturer. It seems two pilots had ordered kits and one pilot convinced his brother-in-law to also buy one in order to divide the shipping cost by three. When the gliders arrived, the pilots commenced building theirs, but the brother-in-law wasn't a pilot and didn't know how to build an airplane so he dropped it off at a company that does "builder-assist" and asked them to work on it for him. As they did work, he'd pay the incremental bills. When his checks stopped arriving, and after a few years of inaction, the company retained legal possession of the kit and put it on eBay to recover their investment of unpaid time. We calculated that the original owner had invested about $35,000 in the purchase, shipping, and the work on the aircraft when he walked away. All the original invoices had come with the kit.

The Alpin is a two-seat motorglider constructed of fibreglass, wood, and fabric. The forward fuselage is fibreglass, the tail boom and wings are constructed of wood, and the entire aircraft is covered in fabric. It is 7.0 m long, wingspan 15.4 m, and the motor folds out of the fuselage from behind the cockpit. It has a 28:1 glide ratio at 55 mph, stalls at 40 mph and a V_{ne} of 110 mph.

We started the construction process by filing our letter of intent on 9 July 2008 with MD-RA (Minister's Delegate – Recreational Aircraft, who is responsible to inspect and issue the C of A for amateur built aircraft in Canada on behalf of Transport Canada). The manuals were a little less than adequate and lots of questions arose during the build; some we found answers for on the internet with a few owners in the US, and others we decided for ourselves

Jerry Mulder

from previous experience. Work progressed at various rates of effort: we purchased a Rotax 503 engine, had a custom propeller manufactured, installed all the parts and pieces, and covered the wings and fuselage with fabric.

We have several other aircraft to maintain and fly, so getting the Alpin finished wasn't a priority – more something to tinker on when the club wasn't operating until it was close to finish, then it was time to push it over the line. The "51% complete" inspection was done in August 2009, precover in April 2010, and the final inspection in 2018.

The first flight of C-FKTD was an aerotow to 50 feet and land straight ahead in October 2018. Everything functioned as expected so we prepared for another launch. After takeoff I noticed the spoilers were partially open and vibrating. We are still fiddling with the spoilers as they aren't rigged exactly how I'd like them, but are getting close. We put a few more flights on that fall and, in between other club flying, have about 15 hours total time so far. We need to tune the engine next so we can complete the self launch and climb test to remove the restrictions on the C of A.

As this season has ended, the Alpin is now suspended from the hangar ceiling, where it lives whenever we are not flying it. It is suspended above the Citabria, Cherokee and Tiger in our hangar in Innisfail, the wheels sitting in a cradle that is winched up to the I-beam we have mounted on the trusses. That allows it to be rolled to the back of the hangar once it is hanging eight feet up in the air. The system to lower the glider and ready it for flight takes less than ten minutes, and only the Citabria needs to be pulled out of the hangar to allow the Alpin to be lowered.

There is another Alpin in Canada, flying regularly at the Saskatoon Soaring Club. Fernando has posted some of his flights on the OLC. Their glider was registered as an ultralight when it was imported from Mexico, whereas ours is registered as an amateur built glider. Some have likely seen the ***YouTube*** videos of a two-seat glider with a jet engine, that is the *TeST 14-J BonusJet*, which is an all-fibreglass version of the Alpin. A Google search for TeST 14 should take you down the correct path if you're interested, and I understand it may be for sale too. See ***<https://www.desertaerospace.com/bonusjet-c1erv>.*** ❖

ASC Treasurer's report – Gerald Ince

2021 MARKS THE SECOND YEAR OF OPERATIONS for the Alberta Soaring Council (ASC) after the loss of its funding from Alberta Sport Connection, which previously provided of over $37,000 annually to our organization. A portion of that funding had been used to engage an Executive Director who managed everything from the day-to-day administration of the ASC to the organization of meetings and events. ASC relied heavily on the Executive Director position and we have been without one since June of this year.

We have managed to run the organization with the continuing help of volunteers both administratively and on the ground at Cowley. The ASC Executive have assumed the duties previously performed by the Executive Director. I would like to acknowledge Sheldon Steinke, our former Executive Director, and Geoff Minors, our Cowley Director, who have continued to perform key tasks on a volunteer basis to keep us running. I would also like to thank everyone who stepped up to make our summer and fall Cowley camps a success.

In order to ensure the viability of the ASC, a number of initiatives have been undertaken to bring our expenses in line with revenues:

- Cut expenses including eliminating the payments to the Executive Director and Cowley Director as noted above.
- Removed ASC from the administration of insurance payments for the Alberta glider fleet under the SAC insurance plan. All insurance premiums are now processed directly by the SAC insurance broker, eliminating a significant amount of work previously performed by the Executive Director.
- Reduced overhead expenses by meeting virtually to minimize travel and accommodation costs.
- In March we held our AGM and Safety Seminar via a videoconference, which was very successful.

In 2021 we also changed the rental arrangement for towplane PCK so that our two largest provincial clubs, who typically use PCK for pilot checkouts and as a back-up for their own towplanes, each pay a $2,500 annual standby charge to ASC. In exchange, those clubs receive a reduced hourly rental rate on PCK. This provides a more stable revenue stream to ASC while continuing to provide the clubs with access to PCK when they need it.

The ASC hosted two well-attended flying camps at Cowley during the year. The revenue from these camps, combined with PCK rental and standby charges, will cover our operating costs for PCK. Maintenance expenses for PCK are expected to decrease in 2021 to a level in line with historical averages. As we wind down the 2021 soaring season, most of our expenses for the year are known. We had cash and investments of approximately $52,000 as of 30 September 2021, so are well positioned for the start of the 2022 flying season when we will have to pay our insurance expenses.

We look forward to another great year of soaring next year. All indications are that we are on track to host a casino in the second quarter of 2022, which will increase our financial flexibility considerably. ❖

The Cowley camps

Geoff Minors, LSC

THE SUMMER CAMP was in the balance for a "no-go" due to the heavy smoke surrounding Cowley and the smoke forecast was not very good for the week of the camp. The ASC executive held an emergency Google meeting to decide if we were going to get enough pilots to register. The decision was to let the camp go ahead and have two towplanes available.

One of the questions I have been asked was why has the cost of registration gone up so much? This was due to ASC losing the grant money from Sports Connect which supported the camps and other activities. The camps now need to be self-financing and to make a small profit to help with the maintenance costs for the airfield and the ASC towplane.

The camp went ahead with some anxiety on my part on how many pilots would turn up due to the poor conditions. However, tantalizers like having two BBQs helped a lot! It was nice to see the RVs starting to roll in and cars with glider trailers arriving on Saturday. Gliders were getting rigged ready for the soaring week to start.

We had 30+ pilots register which makes the camp a busy place. It was also nice to see several out of province pilots arrive. The first thing on the agenda was to get help to fill in as many holes on the runways. This took many loads of dirt in the Kubota. Thank you to those who helped to do this. The ASC winch, based at Cowley, was kept busy with pilots wanting to get checked out for winch launch. That keeps me busy as a winch instructor at the camp, which I am more than willing to do and enjoy very much. The smoke did slow flying operations down but on several good days the conditions were very good and made XC flights possible with pilots going down to Waterton for the first time. There were a few days where ridge soaring was possible on the Livingstone Range on the days when visibility made it safe to do that.

The stats for the Summer Camp were: 142 recorded flights, 153 tow tickets sold, 30+ pilots registered.

Thanks to John and Carol Mulder for helping with tow ticket sales and safety.

Thank you all who made this possible and we look forward to seeing you next year. Denise Vanderkooi organized a roast chicken supper in her large cooker and many were cooked which we enjoyed very much. Thank you, Denise. On the last Saturday we also had a BBQ organized by Rosemary Minors. Again, this was enjoyed by everyone who attended. Thank you, Rosemary. ❖

Close to IFR today

Doug Woytuik

Sunset at the Fall camp looking east

Ben Hornett

The Fall Camp is probably the most anticipated camp to attend and Cowley again lived up to its fame as a Diamond mine! Conditions were looking very good for wave and didn't disappoint. From Day 1, the wave was there and enjoyed by those who came and were ready on the first Saturday. The rest of the week didn't disappoint either with heights up to 28,000 achieved and four Diamond climbs were earned. We had visiting pilots come from as far as Ontario to experience what Cowley has to offer. On days with no wave, thermal and ridge soaring was there to be used. How many places in Canada can you enjoy all three of these conditions? Cowley is truly a magnificent place to fly from.

There was only one landout recorded! Tim Fulcher from Winnipeg made a wise choice after being dumped down in heavy rotor near the range. There are only a couple of safe landing fields under the Range and he made a safe landing in one. The rancher came out to greet him and said this was not the first time a glider has landed in this field.

Cowley is not an easy place to fly from. In strong wave conditions you need to be prepared to make safe decisions. If you have never been caught in rotor you are in for a surprise! On the last Monday I took Sheldon up as a student in the LSC Grob to get aerotow experience and hopefully wave. Well that turned out to be one of the most bumpy aerotows I have ever had – trying to follow the towplane was a fight until we released. After release we were also thrown around in bad rotor and no matter where we went, we could not connect with the wave. Knowing your position and safe heights to get back to the airfield really helps and this is where local knowledge helps.

If you have never flown at Cowley, I highly recommend going for an area check flight with someone who knows the area. The few flights that day everybody commented how bad it was. Even the towpilot had to call it a day after starting to feel sick after being bumped around the sky!

On the last Saturday of the camp, Rosemary Minors, with the help of Mary Lou Hill and Lauren Troppmann, organized a Turkey Thanksgiving Dinner in the camp kitchen which was very much enjoyed by all. This may well be the revival of a past tradition. Thank you to George Haeh and Sheldon for being the camp managers. I would also like to thank our tow pilots who make these camps possible.

Camp stats: 26 pilots registered, 96 recorded flights, 171 tow tickets sold. This was also a very successful camp. ❖

John Lubon, SOARING

A stubble fire thermal

Tony Burton, Cu Nim

WHEN THE AIRMASS IS STABLE, it takes quite a strong heat source on the ground to trigger a thermal. Here, it is a stubble fire.

Stubble fire thermals can be very powerful, though brief. The fire in this photo may have been accidental as it looks like it is burning left to right downwind. When deliberately set, a farmer will usually light the stubble around the perimeter of the field, and it will burn in towards the center. It will be slow at first, but as more heat is generated within an increasingly small area, the heat flux becomes almost explosive, and a torus-shaped thermal may even surge off the surface, Much crop debris is sucked into the column, then the thermal will die rapidly when the stubble is consumed.

At the 1978 World Gliding Contest in Châteauroux, France, I crewed for John Firth. The grain harvest had been done, and on one light wind, hot, and stable day, many stubble fires were visible around the countryside. On the final leg of the task, pilots were often flying fire to fire trying to get onto final glide. I drove out to a high spot down the final leg to spot any beginning fire and radio the location, and John was able to reach one we called in, giving him a final glide. Fun. ❖

ASC President's report

from page 2

is enriched by your active participation. Thank you. Thank you. As you reflect on what 2022 will be for you, consider staying involved and active as a volunteer in our sport. It is especially noteworthy for me to thank Sheldon Steinke and Geoff Minors for their service to the Alberta Soaring Council in 2021. Their continued support behind the scenes in helping to negotiate land lease agreements and manage financial reporting has been an enormous help to the executive.

We were fortunate this year to have two very successful Cowley camps. Both were well attended (42 pilots in summer and 29 in fall), and we were rewarded with some excellent wave soaring again during our fall camp. I would like to thank Geoff, Sheldon, George Haeh, Dale Brown and all of the club camp coordinators (Chris Chiasson, Tyler Paradis, John Mulder, and others) who took the lead in organizing this year's events. It was great to see so many folks come out and continue to benefit from the world-class soaring site we have in our backyard!

Wave soaring along the Canadian Rockies took on a whole new perspective this year due to the amazing work of Chester Fitchett and Tyler Paradis. Chester has been mapping the wave along the eastern slopes of the Rockies for a number of years, and this year demonstrated not only what is possible, but through his efforts with Tyler and Nav Canada, created an airspace corridor that makes it now much safer and accessible for these flights. A huge congratulations to Chester for his record setting 17 October flight of 1601 km! Accomplishments like this have attracted attention from around the world and will make Alberta a go-to soaring site for those looking to achieve 1000+ km FAI diploma flights in North America!

As you plan for 2022, consider blocking time in your calendar to attend the ASC and SAC Spring Safety Seminars, our Cowley camps, the Canadian National Soaring Competition in Edmonton (dates TBD), or local club events. One of the great things about this sport is the people, and as we emerge from this pandemic, we need to find new ways to engage with and support our community! Together we can all help soaring to grow and strengthen in Alberta.

Stay safe … I look forward to seeing you in one of the online Condor Proving Grounds contests this winter and in the skies in the spring! ❖

David McIntyre

Cu Nim

Operationally, Cu Nim had to deal with many tasks in 2020 that included figuring out COVID protocols, taking delivery of 4 aircraft, and rolling out the objective-oriented training program. Happily, in 2021, we were able to focus much more on building on the work of the year before and flying lots!

In March, the annual general meeting was held and was memorable for being nearly six hours long. I vow to complete the next one in half that time or less!

Training The training program gathered so much interest that at last count, there was a 30 person wait list on top of the students who got to participate in the program this year. Two full week events were run to bolster training opportunities. The first was the "School's-out" week in June/July and the second was the "get-to-solo/soaring" week in August. The achievements of solos, new licences, and badges were many (the full list can be seen on the back page). Three members: Josh Peace, Michael Dineen, and Dylan Martin completed their training and received their glider licence all within one season, a feat that hasn't been achieved at Cu Nim in recent memory.

Weather For the most part it has been a nice season. We were affected by smoke again this year which led to cancelled flying at times due to the very poor visibility. More memorable was the 'heat dome' that affected western Canada. With temperatures climbing very high in late June into July, the "School's-out" flying week had operations going very early each morning and shut down when it got too hot.

Flight line management Following a brief trial in 2020, the flight line was managed with the Take Up Slack system. The flight logs are in much better shape and a great deal of operational data is now available.

Massive clean-up Chester led a sustained declutter campaign across the entire airfield. The results are noticeable and included the removal of abandoned construction projects, defunct campers, and thousands of kilograms of junk from the hangars and the clubhouse. I think everyone can breathe a little easier with the physical and psychological weight reduced.

Garden Pilar and Ursula spent many hours' work on the landscaping around the clubhouse and it has been looking spectacular all season.

Aircraft Sales After years of languishing, the Jantar was sold (handled by Chris Gough) and transported east (towed by Marian). Having languished for even longer, the

two Blaniks we sold (again by Chris G.) and picked up by the purchaser to be flown in the Yukon. A scout wing was bartered for PCK rental time.

Intro flights Intro flights were resumed in 2021 and it looks like about 40 will be completed by season end. Summer and Fall Cowley camps were well attended. Once again it was a great time to build skills, experience the stunning landscape, and trade stories with pilots from across the province and across Canada.

OLC participation Chester pulled off second place in OLC Plus Champion competition and was only 7 points behind first place. Cu Nim placed 6th in the club standings and posted more points than in any previous years.

Looking back, soaring in 2020 offered respite from the pandemic. Gliding at Cu Nim during 2021 was just the same but we enjoyed a longer season and many more achievements. We have exceeded 1000 launches.

Ben Hornett

Central Alberta

In 2021 we started a bit early due to the good weather. We did have some good spring flights. We still had a good number of familiarization flights. We again only had a few students this year who continued through the whole season. We did manage to get a few students soloed though. The private ships flew a little more this season, since they were able to fly the full season instead of a half season. There were a few Covid challenges this season due to the "restrictions on – restrictions off" times, which the club handled very well. The club made some membership rate changes this year, mostly because of the insurance rate increases. So overall the membership numbers remained like last year and are still small since the drop in the Alberta economy.

Some of the club highlights this 2021 season:

The new TST-8 Alpin two-place motorglider continued its test and tweak flights as John and Jerry Mulder work on perfecting the performance of that aircraft. Here is a link to the aircraft details in aeropedia: ***https://aeropedia.com.au/content/test-alpin/.***

Leo Deschamps got the Nimbus "2B" back in the air again for the first time since 2018.

But I would have to say the biggest event for the club this season was attending the Cowley Summer camp. The club brought the Puchacz down and did some training flights. Despite the heat and forest fire smoke, all the members had a fantastic time. There was singing. There were BBQs, some good flights, and even a few friendly debates. It was also good to socialize with the other glider pilots and their families once again, something we all needed since the outset of the Covid pandemic.

Considering the times, I would say our season was a success, and we are looking forward to another in 2022.

Leo Deschamps

Lethbridge

THE 2021 season began with a beautiful day in March! The forecast looked great for a trip to the airfield, so the club decided to spend the day getting things ready for a new season, with the possibility of flying if conditions allowed. Opening the hangar, looking for remnants of mice and other critters, and cleaning up the Grob 103 we fly didn't take too long. If we could get our trusty bus moving, we could set up the winch and fly! The problem was, our bus was locked in a frozen drift up to its nose. With the help of a couple willing hands, shovels, and a very high rpm on the bus, it escaped its winter home and we were set for all the members present to get some checkout time in.

From there our season progressed at its usual pace. We usually fly 2 or 3 Saturdays a month, and try to book in time at the ASC camps. Our two instructors put in the time they have available to allow the club to operate. Our students made considerable progress this year, and it looks promising to have a couple more licensed members early next year. Over the course of the season we resumed intro flights which is always helpful for club revenue. Geoff Minors pulled off seven intros in one day! To help us keep tabs on the airfield, we installed a security camera system on the bus using considerable material donations.

When schedules line up and the right folks can make the field, we like to host a family flying day, where the kids who want to fly get the opportunity, and the rest get to help out by driving the golf cart and Kubota. If they stay happy with those jobs, in a couple years we'll have a full time ground crew.

Looking forward to 2022, we are hoping to keep and increase the current membership, license a number of our students, keep the Grob in good flying condition, recondition the winch, and enjoy the flying that Cowley is always willing to provide.

Bruce Aleman

Edmonton

Here we are looking back at the 2021 season as we in the soaring community (as with the rest of the world) find a way to navigate these unprecedented times and continue to not just enjoy our sport but have it grow. ESC was determined, as in 2020, to thrive despite the pandemic. That goal was not without challenge. Our casino was postponed and there was much uncertainty in income. How

many members were going to return? Would new members come out? Would the field repairs recover quickly enough?

With Thorsten's departure as President we started the year with a significant shuffle as Melanie and Tyler Paradis joined the Board. They injected a wonderful new energy and brought many fresh ideas including a few from their "dual citizenship" at Cu Nim. One of the most significant changes the club made was a flat fee for "all you can fly" as an option which proved extremely popular. It had many benefits, preloading the club's cash coffers and eventually mitigating the liability in member balances.

We also adopted ***Take-up Slack*** as our flight line logging tool. The discussions and adoption of these ideas has created great sense of synergy between our clubs, rejuvenating a spirit of reconnection across the province.

Another challenge was also a major changing of the guard in our towpilot team, with Bob Hagen, John Broomhall, Neil Siemens and Guy Blood all making the decision to hang up their spurs. Dr. Steve (Chihrin) also had himself on the bench due to his daily work in contact with Covid cases. We had to react quickly: Tyler stepped up to fill our Chief Tow Pilot position, we were able to convince Kelvin Cole it was time to fly the front end of the rope, we recruited the very experienced cadet towpilot Paul Simmonds (who quickly became proficient in all of our glass ships), and finally, long time member Aaron McDermand completed his check flights to round out the new team. With Rick Martin and Lyle Shwetz making a total of six towpilots, we were able to get the job done this season.

Very early in the spring we were all on tenterhooks as the snow started to clear – would our efforts in 2020 to regrade the runway prove worthy? All of our twitchy aviators were asking two questions. First, would the grass take since it was seeded but not germinated in the fall? The second was, would the usual spring thaw water recede? With what would become the norm in 2021, our multi-talented team carried out drone overflights, larger aerial surveillance, and sophisticated pumping. By early April we had a plan to operate with a modified take-off run and were able to start operations on 16 April – one of our earliest starts ever and we lost virtually no flying days due to standing water. Flying began with a fervor.

Following Cu Nim's lead, we have adopted Objective Oriented training and determined we would take on a limited number of pre-solo students (10) and give them all the attention they deserve. We had good success and were able to send Mathieu Petit, Phil Shen, Michael Carson and Sophie Cole (on the very last day of flying) solo this year. The Merhejs were hot on their heels and we expect a quick progression for them in the spring! Ben Kiesman, who joined us in 2020 as a licenced cadet pilot, was in seventh heaven and that was obvious most days at the field as he quadrupled his total hours in short order and achieved his Bronze badge, so now he can head out into the Proving Grounds in 2022.

In order to regulate our spending, ESC's initial plan was to only insure a portion of our fleet but it didn't take long to realize that even with a modest membership increase we could make use of all of our ships.

The Cowley Summer and Fall camps were well attended by ESC members. The interclub camaraderie at the Summer Camp was in full display with large groups singing and star gazing well into the late evenings. The Fall Camp had wave each day and grabbing some spectacular lift was almost guaranteed! We found that having a two-seater available at the Summer Camp led to many great mutual flights, with members sharing experiences and learning from each other. For the Fall Camp, ESC deployed the Perkoz and the DG1000S and everyone shared in learning how to catch, stay in, and navigate the Livingstone's wave. Kelvin decided to earn his badge legs incrementally by getting his Gold climb one day, then a Diamond climb the next! Ray Troppmann carried three means on board to validate his amazing Diamond climb.

After replacing the fried Online Glider Network (OGN) *Raspberry Pi* computer on the roof of the clubhouse, the members experienced a new low in daily workplace productivity. It was installed just in time to watch Bruce Friesen stretch his new glider's wings, the club got a good test of the range capability of its newly refreshed system. Perhaps in 2022 the club will try remote deployment of secondary solar-powered OGN stations that were tested in Cowley this fall jointly with Cu Nim!

The club also voted to host the 2022 Canadian Nationals! This effort should keep ESC busy making necessary preparations in the spring – details to follow.

When we wrapped up the flying at the end of the season, it was an extraordinary year for our stats:

- 77 flying days (triple 2020) was the most in the last five years. Field repairs = success!
- 746 total flights, the most since 2017, also triple 2020.
- 592:35 hours, 750% of 2020 and almost double 2018 and 2019. The average flight time was about 0:47, nearly double that of the last five years. Conclusion – more X-country soaring / Proving Grounds = SUCCESS.

Our membership is a healthy 43 full members and 15 social members. However, we believe that looking towards 2022, members who have been sidelined due to the pandemic will enjoy again the sport and ***esprit de corps*** that is ESC. We are looking forward to encouraging members to set goals for themselves for the coming season, and facilitating their realization!

Steve Godreau

2021 pilot achievements

This was an extraordinary year of self-improvement

What's *your* personal goal for 2022?

Solo (1st/PPL transition/again)

Josh Bagrowicz (Cu Nim)
Kaleb Bagrowicz (Cu Nim)
Thomas Braile (CAGC)
Michael Carson (ESC)
Sophie Cole (ESC)
Michael Dineen (Cu Nim)
Thomas Graham (Cu Nim)
Jeff Griffiths (CAGC)
Alastair Hill (Cu Nim)
Joshua Peace (Cu Nim)
Mathieu Petit (ESC)
Dylan Martin (Cu Nim)
Phillip Shen (ESC)

Badges & badge legs

Joshua Bagrowicz (Cu Nim) – C badge
Kaleb Bagrowicz (Cu Nim) – C badge
Mike Busuttil (Cu Nim) – Bronze badge
Chris Chiasson (Cu Nim) – Silver/Gold alt, Silver dist/dur
Kelvin Cole (ESC) – Gold & Diamond altitude
Peter Cromer (Cu Nim) – duration
Carey Cunningham (Cu Nim) – C badge, Bronze badge
Ben Hornett (Cu Nim) – Gold/Diamond dist & Diamond goal completes Diamond badge
Ben Kiesman (ESC) – Bronze badge
Dylan Martin (Cu Nim) – C badge
Patrick McMahon (Cu Nim) – Gold distance/ Diamond goal completes Gold badge
Melanie Paradis (Cu Nim/ESC) – Silver altitude, distance
Tyler Paradis (Cu Nim/ESC) – Silver duration, distance
Shaneel Pathak (Cu Nim) – C badge
Joshua Peace (Cu Nim) – C badge, Silver altitude
Marian Rakusan (Cu Nim) – Dia. dist/alt for Diamond badge
Ray Troppmann (ESC) – Diamond altitude
Doug Woytuik (ESC) – C badge, Silver altitude

Licence

Adam Ali (CAGC)
Michael Dineen (Cu Nim)
Alastair Hill (Cu Nim)
Dylan Martin (Cu Nim)
Joshua Peace (Cu Nim)
Dan Reid (Cu Nim)

Instructor rating

Melanie Paradis (Cu Nim/ESC) – Class III
Tyler Paradis (Cu Nim/ESC) – Class III

OLC – club results – 2021 OLC year

Cu Nim	41,537 km	163 flights
	24 pilots	44,224 points
Edmonton	12,895 km	99 flights
	12 pilots	14,409 points
Central Alberta	2475 km	19 flights
	4 pilots	2766 points
Lethbridge	265 km	4 flights
	2 pilots	225 points

OLC best 6 flights (1000+ points)

Chester Fitchett, Cu Nim	4465 points
Chris Gough, Cu Nim	3784 points
Bruce Friesen, ESC	3330 points
Marian Rakusan, Cu Nim	3238 points
Tony Burton, Cu Nim	3051 points
Struan Vaughan, Cu Nim	2564 points
Gerald Ince, Cu Nim	2501 points
Ben Hornett, Cu Nim	2336 points
Patrick McMahon, Cu Nim	1939 points
Patrick Pelletier, ESC	1803 points
John Mulder, CAGC	1619 points
Gary Hill, ESC	1175 points
Tyler Paradis, Cu Nim/ESC	1077 points

Best 500+ km flights

Chester Fitchett, Cu Nim	Arcus M	1601 km
Bruce Friesen, ESC	miniLAK-FES	604 km
Chris Gough, Cu Nim	Ventus	603 km
Marian Rakusan, Cu Nim	ASW-20	562 km
Tony Burton, Cu Nim	Russia	529 km
Ben Hornett, Cu Nim	LS-6	524 km
Patrick McMahon, Cu Nim	LS-6	519 km