

Earthrise



The official newsletter of the Canadian Association of Rocketry
Le bulletin officiel de l'Association canadienne de fuséonautique

Volume 8 Issue / numéro 2

Hello to all my fellow rocket enthusiasts!

As summer turns to fall (and eventually winter), it's nice to look back at some of the fabulous activity we had across the country, and to start looking at what projects can be built over the winter. Like most of you, I make mental notes at each launch I attend on new building techniques, new kits, or new electronic packages other people have and wonder how to incorporate these things into my own plans. It's one of the many great things that we get as part of our great community.

One thing that I have realized over the last several months is that there is a growing interest in rocketry on several levels. Whether it is university teams hoping to gain experience to enter competitions, or elementary school programs, or just ordinary people getting the bug, I have been contacted by interested people in Ontario, BC, Manitoba, Yukon, and I know that others are contacting the active clubs in Alberta, Quebec, and New Brunswick. It is a very exciting time, and a little daunting to see all the opportunities that there is to not only grow our hobby, but also playing a part in educational activities that will help create the next generation of rocketeers. Some of the work we need to do as an organization is determining what role CAR/ACF should be taking in these activities. As a small organization, we cannot be everything to everyone, but we do have a part to play.

I hope that you all have a great winter building season and look forward to hearing about all the projects that will be worked on.

Safe and happy launching to you all!

Sincerely,
Tim Rempel



Salutations à tous nos fuséonautes!

Maintenant que l'été a laissé la place à l'automne (et bientôt à l'hiver), c'est agréable de se rappeler toutes les activités qui ont pris place à travers le pays, et de commencer à regarder les projets qui peuvent être construits durant la saison froide. Comme beaucoup d'entre vous, à chaque lancement auquel j'assiste, je prend des notes sur les nouvelles techniques de construction, les nouveaux kits, et les nouveaux modules électroniques utilisés par d'autres membres passionnés, et je pense à incorporer certaines de ces idées dans mes propres conceptions. C'est l'un des gros avantages d'être partie intégrante de notre communauté.

J'ai réalisé au cours des derniers mois qu'il y a un intérêt croissant, à plusieurs niveaux, pour la fuséonautique amateur. Que ce soit par les équipes universitaires qui désirent prendre de l'expérience avant de participer à des compétitions, les programmes d'initiation des écoles élémentaires, ou simplement par des gens ordinaires qui se découvrent un intérêt pour le domaine, j'ai été contacté par des personnes de l'Ontario, de Colombie-Britannique, du Manitoba, du Yukon, et je sais que d'autres contacts se font via les clubs régionaux en Alberta, au Québec, et au Nouveau-Brunswick. C'est une époque excitante, et il est un peu intimidant de voir toutes les occasions actuelles de faire grandir notre passe-temps et de participer à l'éducation d'une nouvelle génération de fuséonautes. Il nous faut déterminer quel rôle et quel degré d'implication l'ACF/CAR doit avoir dans ces genres d'activités. Comme notre organisation est petite, nous ne pouvons pas répondre aux besoins de tout le monde, mais nous pouvons certainement jouer un rôle important!

J'espère que vous passerez de bons moments à concevoir et bâtir vos projets durant l'hiver, et j'ai hâte d'en entendre des nouvelles... Je vous souhaite à tous des lancements réussis et sécuritaires!

Sincèrement,

Tim Rempel



As I compile this issue of Earthrise, rocketry flying season is in full swing. All those winter new builds and old repairs are being flown, major launches have been held in Alberta, Quebec and New Brunswick and fliers are looking forward to the remaining launches of the season. The 50th Anniversary Apollo fever has swept through the rocketeers in this continent, with hobby rocketry hitting local news cycles and capturing or recapturing public interest as clubs hold events to celebrate. All these opportunities are thanks to the hardworking folks who work to keep rocketry in Canada legal and safe. We owe some gratitude to those who work for the CAR/ACF board, all the RSOs, and Launch Organizers who do the groundwork so that fliers stay happy and wish them well in their work.

The first issue of Earthrise after its relaunch earlier this year received some notes of appreciation. I would like to thank those of you who responded, and especially those who have been willing to create material for Earthrise. You will find some more individual content in this issue submitted by CAR/ACF members. Earthrise can become a great way to share our successes, lessons learned, and just cool stuff. Remember, we have the benefit of being able to link to content now, so please share links to your pictures and videos as you post them.



Steve Thatcher of SMT Designs has been making a name for himself in the world of 3D printed electronic bay design and production. SMT Designs released updates over the last year with new products including e-bay components and kits, ground support components, retainers and rail guides. The goal of the designs is to allow for reuse of avbays between multiple rockets, allowing quicker turnarounds between flights with less mounting and wiring. SMT Designs has a developed product line in supporting many commonly used altimeters and GPS units, but also provides custom work as required.



Fall Fire 2019

(Saskatoon Rocketry Society):
November 2, 2019, [Click for Details](#)

Model Rocketry Profile

Taras Tataryn (CAR/ACF #3)

Having read Saverio Prato's article in the last issue of EARTHRISE I wanted to add, as Paul Harvey use to say on his radio program, "...and now for the rest of the story".

Looking at the Capitol Cup 2017 photograph, reminded me that it contained three past CAR* Chairman, Peter Cook (CAR#01), Saverio Prato and Taras Tataryn, and of our participation in international space modelling (model rocketry as it is known in the FAI competition world). The world governing body for all aero-space international competition and records is the Fédération aéronautique internationale (FAI). It governs everything from aeromodelling (model airplanes and rockets) through to space flight, so if you want a record that will be recognized around the world you have to deal with the FAI. In Canada, FAI's representative is the Aero Club of Canada, originally it was the Royal Canadian Flying Clubs Association (RCFCA) which actually founded the CAR* back in 1965, and the Aero Club delegates the Model Aeronautics Association of Canada (MAAC) with FAI activities in the aero modelling sphere in Canada.

The 1st World Space Modelling Championships (WSMC) were held in Vrsac, then Yugoslavia (now Serbia) and CAR* members did attend, and they were Denis Lufkin, Mark and Laurie Saunders plus another rocketeer whose first name I can only recall, Dan (if anyone knows his last name it would be appreciated). The 2nd WSMC, in 1974, in Dubnica, then Czechoslovakia (now Slovakia) saw Gale Smith compete.

CAR* finally put a whole team together for the 4th WSMC that were held in 1980 in Lakehurst, NJ, USA (still USA ☺). The team was made up of (L-R): Taras Tataryn (Team Manager); Fritz Gnass (past CAR* Chairman); Garth Illerbrun (past CAR* Chairman); Dave Hutchinson; Peter Cook (past CAR* Chairman); Ian Henderson; Pierre Dion; and Mike Sisko.

Peter Cook won bronze, a first ever



win for Canada at a WSMC in the rocket glider event.

With the WSMC moving back to European venues it became too cost prohibitive to send a Canadian Team. CAR had left the Science Foundation and was now on its own, so there was no more external financial support, and costs for insurance and FAI fees were growing. The FAI annual fees for nearly 15 years were being paid out of the Chairmans' pocket, but as it became too much, the fees were not paid and the representation of Canadian space modellers once again returned to MAAC, where it still is.



1992 WSMC, FAI Jury, Florida. L-R Otakar Saffek (Czech Republic),
Taras Tataryn (Canada) and G. Harry Stine (USA)

Then after 27 years we were back into FAI competition with the Capitol Cup in 2007 in Great Meadows at The Plains, Virginia, USA, all thanks to Trip Barber of the NAR! This event was a FAI World Cup, which required at least two nations participate and that a non-host country modeller be president of the Jury, for it to be a sanctioned event. Well, we rose to the occasion and sent a small contingent That “team” was made up of Fritz Gnass, Richard Duczmal and Taras Tataryn (FAI Jury President). After 27 years Canada was back, and we were in the winner’s circle: Fritz Gnass S6A (Streamer Duration) - Gold; Richard Duczmal S8E (“E” R/C Rocket Glider) – Silver and Fritz again S9A (Gyrocopter Duration) – Bronze.

This started the ball rolling for FAI competition in North America and it has not stopped. Following the 2007 competition we have had five more Capitol

Cups, two Great Lakes Cups, four Can-Am Cups and one North Coast Cup, all World Cup/Open International FAI events. Being typical Canadians, we do not want to brag too much, a quick summary of our participation in these Continental FAI competitions:

S2/P (Precision Fragile Payload) - 2 Gold, 1 Silver and 1 Bronze;

S3A (Parachute Duration) – 3 Silver and 2 Bronze;

S4A (Boost/Glide Duration) – 1 Gold, 2 Silver and 1 Bronze;

S6A (Streamer Duration) – 2 Gold, 3 Silver and 1 Bronze;

S8E/P (RC Rocket Glider Time Duration and Precision Landing) – 1 Gold; 4 Silver and 2 Bronze;

S9A (Gyrocopter Duration) – 3 Gold; 1 Silver and 3 Bronze; and

Overall Meet Champion – 1 Gold, 1 Silver and 1 Bronze.

Jury Presidents 7 times and Jury members 6 times.

We closed off the 2019 season with Kevin McLeod winning our first ever S8E/P Gold medal!!! Not bad for a small handful of old timers!

Team Canada needs members, if you are interested there are a “few” FAI World Cup and Open International events scheduled for 2020. The events tend to be those listed above, and the possibility of S7 (Scale) and maybe S5 (Scale Altitude).

Arizona Cup (together with NARCON), March 2020, in Tucson, AZ.

FIRE, Firefly Cup, April 2020, near Austin, TX.

Can-AM 2020, June 2020, in Muskegon, MI.

North Coast Cup 2020 (together with NARAM-62), July 2019, in Geneseo, NY.

Then there is the WSMC in Romania at the end of August, early September 2020!

If you are interested in FAI competition you can download the [FAI Sporting Code](#)

I have used an “*” when referring to the original CAR to distinguish it from the current CAR/ACF. One final comment, Peter Cook was not only the first CAR Chairman, but also Editor of EARTHRISE, designer of the original CAR* crest and author of CAR’s Sporting Code Manual, thus the name “Cook Book”.

By Simon Stirling CAR #686 L4

Back in April of this year (2019) I was answering some questions posted to the Lethbridge Rocketry Association (LRA) Facebook page. It was about the upcoming Rock Lake 21 launch over the Canada Day long weekend. I suddenly realized that I had not built a HPR in almost 7 years, after getting my Level 4 on "Sulaco". Most of my flying was putting up existing models built and fixed over the previous years, and I noticed I had never built a fully fiberglass rocket.

I had no real favorite kit, but after some web searching I found a nice looking rocket from Madcow Rocketry, their 4 inch Fiberglass Mad Dog XL kit was on sale, so I thought why not.



Mad Dog XL from Madcow Rocketry

The first step in building any kit is getting the supplies needed, since my last build was so long ago, I had no useful level of epoxy left, no JB weld and I soon realized after the kit arrived including an all fiberglass avionics bay that my decade old electronics I had been using

successfully over my 16 years of HPR would be a very tight fit inside a 4 inch airframe. I know most people think 4 inches is plenty of room for altimeters etc. and usually they are, but I have never built a 4 inch airframe since my L1. Most of my builds are 6 or 7 inches so I have never really had to consider a 'small' e-bay enclosure. In reality this was a good excuse to start doing some research on what is new in the hobby as far as electronics go.

After some consultation with some other rocketeers, I decided to upgrade my altimeters to the Raven 4 from Featherweight and the TeleMetrum from

AltusMetrum. Years ago while flying a complex M total impulse air start, I had a switch failure with one of my altimeters, and as Murphy's Law would attest, for some reason my second altimeter failed resulting in a good 'up' part, but a lawn dart that came in ballistic, no separation at all. So I have a real aversion to using any type of a switch. The great thing about the Raven series of altimeter is that they can be armed using a powerful magnet. The TeleMetru, would need a switch to turn on, but this device has built in two way communication ability and I could check battery voltages and continuity remotely (as well as listening for the right sequence of 'beeps' right at the pad after arming).

Second step, putting the motor mount together with the centering rings, which led to another small issue; the centering rings are not much larger in diameter than the motor mount, how do I attach the lower recovery harness? There is no way a standard U bolt would work, since the available surface area to drill out would significantly weaken the centering ring. My solution was to use my Dremel to carve out just enough space for my Kevlar cord to pass through. I then wrapped the Kevlar around the centering rings and used a significant amount of epoxy to ensure it would not come free from the sudden impulses that are applied after motor burn out and separation occurs. I chose not to use any knots, the issue with knots in general is that it weakens the Kevlar by almost 50%, which may not be an issue if you have 1500 lbs tensile strength Kevlar, in retrospect I would wrap the lower harness against both the top centering rings instead of just the lower one as pictured below. Be sure to rough sand the motor mount so the epoxy has something to grip, smooth surfaces are great in these fiberglass builds but that means you really need to be scoring any surface that will be bonded. I use 80 grit sandpaper, it seems to work very well with smooth fiberglass and it takes less effort than a finer grit paper.



Motor Mount upper centering rings with lower recovery harness attached.

Once the epoxy had set on the now completed motor mount, I could test fit this inside the back end of the sustainer to ensure it was a good fit, usually there is some sanding required to get it to sit correctly. I should note, make sure you measure where you want the centering rings to go on the motor mount, most fiberglass kits do not come with any instructions they assume you have a basic understanding of rocketry building so it is wise to lay everything out first just so you can visualize what goes where. If you place a centering ring too low or too high on the motor mount, you will never get your fins to fit into the slotted guides correctly, which would be a major issue that would not easily be rectified.

The finished motor mount is pictured below. Ever since my first HPR kit I have always signed the motor mount; I also sign all my motor casings as well. I have found many a casing while wondering around looking for rockets that have been spit out during flight. They usually survive the impact with the ground but with no identifiable markings, it is hard to return the casing to the rightful owner.



Completed and signed Motor Mount.

The next step is fin attachment. This can be a challenging part of any build. If you do not get your fins on straight, you can get a significant corkscrew to your flight profile. When using higher impulse motors, this puts additional stress on the fins and lower airframe and can result in failure (shredding), even if the vehicle never goes through the Mach envelope. While I do not have any pictures of this process, I use a pretty standard technique and simple approach. I place the lower airframe on a work space about waist height and ensure it is strapped down or at least will not roll around or move, once you start to glue fins on, if your airframe shifts it will cause the fin to sag in one direction. I then use 5 minute epoxy and slide the first fin through. Behind the back end of the sustainer I make a plumb line, consisting of a large weight on the end of a string. I can then step back and look down the sustainer and ensure the plumb line cuts the diameter in half and that my fin is aligned exactly along the same bisection. I know some people build fin guides, but to be honest the visual method is equally as good and I don't have to build another device. This is repeated for all the fins until they are epoxied onto the motor mount. At this point, I would be remiss not to point out that in larger impulse builds (> 'K' impulse) most experience rocketeers also wrap the inner fin fillet (on the motor mount) with Kevlar, or carbon fiber or fiberglass. That would mean cutting the back of the slots out so you could remove the motor mount once the fins are epoxied onto the mount for added strength. That way you can re insert the mount with the fins attached for final epoxy into the sustainer. So I only applied epoxy the motor mount itself, if I were to epoxy the bottom of the fin, when sliding it through the fin slot it would leave epoxy on the sustainer and I would not be able to remove the motor mount with the attached fins later for the additional carbon fiber. Once that is finished on all three, I epoxy the motor mount with the reinforced fins into the sustainer using lots of epoxy at the top and bottom of the centering rings and 'good' amount after measuring where the second upper centering ring would sit inside the sustainer.



Three fins attached to the Sustainer

The next step after bonding the motor mount with the carbon fiber reinforced fins into the lower section is dealing with the fin fillets. If you do not re-enforce your lower fin attachment points, then this is a very critical part of the build. It isn't just to make a nice smooth transition for painting; it really can add a significant amount of structural support to the sustainer. This is a perfect use of JB Weld. It is relatively cheap and available at most hardware stores. Before mixing the JB Weld in a disposable plastic cup, I use masking tape to mark out a line on both the fin and the sustainer. That way I don't have to worry too much about being precise when I apply the weld into the fin fillets. I then use a large wooden tongue depressor to smooth out the fillet after a liberal application of JB Weld. Don't rush this process, just do one fin fillet at a time. You will end up with some very nice, smooth and seamless transition from the fin to the sustainer airframe. The nice thing about JB Weld is it is fully sandable, so I can get a nice look at the front and back fin root.



Fin Fillets done with JB Weld and a Large Tongue Depressor

Now, aside from the motor retention, the sustainer lower airframe is structurally complete. I drilled a 1/8 inch hole near the upper section for venting; rough sanded the entire outside surface then used a commercially available primer to spray the airframe. I have always used

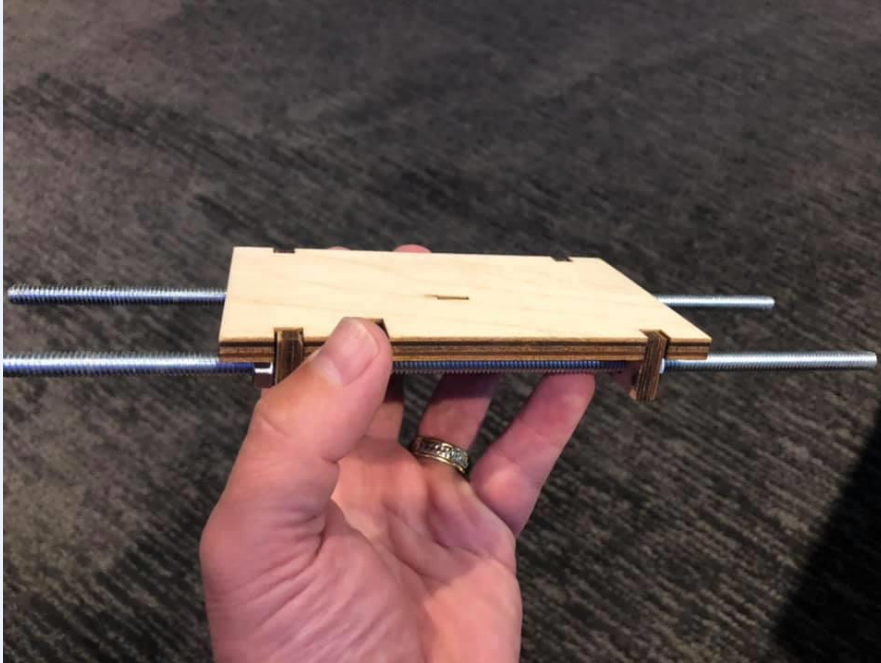
KILZ primer sealer because it has a high particle density so it helps fill in any small imperfections after sanding. The upper airframe and nose cone were also sanded and sprayed with KILZ primer. I just find the final coat of paint seems to go on much cleaner after the KILZ application, plus there is an added effect of easily seeing where more sanding is required for that finished look.

Airframe with KILZ primer applied post sanding.



I now had a decent looking rocket but I needed to start work on the e-bay. I used one purchased from Madcow, an all fiberglass coupler that comes with the threaded rod, wooden sled for mounting the electronics onto and all the necessary hardware. I also had to decide how I wanted the ejection charges to be secured and I went with some commercially available pvc endcaps. I epoxy them onto the forward and aft bulk heads of the e-bay and used terminal blocks for the wiring of charges. My only issue with the bay I

bought was the single eye bolt style attachment. In all previous e-bays I have made, I typically use the U-bolt style connectors because it distributes the shock load (impulse) of the recovery gear over a larger portion of the surface of the bulkheads over two attachment points instead of just one. This e-bay was all pre drilled however; and I had no choice but to use the single eye bolt style to attach the recovery gear. If you are not happy with the supplied hardware, you can always replace it with 'beefier' hardware of similar diameter.

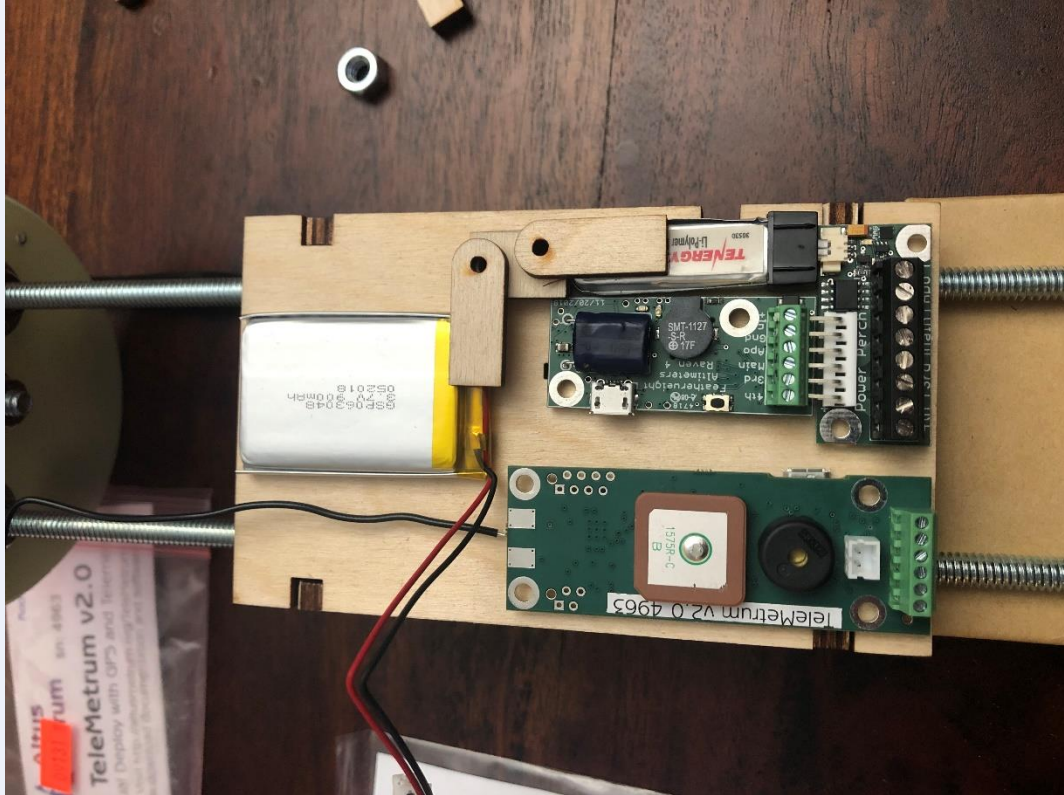


E-bay sled and threaded Rod



Mounting PVC Ejection Charge Holders and Terminal Blocks onto the Bulkheads

Now it is really just organizing your electronics in the most efficient way possible considering you may need batteries, switches etc. all to fit on the sled. I managed to mount my one screw switch on the other side of the bay.

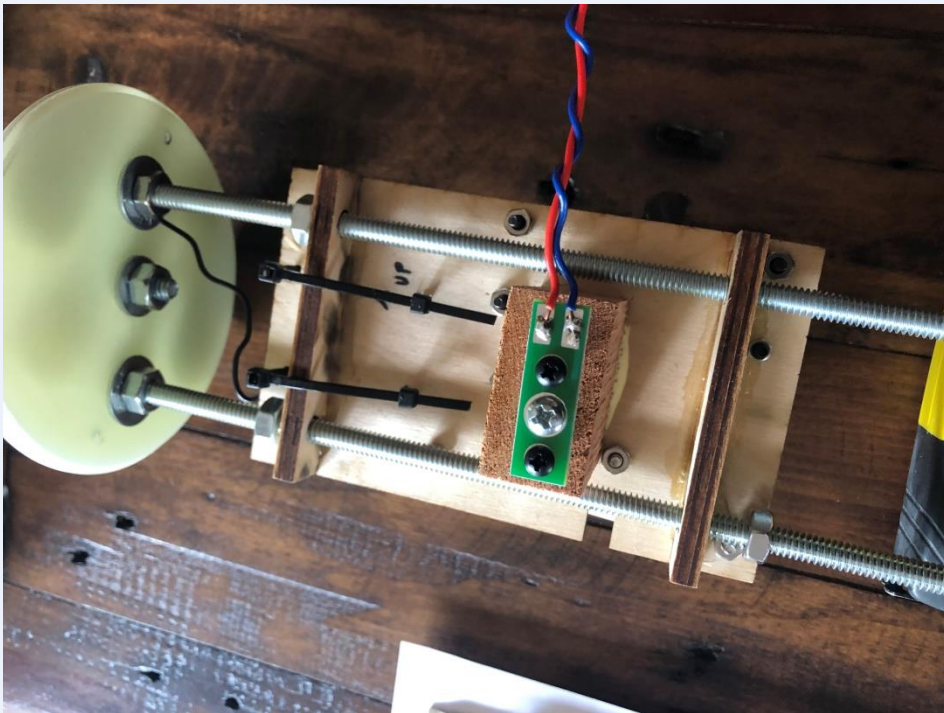
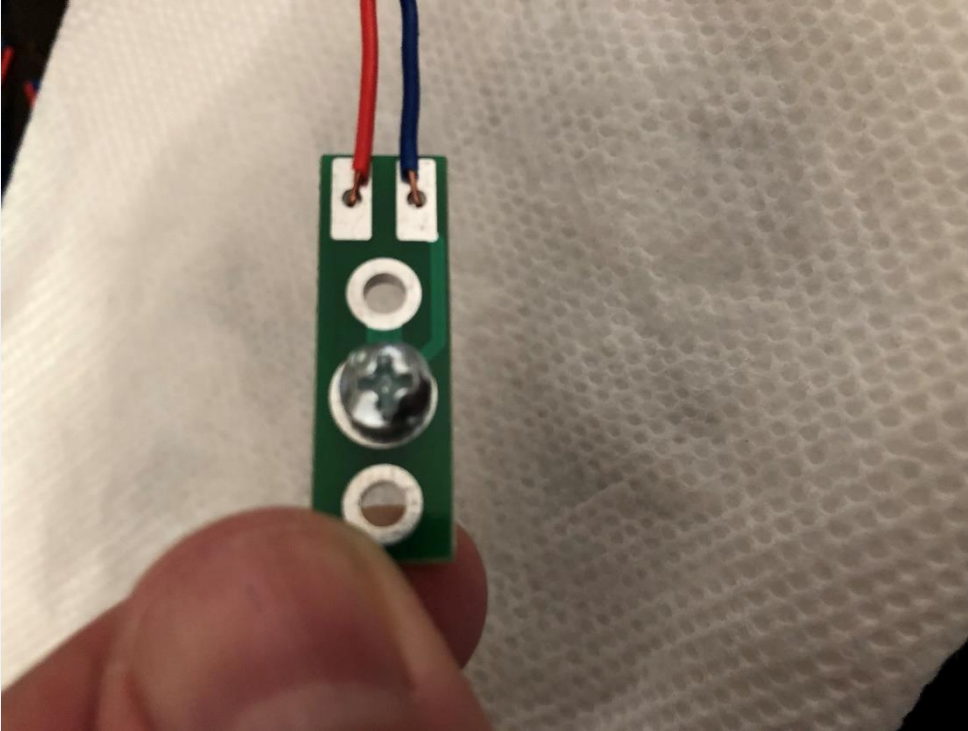


Final layout of the E-bay

One thing to note, some of the newer electronics do NOT have to be mounted with any specific side vertically, that gives you far more flexibility than older altimeters. You may want to consider in your layout how accessible the USB connectors are when they are mounted on the sled. That way you do not need to remove them from the sled if you want to program or download flights, one thing that I did not really consider in this build until I had to connect my USB cable to them and realized I needed to take one of them off to gain access to the port.

I bought some switches from Apogee Rockets, I like these! You do have to solder the wire onto the switch (not difficult but it means more equipment). The switch has two mounting holes so you can attach it securely according to your design layout. I used a piece of wood and glued it onto the underside of my sled. I did this for two reasons, the first was there was not enough room on the side with my mounted electronics, the second was the raised screw switch was easier to align with the hole I needed to drill in the airframe. There are many methods to mount switches, this is just the one I went with on this build and it seemed to work well.

Screw Switch from Apogee Rockets.



Mounted Screw Switch post Soldering.



Final E-bay Sled Layout with Switch.

The final step was painting, sanding and painting, sanding...painting...even with a fiberglass kit there was some spots to smooth out. I will admit, a fiberglass rocket is much nicer, much easier to work with from a finishing perspective than what I had done in the past. Now that most fiberglass kits are priced for the average consumer, I foresee many of them making their way into the rocketry world moving forward.

I want to thank Bruce Aleman for 'encouraging' me to submit this to Earthrise, if you are on Facebook there are more pictures and descriptions in the photos section where I outline the build in more detail. [Click here](#)



Final Paint Scheme, and First Assembly post finishing. Final weight with Motor 10.3 KG



L'année 2019 va bon train et nous avons déjà deux de nos trois lancements de passé. Nous sommes affiliés au CAR et réussissons à avoir de nouveaux membres années après années. Le premier lancement fut à Drummondville fin mai et avons eu 32 lancements le samedi variant de E à K avec un plafond de 6000 Pieds
 Le deuxième lancement au Lac St-Jean au Québec en début juillet fut sur deux jours variant de E à M avec plafond de 12000 pieds. Sous certaines conditions nous pouvons même aller jusqu'à 15000 pieds. Si vous êtes intéressé à lancer avec nous ce sera un plaisir de vous accueillir.

Pour ma part je suis passionné de fusées depuis environ 30 ans (Aie). J'ai commencé avec une fusée Estes comme la plupart du monde avec un moteur C. À ce moment le D était presque inaccessible et plus fort n'existait pas dans notre milieu.

Ensuite dans les années fin 90s un ami m'arrive avec une Estes qui peut prendre du E !! Quoi un moteur E ça existe? Après s'être informé sur internet (les débuts d'internet) nous avons acheté E, F & G. À partir de ce moment que nous avons lâché la poudre noire pour du Perchlorate nous avons vraiment commencé à nous amuser.

Quelques temps plus tard au début 2000 nous voulions aller encore plus fort et avons découvert le club de Montréal A3maQ (Par la suite CQF). Avec le club j'ai passé mes 3 premiers niveaux.

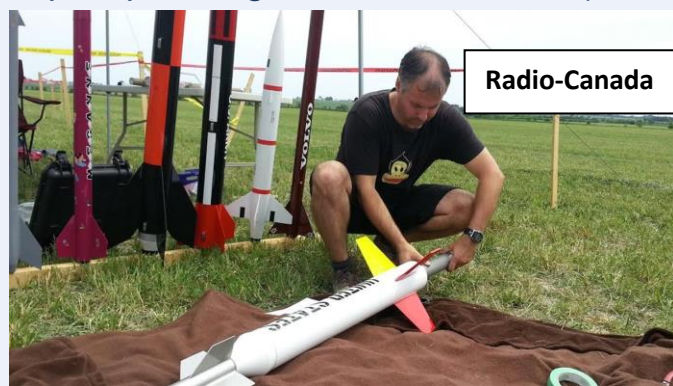
Ensuite pour augmenter le plaisir CTI est arrivé parmi nous. Nous avons passé d'environ 4 G différent possible à une vingtaine. En plus des moteurs G de 159 Ns il n'y en avait pas. Peu importe la puissance CTI ont apporté une variante de lancement incroyable ce qui ajoute beaucoup de plaisir pour la même fusée.

En plus de CTI qui est devenu un très gros joueur il est important de mentionner Jolly Logic qui nous a créé de superbes bijoux. Le chute release permet facilement de reprendre toute nos vieilles fusées qui n'ont jamais eu la chance de voler avec un gros calibre dans un petit champ. Mes fusées qui ne se contentaient exemple d'un G peuvent facilement voler avec un H ou même I comme si elle était équipée de CPR. Pour moi ça a beaucoup changé la donne.

Maintenant je lance de C à K et chaque vol peu importe sa puissance est intéressant. Graduellement j'augmente la puissance. Le L va arriver sous peu et surement un M ensuite. J'aime construire des fusées qui sont en plastique ou fibre de verre. J'ai abandonné le bois ou carton. J'aime une fusée lourde et solide, quelques chose de sérieux quoi!

Tant que le club va exister je vais tranquillement faire mon chemin à lancer avec ma famille et mes amis car au-delà de lancer nous fesont de belles rencontres pendant une fin de semaine. Étant donné l'intérêt commun il est facile de découvrir du monde intéressant et développer de nouvelles amitiés ce qui est très important pour moi.

Voici quelques liens de nos activités (cliquez pour regarder/click to watch):



Québec, Canada

Lancement fusées

St-Prime 2019

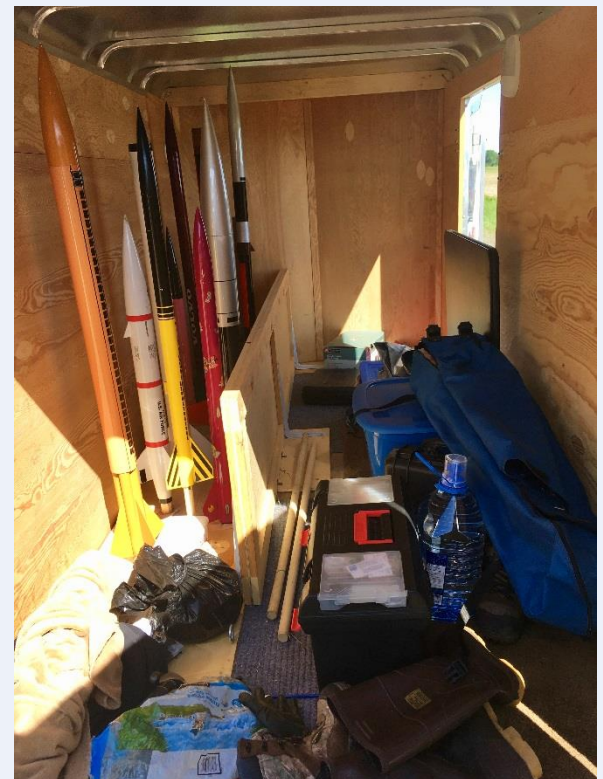
Photos



*First Estes Rocket
launching on a C motor*



The Rocket Trailer





PML BBX



Launching on a J360 Skidmark



CTI I-125 Longburn Launching the Nike Apache

2019 has been a great year and so far, we have proceeded with two out of three scheduled launching events. We are associated with CAR/ACF and are increasing our membership year after year. The first launching event took place in Drummondville at the end of May and we had 32 successful launches, with a ceiling topped at 6000 ft, using E through K motors.

The second launch event took was in Lac Saint-Jean at the beginning of July. Using E through M motors, participants were allowed up to 12 000 ft. Conditions permitting, a ceiling of up to 15 000 ft may be allowed. We would be more than happy to welcome you at future events.

As for myself, I've been passionate about consumer rockets for about 30 years (yikes!). I started with an Estes and debuted with a C class motor, like most of you. At the time, a D class was very hard to come by where I lived and forget about getting anything larger than that. In the 1990's, a friend of mine came by with an Estes rocket that could actually hold an E motor!! An E motor?? They actually make that! That was very exciting to us and after having researched what was on the Internet, we got our hands on E, F and G motors! We quit using black powder at this point and started having fun with ammonium perchlorate as a propellant.

Sometime after that, in the early 2000s, our group discovered the A3maQ club in Montreal (which became CQF). That's where I got my first three certification levels.

To get more kick out of our hobby, we started dealing with CTI and we went from about 4Gs of thrust to more than 20! Whatever power we were using, dealing with CTI offered a great variety of launching choices and increased our fun factor tenfold!

In addition to CTI becoming a major player, Jolly Logic has been an important contributor as well, creating superb rockets with the chute release allowing us to retrieve old rockets that never had the chance to launch with a big caliber motor in a small field. My older rockets that only flew with a G motor can now use an H or I if they were equipped with a chute release. That was a game changer for me.

I now launch anything from C to K and each launch is an interesting one. I increase the power gradually and am looking forward to try out L and M class motors.

I love building either plastic or fiberglass rockets. I have stopped using wood or cardboard as I now enjoy building heavier and more solid, serious stuff!

As long as the club will operate, I'll continue doing launches with family and friends. It's not all about launches though. Through this activity, you meet interesting and fun people and build interesting friendships and in the end, that's what is most important to me. Be sure to click on the links in the French language article and watch some local coverage of our launch activities!

Rocketry Roundup

Videos by Sebastian Richard, Dominic Paquet, Ken Mueller

Click to watch these video presentations of 2019 rocketry activity from across Canada!

New Brunswick



Quebec



Alberta



As a member of the Lethbridge Rocketry Association I always have fond memories of Rock Lake. It was the first major launch I attended, and this year Rock Lake 21 was the 20th event I was privileged to help organize and participate in. The usual organizing details were split with Tim Rempel as usual, and the setup days found most of us breathing a sigh of relief as the fire marshal for the area decided to allow the launch to go ahead just in time.

A typical Rock Lake event begins with the early arrivers joining Tim on the range Wednesday evening. Thursday sees the first trips to the secure storage facility (SSF) for truckloads of launch equipment, ladders, pads and rails. The SSF is a bit of an inside joke, combining the good graces of a local farmer with a building that has survived about 200 years on the Canadian prairies...never-the-less, the proximity to the launch site makes the site a great bonus for Alberta rocketeers.

Friday morning sees the final launch site prep, with the RSO setting pad angles to ensure safe operations, checking the launch controller and getting ready for the range to open at noon. High power launching ensues during daylight hours right until 4pm on Sunday. The LRA with very few members always appreciates the number of rocketeers that help with setup and teardown year after year!

Rock Lake 21 was a typical event in terms of registered fliers, certifications, and number of flights. The presence of the Kronos Pente team made it a less typical event! This group of four built a beautiful 1:20 scale model of the Saturn V timed with the 50th Anniversary of the Apollo moon landing. It was a treat to watch them prep the vehicle over several days, get it on the pad and fly it successfully! It was also a treat to see the number of spectators and positive media coverage this rocket brought to our launch. Hopefully it can also have an effect by drawing new members to the hobby. Look for a detailed writeup on the Saturn V by the Kronos Pente group in the next issue of Earthrise!

The LRA likes to host several contests at Rock Lake, combined with a raffle. This year a great list of prizes was available once again for the contests. A special thanks goes to [The Canadian Rocket Store](#), Tim Rempel, and the [LRA](#) for the donation of prizes.

The first contest was a benchmark altitude contest. Based on the moon's proximity to earth at the time, the number to reach was 361' for models and



3614' for high power. Josh Aleman took the model competition prize and Matt Tomaszewski won the high power prize. The second contest was a closest to the pin landing contest, but with the prevailing winds over the weekend, not one contestant even landed within the 50 foot ring...

The photos and video of Rock Lake 21 were provided by Ken and Sonja Mueller, Ian Watson, and Bruce Aleman.

Rock Lake by the Numbers

Total Number of Flights: 201

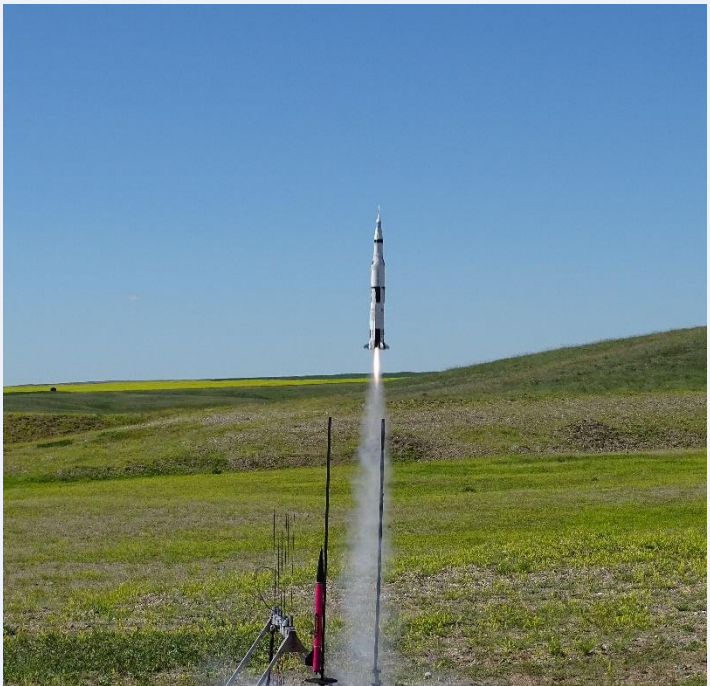
Certifications: 10 (Four Level 1, Four Level 2, One Level 3)

A:22	F:11	K: 5
B:14	G:21	L:3
C:34	H:13	M:0
D:28	I: 10	N: 0
E:13	J:12	O: 1





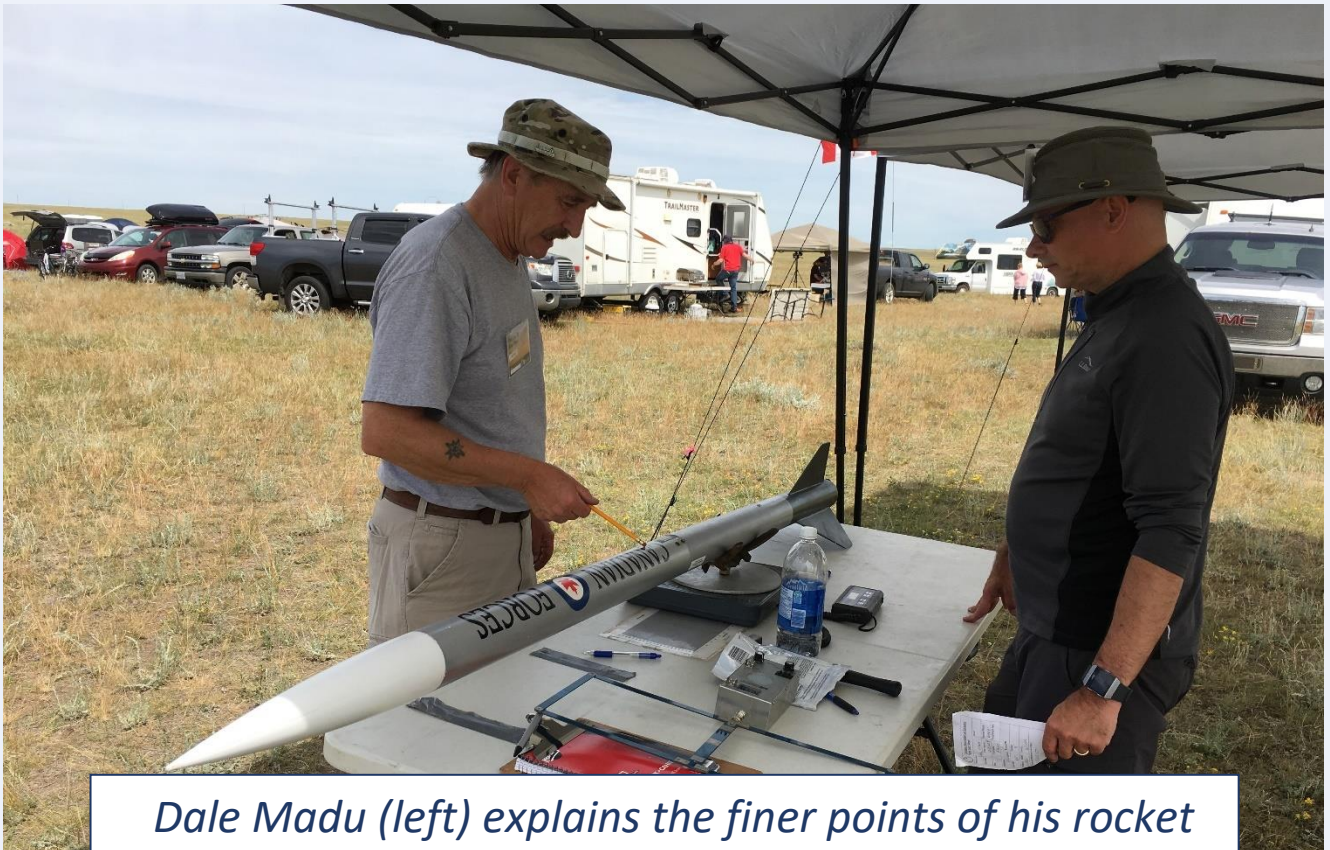
Members of the Edmonton Rocketry Club pose for a group photo.



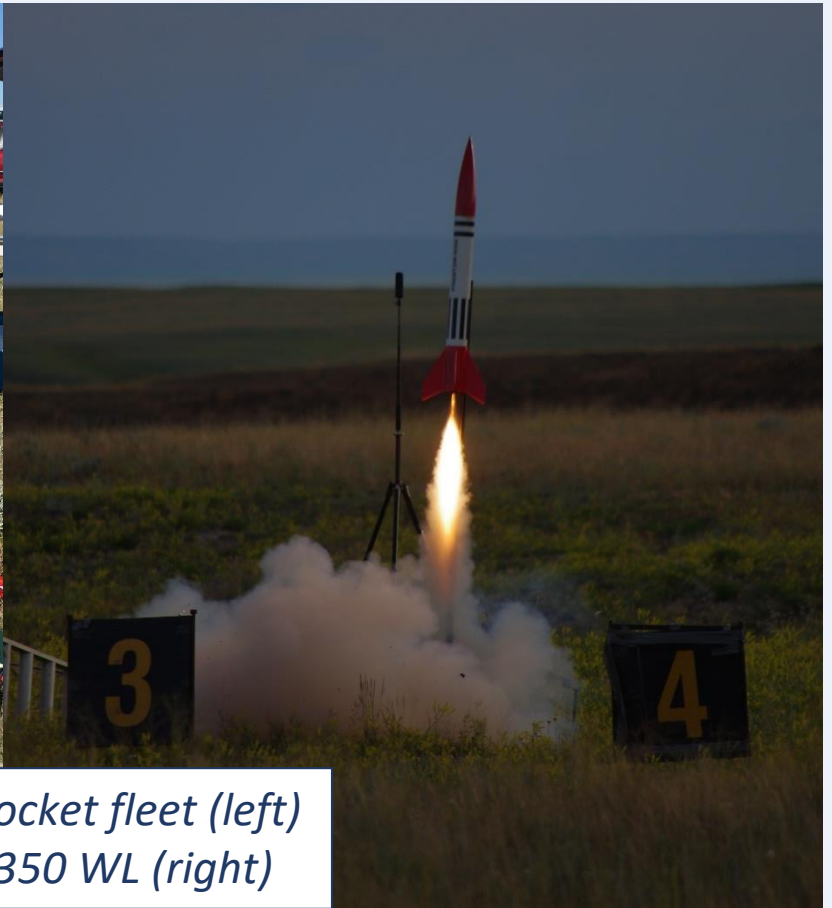
Josh Aleman loads his Saturn V under the watchful eye of his uncle (left). Josh's Saturn V launching on a CTI F44WT



Greg Bilodeau returned to Rock Lake after many years to get his rockets back in the air (right) His 4" Black Brant II launching on an AT J415 (left)



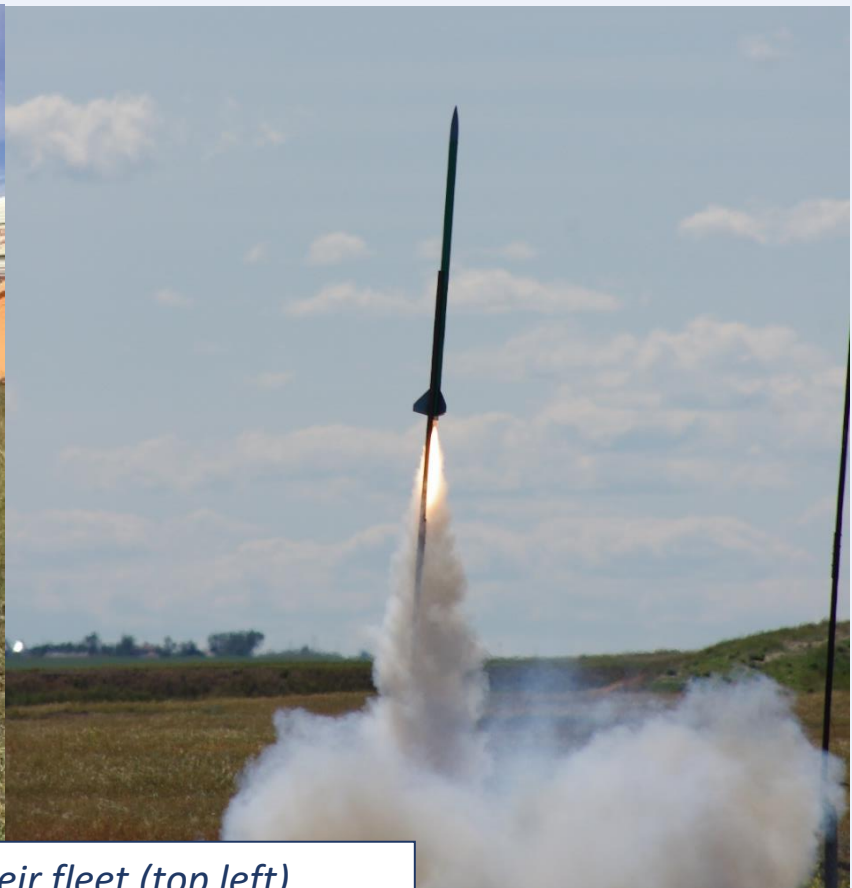
Dale Madu (left) explains the finer points of his rocket to Rocket Inspector Simon Stirling (right)



*Layne Pelechytik poses with his rocket fleet (left)
Layne's rocket flying on an AT J350 WL (right)*



*Ken Mueller with "Skunk Ace." Look for a complete build
article and flight report in the next issue of Earthrise!*



Bruce Aleman and his nephew Josh with their fleet (top left)

Bruce's 54mm MinD lifts off on an AT J135 WL (top right)

Josh's scratchbuilt rocket takes off on a CTI G69 SK (bottom right)

Onboard video of Josh's flight (click bottom left)





*Layne Pelechytik's "Higher Calling" tears off the pad on an AT K535 WL (above)
Steve Mantai's AGM 33 lifts off on a CTI I297 SK (below)*





Jason Rodney and his family drove all the way from Vancouver Island to fly. Jason's successful Level One cert flight was his "Goblin" flying on an AT H100 WL (above)



Model Mania!



What is CAR/ACF?



CAR/ACF Mission

The Canadian Association of Rocketry is a world-class association of rocketeers organized for the purpose of promotion, development, education and advancement of amateur aerospace activities. The Association provides access, leadership, organization, competition, communication, protection, representation, recognition, education and scientific/technical development for its members.

CAR/ACF Vision

We, the members of the Canadian Association of Rocketry are the pathway to the future of amateur aerospace and are committed to making rocketry the foremost sport/hobby/activity in the world. This vision is accomplished through:

- A dedication to safety and responsibility
- Partnerships with its valued associates, the aerospace industry and government
- Development of programs that meet or exceed Canadian government regulatory requirements
- A process of continuous improvement
- A commitment to leadership, quality, education and scientific/technical development
- A safe, responsible and enjoyable aerospace development environment.

More about CAR/ACF

- CAR/ACF was established in 1965
- CAR/ACF is a self-supporting, non-profit organization whose sole purpose is to promote development of Amateur Aerospace as a recognized sport and worthwhile amateur activity.
- CAR/ACF is an organization open to anyone interested in legal and responsible rocketry.
- CAR/ACF is the official national body for amateur aerospace in Canada.
- CAR/ACF is a chartering organization for model rocket clubs across the country. CAR offers its' chartered clubs contest sanction and assistance in getting and keeping flying sites.
- CAR/ACF is the voice of its' membership, providing liaison and certification programs with Transport Canada, Natural Resources Canada (Explosives Regulatory Division), and other government agencies through our national headquarters in Calgary, Alberta. CAR also works with local governments, zoning boards and parks departments to promote the interests of local chartered clubs.
- CAR/ACF is the principal stakeholder representing Non-military, Non-commercial aerospace on the Transport Canada Canadian Aviation Regulatory Advisory Council (CARAC) which is responsible for maintaining and developing the Canadian Aviation Regulations (CARS).
- CAR/ACF is a Rocketry Association whose rules and regulations as formally acceptable to the Minister of Transport.



Qu'est-ce que l'ACF?



Mission de l'ACF

L'Association canadienne de fuséologie est une association de classe mondiale organisée dans le but de promouvoir, développer, éduquer et faire progresser les activités aérospatiales amateurs. L'association fournit accès, direction, organisation, concurrence, communication, protection, représentation, reconnaissance, éducation et développement scientifique / technique à ses membres.

Vision de l'ACF

Nous, les membres de l'Association canadienne de fuséologie, sommes la voie de l'avenir de l'aéronautique amateur et nous nous engageons à faire de la fusée le sport / loisir / activité la plus importante au monde. Cette vision est réalisée à travers:

- Un dévouement à la sécurité et à la responsabilité
- Des partenariats avec ses précieux collaborateurs, l'industrie aérospatiale et le gouvernement
- Un développement de programmes qui respectent ou dépassent les exigences réglementaires du gouvernement Canadien
- Un processus d'amélioration continue
- Un engagement envers la direction, la qualité, l'éducation et le développement scientifique / technique

En savoir plus sur l'ACF

- L'ACF fut établie en 1965.
- L'ACF est une organisation autonome à but non lucratif dont le seul objectif est de promouvoir le développement de l'aéronautique amateur en tant que sport reconnu et en tant qu'activité amateur valable.
- L'ACF est une organisation ouverte à toute personne intéressée par les fusées légales et responsables.
- L'ACF est l'organisme national officiel de l'aérospatial amateur au Canada.
- L'ACF est une organisation membre de clubs de fusées miniatures à travers le pays. L'ACF offre à ses clubs affiliés sanction et assistance pour obtenir et conserver des sites de vol.
- L'ACF est la voix de ses membres et fournit des programmes de liaison et de certification avec Transports Canada, Ressources naturelles Canada (Division de la réglementation des explosifs) et d'autres agences gouvernementales via son siège national à Calgary, en Alberta. L'ACF collabore également avec les administrations locales, les conseils de zonage et les départements des parcs pour promouvoir les intérêts des clubs à charte locaux.
- L'ACF est le principal intervenant représentant l'aérospatiale non-militaire et non-commerciale au sein du Conseil consultatif de la réglementation de l'aviation canadienne (CCRAC) de Transports Canada, qui est chargé de maintenir et d'élaborer le Règlement de l'aviation canadienne (DORS/96-433).
- L'ACF est une association de fusée dont les règles et règlements ont été officiellement acceptés par le ministère des Transports.



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Rear Photo/photo de résumé:

Jason Neninger flies a Space X Falcon 9 scale model on a D12-5 at Rock Lake 21