

Earthrise



The official newsletter of the Canadian Association of Rocketry

Le bulletin officiel de l'Association canadienne de fuséonautique

Volume 9 Issue / numéro 3

Hello fellow rocketeers!

2020 has indeed been an interesting year for our hobby. From the uncertainty at the beginning of the pandemic and the shutdown of activities as we all waited to see how this crisis would affect us all, to the resumption of launches and all the work that had to happen to ensure that provincial directives around health were followed. We then had a pretty good couple of months of near normal activity, only to be surprised by the loss of our insurance coverage. This was something that we definitely didn't expect and brought on a bit of stress for all as we attempted to find a replacement insurer. Thankfully, we were able to find a new insurer and we are now again on a good footing for our hobby. While we were able to find a new insurance provider, this process has brought a couple of thoughts to the forefront.

First, the search for an insurance package reinforced the fact that it is our exemplary safety programs and blemish free history that allowed us to once again have insurance. Safety is always our top priority and the programs developed over the decades all contribute to our reputation.

Second, finding insurance is not easy. Between the two brokers that were searching, over 24 insurers were contacted. Few were interested, and only one provided a quote that worked for our organization. This says to me that we need to make sure we are doing everything to keep our safety record intact because keeping insurance is tenuous. A large claim would likely cost us our insurance and we would have difficulty finding it again, and even if we did, the cost would be prohibitive. As it stands, even our new insurance is more costly than our previous package. Thankfully, due to good financial stewardship, CAR/ACF currently has the means to cover this for now, but we will need to account for the new expense in the years ahead.

That being said, we are now able to fly and enjoy this hobby. I encourage everyone to get out there as much as we can as I find it a great distraction from all the chaos seemingly going on around the world.

Safe and happy launching to you all!

Sincerely,

Tim Rempel

President

Cover Photo: John Glasswick's *Dos Diablos* lifts off at Rock Lake 22. The flight staged perfectly from a K555 to a J295. Photo by Bruce Aleman

Décollage de la fusée "Dos Diablos" de John Glasswick durant Rock Lake 22. La fusée a fait une transition parfaite d'un K555 à un J295. Photo de Bruce Aleman

Bonjour à tous les fuséonautes!

Le moins qu'on puisse dire, c'est que l'année 2020 a été intéressante pour nos activités. Ça a commencé par l'incertitude au début de la pandémie, l'interruption des activités, puis le redémarrage des lancements et tout le travail qui a été fait pour se conformer, pendant ces lancements, aux directives sanitaires provinciales. Ensuite, nous avons eu deux mois assez normaux, et finalement l'association a perdu sa couverture d'assurance. Ceci était totalement inattendu pour l'exécutif, et le fait de trouver un nouvel assureur nous a causé bien du stress à tous. Heureusement, nous avons maintenant une nouvelle assurance et sommes donc en position de continuer à profiter de notre passe-temps. Cependant, le processus de recherche d'une nouvelle assurance a placé l'accent sur plusieurs aspects de notre situation.

Tout d'abord, c'est grâce à nos mesures exemplaires de sécurité et notre historique sans accident que nous avons pu avoir une nouvelle assurance. La sécurité reste notre première priorité, et nos programmes de sécurité, maintenant développés sur plusieurs décennies, contribuent à notre réputation.

Ensuite, trouver une assurance n'a pas été facile. Entre les deux courtiers qui ont fait les recherches, plus de 24 assureurs ont été contactés. Peu d'entre eux étaient intéressés, et une seule compagnie a fait une soumission acceptable pour notre organisation. Cela me dit que nous devons tout faire pour garder intact notre historique de sécurité. Toute demande importante relative à un accident nous coûterait probablement notre assurance et nous aurions de la difficulté à en trouver une autre, et même en ce cas, le coût serait prohibitif. Même maintenant, notre nouvelle assurance coûte plus cher que l'ancienne. Heureusement, grâce à une bonne gestion financière, CAR/ACF peut actuellement couvrir la différence, mais nous devons prendre en compte ces coûts accrus dans les années à venir.

Cela étant dit, nous sommes à nouveau en mesure de voler et de profiter de notre passe-temps. J'encourage tous les membres à faire de même. Personnellement, j'y trouve un répit du chaos qui semble généralisé dans le monde extérieur.

Je vous souhaite à tous des lancements heureux et sécuritaires!

Sincèrement,

Tim Rempel

Président

With summer bringing some more openings in most jurisdictions, rocket launches have taken place across the country. You will see reports of launches in this issue, hopefully you all had the opportunity to attend a launch and fly some rockets. If not, keep building and try again at the fall and winter launches.

As I was sketching out a recent build of a SpaceX Falcon Heavy model I thought about the energy and success of the company and found myself comparing the current SpaceX activities to the space race of the 1960s and 70s. The energy and drive of visionaries, the reliance on educated scientists with a bold plan to try something never done before, and the ratio of success to failure all compare. The Gemini and Apollo programs are almost mirrored by SpaceX with the Falcon 9, Falcon Heavy, and now Starship programs. Early failures were learned from, corrected and built the foundation for later programs. The technological leap over the intervening fifty years has allowed for successful landing and reuse of booster rockets and fairings. Humans have successfully test flown the new Dragon capsule with positive reports. The company is making rapid strides in the Starship program with a humorous track record of testing to destruction. The future looks good for SpaceX, and us!

Just like the great rockets of the space race, model rocketry has latched onto the energy of SpaceX. Falcon 9, Falcon Heavy, and Dragon capsules are starting to fill the hobby space with help from the advent of 3D printed components. The rockets are showing up at launches and being flown as clusters, staged models and scale models. The success of youth programs at schools and universities in the USA especially, but also Canada, bodes well for the hobby. This time the new generation of aerospace engineers and general space enthusiasts will grow up building and flying the Falcon and Starship series, and a generation after that they'll be begging Estes to bring back the classic SpaceX rockets! There are quite a few options for kits out there, see the product news section for a great example.

As always, Earthrise depends heavily on the contributions of the CAR/ACF members. Please consider sharing your projects and feel free to pass on anything you can think of. Remember, we can link to photos, videos, and websites. You can submit in either official language as well. Thanks is in order for those willing to share again this time.



Avec la venue de l'été, les lancements de fusées ont pu reprendre à travers le pays. J'espère que vous avez eu l'occasion de participer à un lancement et lancer quelques fusées. Sinon, continuez à travailler sur vos projets et re-tentez votre chance aux lancements qui auront lieu cet automne ou cet hiver.

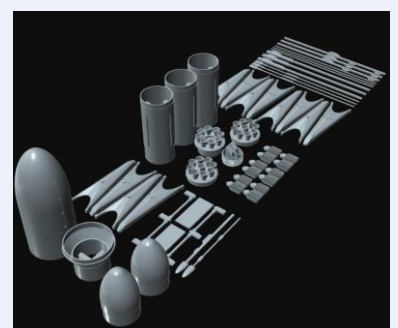
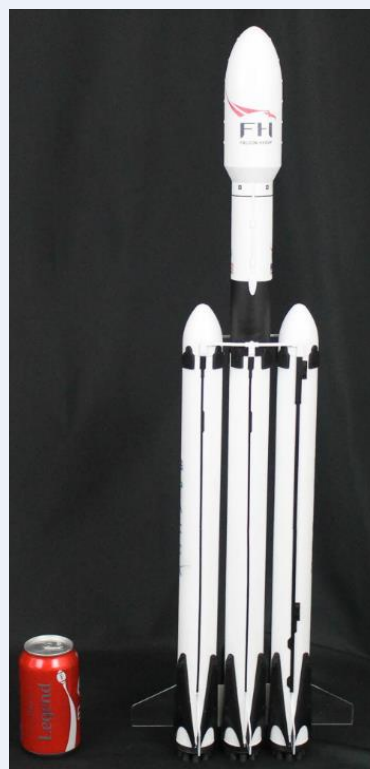
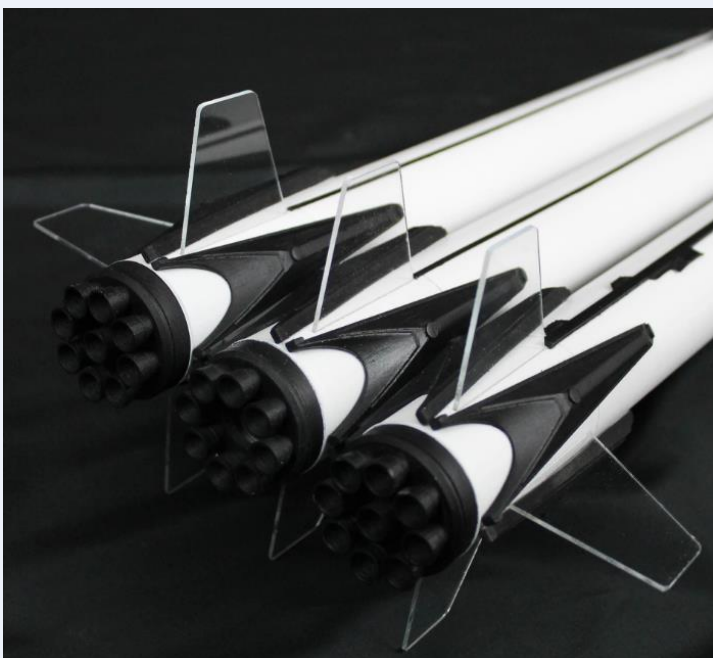
Je travaillais récemment sur un modèle de SpaceX Falcon Heavy, et je pensais à l'énergie générée dans notre domaine par le succès de cette compagnie. Cela nous ramène aux activités spatiales des années 60 et 70. Que ce soit pour la motivation de ces visionnaires, leur façon de se fier sur des scientifiques instruits pour accomplir des projets audacieux, les proportions de succès et d'échecs, tout se compare! L'évolution des programmes Gemini et Apollo a des points communs avec ce que fait SpaceX avec les programmes Falcon 9, Falcon Heavy, et maintenant Starship. Les échecs du début ont servi de leçons pour la fondation des programmes qui ont suivi. Un demi-siècle de progrès technique ont rendu possible de construire des fusées et des carénages réutilisables. Maintenant, des astronautes ont fait un premier vol réussi avec une capsule Dragon. La compagnie SpaceX fait également des progrès rapides dans son programme Starship, ce qui donne lieu à des vidéos de tests destructifs assez humoristiques. L'avenir est prometteur pour SpaceX et pour nous!

Comme à l'époque de la course à l'espace, la fuséonautique amateur s'inspire de l'énergie de SpaceX, et des modèles de Falcon 9, Falcon Heavy, et de capsules Dragon apparaissent un peu partout, bénéficiant entre autre des technologies d'impression 3D. On voit de plus en plus ces fusées pendant les lancements, que ce soit des variantes multi-étages, avec moteurs multiples, ou simplement des reproductions à l'échelle. Il est prometteur de voir le succès des programmes pour jeunes dans les écoles et les universités, aux Etats-Unis comme au Canada. Une nouvelle génération d'ingénieur(e)s en aérospatiale et d'enthousiastes de l'espace est en train de grandir, construisant des fusées Falcon et Starship. Une génération plus tard, ils et elles seront en train de demander à Estes Rockets de remettre en vente les fusées "d'époque" de SpaceX! Il y a maintenant pas mal de kits de ce genre qui sont disponibles, voyez notre section sur les nouveaux produits pour un bon exemple.

Comme toujours, Earthrise dépend beaucoup des contributions des membres de CAR/ACF. Pensez à partager vos projets avec nous ainsi que toute information pouvant être intéressante pour les membres. Le cas échéant, EarthRise peut inclure des liens vers des photos, des vidéos, et des sites web. Les articles peuvent être soumis dans les deux langues officielles. Merci encore à tous nos contributeurs!

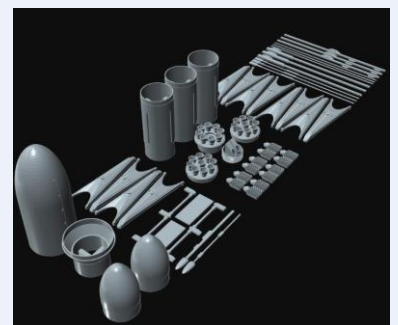
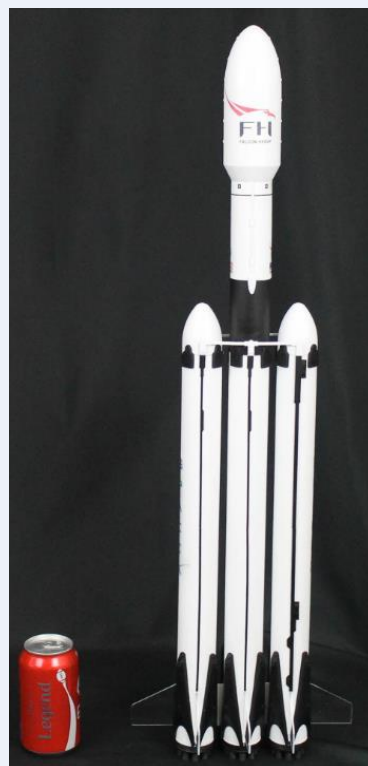
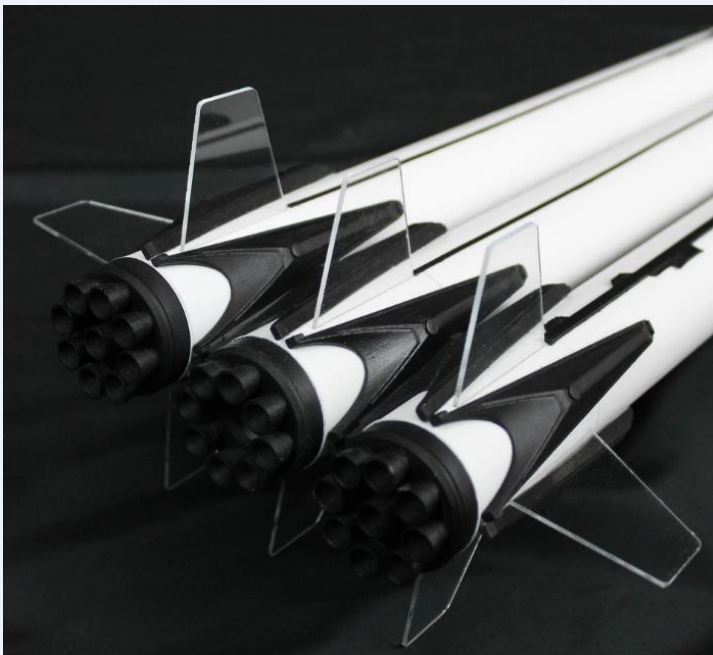
There is no denying that the SpaceX Falcon Heavy is currently the most powerful rocket in the world. Able to lift 64 metric tons into low Earth orbit, the Falcon Heavy recovers and reuses all three first stage cores making it the most economical heavy lift rocket available today. When you purchase the [Boyce Aerospace Hobbies](#) SpaceX Falcon Heavy Builders Kit, you get a faithful 1:89 scale representation of this iconic launch vehicle. The Builders Kit features 55 3D-printed ABS parts, 8 laser-cut clear plastic fins, screw-on motor retainer and incredible waterslide decals. The Falcon Heavy Builders Kit assembles into a commanding 31.125" rocket that weighs in at 15oz. When flown on 24mm E or F composite motor, the Falcon Heavy can see heights up to 821'. Included step-by-step instructions make building this kit a breeze; just grab your standard hobby tools, additional required parts and enjoy replicating history in your own home.

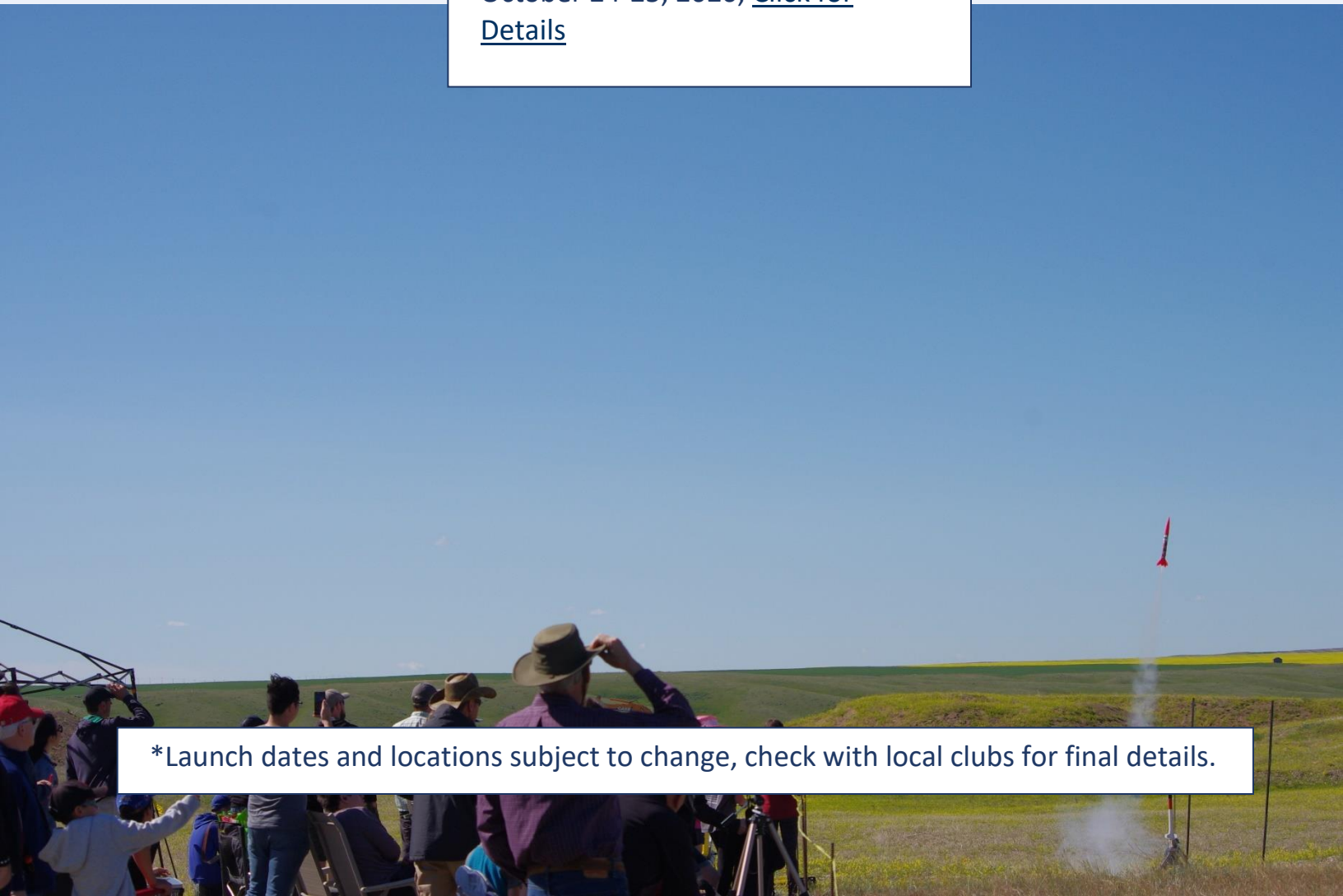
- The Boyce Aerospace Hobbies SpaceX Falcon Heavy Builders Kit is a 1:89 scale model of the most powerful operational rocket in the world.
- Once assembled, this beautiful kit measures 31.125" tall and weighs 15oz
- Features 55 individually 3D-printed ABS parts
- Includes 8 laser-cut clear plastic fins
- This SpaceX kit also includes a screw-on motor retainer
- Complete your kit with the included waterslide decals
- On recommended 24mm E or F composite motors, this kit can see heights from 475' to 821'
- Requires the following parts not included: (4) 18" BT-60 body tubes, (1) BT-50 body tube, (2) BT-50 motor blocks, (1) 30" shock cord, and (1) 36" parachute
- Includes step-by-step [assembly instructions](#)
- Boyce Aerospace Hobbies recommends hobbyists under the age of 13 be supervised by an adult at all times.



Il n'y a pas de doute: la fusée Falcon Heavy de SpaceX est actuellement la plus puissante du monde. Elle est capable de placer 64 tonnes métriques en orbite basse, tout en permettant la récupération des trois premiers étages, et c'est donc le lanceur lourd le plus économique de la planète. Si vous construisez le kit SpaceX Falcon Heavy de Boyce Aerospace Hobbies, vous aurez une représentation fidèle de ce lanceur mythique à l'échelle 1:89. Le kit inclut 55 pièces en plastique ABS imprimées en 3D, 8 ailerons en plastique transparent coupés au laser, un dispositif vissable de retenue de moteur, et de très beaux décalques. Une fois assemblé, le "SpaceX Falcon Heavy Builders Kit" devient une fusée mesurant 31.125" (79 cm) qui pèse 15 oz (425 grammes). Cette fusée est conçue pour voler avec un moteur composite E ou F de 24mm, et peut atteindre une altitude de 821' (250m). Il faut prévoir acheter séparément certaines pièces, comme indiqué ci-dessous. Grâce aux instructions détaillées présentes dans le kit, il est facile à construire avec du matériel standard de fuséonautique, et vous permettra de rendre hommage aux avancées de SpaceX chez vous!

- Le "SpaceX Falcon Heavy Builders Kit" de Boyce Aerospace Hobbies est un modèle à l'échelle 1:89 de la fusée actuellement opérationnelle la plus puissante du monde.
- Une fois assemblée, cette superbe fusée mesure 31.125" (79cm) et pèse 15 oz (425 grammes).
- Le kit comprend: 55 pièces en plastique ABS imprimées individuellement en 3D, huit ailerons en plastique transparent (coupés au laser), un dispositif vissable de retenue de moteur, un jeu de très beaux décalques, et des instructions détaillées.
- Avec un moteur composite E ou F de 24mm, la fusée peut atteindre 475'-821' (130-250m).
- Il faut se procurer séparément les pièces suivantes: 4 tubes BT-60 de 18", 1 tube BT-50, 2 blocs moteur pour tube BT-50, un cordon de choc de 30"/76 cm, et un parachute de 36"/91 cm.
- La compagnie Boyce Aerospace Hobbies recommande que les fuséonautes de moins de 13 ans soient toujours supervisés par un adulte.





*Launch dates and locations subject to change, check with local clubs for final details.

March 19th, 2020 our province decided to go on lock-down. I found my store closed, and was stuck at home, a workaholic trying to find things to do. I installed a ceiling in part of my basement, painted rooms and generally finished as much of my Honey-do list as I could. That took about 2 weeks, and yet there was no indication of going back to work for a while. I was getting bent out of shape, developing twisted thoughts.....And then it came to me! Time to upscale my ACME Spitfire. When I built the original kit about 10 years ago, I found it to be one of the most challenging builds I had ever done. This would be just the project to keep my mind off the craziness this pandemic created. So it was time to scrounge through my parts bin to see what I could come up with. This task would not be that easy, as craft stores were also closed. I did know I was off to a good start, as I had picked up a paper mache cone at a local store a while back. Although it was not quite the appropriate length of the original, it would still be close enough to work. I next located some 3 inch(ish) mailer tube that would match up with the cone.

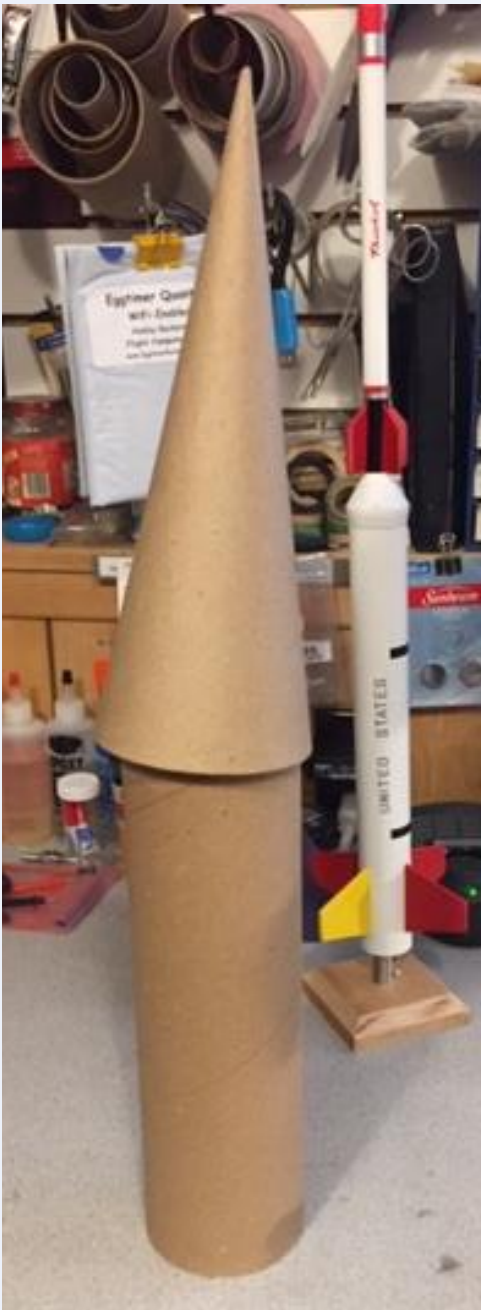
Next step was to scrounge up original instructions and templates, and enlarge them to match the new tubes. That took a bit of playing with the enlarge functions, but after a few wasted pieces of paper, I was able to create the tube cutting templates from the originals. Slowly but surely, the tube sections were coming together. The cone shroud was made from Bristol board. I then slotted the shroud to match the fins, then put two coats of fiberglass resin on the cone and shroud to reinforce them. I also measured and cut all centering rings with the ring cutting jig I built previously (that's another article). All the parts made, now on to assembly!

Anyone who has built the original would know that I could not build the inside workings in the same fashion. I would need through-the-body fins. The outside cone shroud would not be able to be a supporting part of the fin assembly. I also had to eliminate most of the inner tube workings to allow more space for a parachute. I eliminated any centering rings above the motor mount, choosing instead inside tube couplers epoxied in at every bend in the tube, inside and out. Lots of fitting, adjusting, and fitting again, and lo and behold, I had everything somewhat together!

I matched the balancing point of the original by adding six ounces of noseweight and also had to settle with launch lugs instead of rail buttons. The rest would be up to the rocket gods. No way I'd Rocsim this one accurately.

Lots of wood filler, and on to painting and finishing. I decided I wanted to do something in a Steampunk style. After several primer coats, I fashioned plumbing on the outside from plastic model trees, and then finished the rocket with Krylon Copper. A bit of vinyl graphics thanks to my Cricut, and over 200 black dollar store beads glued on to look like rivets, and voila! Finished project.

To honor SpaceX's recent successes, I decided to name it Crew Draggin' I launched it on it's maiden flight on an Aerotech F50-4. It flew around 800 feet, straight as an arrow, and recovered successfully, planning a G next flight. Special thanks to Jim Flis for being there to answer any questions during the build, as well as for the inspiration!





Ma province est passée en mode “confinement” le 19 mars 2020. Je me suis retrouvé avec ma boutique fermée, à la maison, un bourreau de travail cherchant à s’occuper. J’ai installé un plafond dans une partie de mon sous-sol, re-peinturé quelques pièces, et fini plusieurs items sur ma liste de choses à faire. Cela a pris deux semaines, et il n’y avait pas de signal clair qu’un retour au travail serait possible prochainement. Je commençais à déprimer, et soudainement, l’inspiration m’est venue... Le moment était venu de faire une version agrandie de ma fusée ACME Spitfire! Il y a 10 ans, quand j’ai bâti le kit d’origine, j’ai trouvé que c’était une des fusées les plus difficiles à construire de ma carrière. Exactement ce qu’il me fallait pour me distraire de la folie causée par la pandémie. J’ai donc commencé à fouiller dans mes boîtes de pièces détachées pour voir ce qui était possible. Vu que les boutiques d’artisanat étaient également fermées, la tâche allait être difficile. Je savais qu’au moins, je possédais déjà un cône en papier mâché, acheté il y a un bout de temps dans une boutique du coin. Le cône n’avait pas tout à fait la bonne longueur, mais ça pouvait passer. Ensuite, j’ai trouvé des tubes d’expédition de 3 pouces qui pouvaient être compatibles avec le cône.

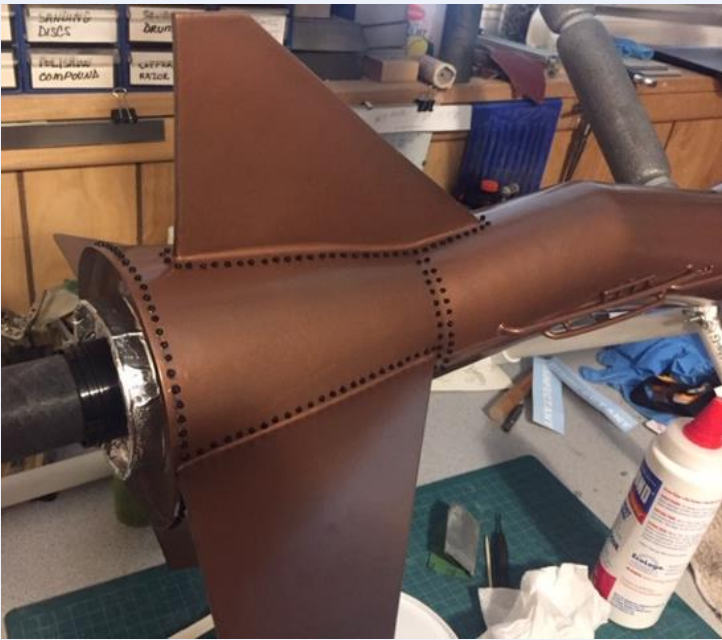
Ensuite, j’ai retrouvé les instructions et les modèles du kit original, et je les ai agrandi pour correspondre aux nouveaux tubes. Cela a pris quelques ajustements, et gaspillé quelques feuilles de papier, mais éventuellement, j’ai obtenu des modèles pour découper les tubes à l’échelle des originaux. Lentement mais sûrement, j’ai pu assembler les sections. J’ai fait l’enveloppe du cône arrière avec du papier bristol, fait les fentes pour l’alignement des ailerons, ai ajouté deux couches de résine de fibre de verre sur le cône et son enveloppe pour les renforcer. Il m’a fallu également mesurer et découper tous les anneaux de centrage, grâce au gabarit de découpage d’anneau que j’ai construit dans le passé (ce sera pour un autre article). Une fois que toutes les pièces étaient prêtes, j’ai pu passer à l’assemblage!

Il est clair, pour quiconque ayant construit le kit ACME Spitfire original, que je n’allait pas pouvoir faire l’intérieur de la fusée avec la même technique. Il me fallait des ailerons qui traversent le tube principal, et l’enveloppe extérieure du cône arrière n’allait pas pouvoir servir de support structurel pour les ailerons. Je devais augmenter l’espace disponible pour le parachute, et j’ai donc enlevé les anneaux de centrage au-dessus du support moteur. En remplacement, à chaque coude dans le tube, j’ai fixé, à la colle époxy, des coupleurs de tube. Après beaucoup d’ajustements, j’ai fini pas assembler le tout!

Pour obtenir, en proportion, le même centre de gravité que le modèle original, j’ai ajouté 6 onces (170g) de lest dans le nez de la fusée, et j’ai dû utiliser des pattes/tubes de lancement au lieu de boutons. Pour le reste, sachant qu’une simulation précise de vol avec Rocsim était irréaliste, je me suis fié aux dieux de la fuséonautique.

Cela a pris pas mal de bouche-pores à bois... Je voulais une décoration dans le style "Steampunk". Après plusieurs couches de peinture d'apprêt, j'ai utilisé des petits modèles d'arbres en plastique pour faire de la fausse plomberie apparente, et j'ai recouvert le tout avec de la peinture en aerosol Krylon Copper. Pour finir, quelques graphiques en vinyle avec mon Cricut, et plus de 200 perles noires (achetées au magasin à un dollar) collées pour avoir l'apparence d'être des rivets, et voilà! Un projet terminé.

En l'honneur des succès récents de SpaceX, j'appelé la fusée Crew Draggin'... Pour son vol inaugural, j'ai utilisé un moteur Aerotech F50-4. La fusée est montée droite comme une flèche, à peu près jusqu'à 800 pieds (250m), et je l'ai récupéré sans problème. La prochaine fois, j'essaierai un moteur G. Grand merci à Jim Flis pour avoir répondu à mes questions pendant la construction, ainsi que pour l'idée du kit original!



If you are an avid scratchbuilder, you know the importance of being able to make custom pieces for odd size body tubes, etc. For many years I cut centering rings on a band saw, then used a sander to get them as close to round as possible. For motor mount sizes I found the closest sized hole-saw bit, and then sanded again. A couple years ago I decided to buy the tools needed to do this the right way. I bought a Jasper jig for a router, and then shopped for a router that would fit the jig. It seems that is harder than I first thought, but after some careful searching I found a router that would match the jig. Jasper makes several jigs, I purchased one sized for 7.5" diameter and smaller. It has been a great addition to the workbench, allowing me to cut bulkheads and centering rings with ease. For those building larger diameter projects, alternate jigs are available.

You first need to find a scrap of thick plywood as an overcut surface. The plywood from which rings or bulkheads are to be cut from is laid on the surface and clamped. A finishing nail is driven into the center of the ring. For a centering ring I cut the inner ring first, leave everything clamped and nailed in place, and then cut the outer circle using the same finishing nail in the center. A small pilot hole is drilled as a starting location for the router bit. The matching hole size location is found on the jig, and the router is placed in position. From there, a steady pressure swings the router around the diameter of the circle, cutting the ring or bulkhead, and there you are!



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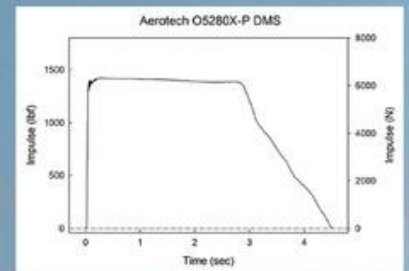
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Introducing The New 05280X-P5 98mm High-Power DMS™ Single-Use Rocket Motor (No. 15528P)

The Tripoli Certified 05280X-P5 98mm DMS Disposable Motor System™ Single-Use Rocket Motor produces the highest certified total impulse of any 98mm rocket motor ever sold to the high-power sport rocketry market.

- Features AeroTech's High-Isp Propellant X™ producing exceptionally high total impulse accompanied by a bright white flame and brilliant exhaust plume with moderate smoke.
- Delivers 22,223 N-sec of total impulse in 4.4 seconds making it ideal for extreme high-altitude attempts including two-stage flights to the edge of outer space / Von Kármán line!
- Designed with a filament-wound fiberglass casing, glass-reinforced composite phenolic nozzle and a machined aluminum bulkhead with built-in 3/8-16 thread for a matching eye bolt.
- Configured with a removable, threaded fiberglass DMS thrust ring designed to fit standard motor retainers.
- This is a "plugged" motor design producing only tracking smoke and requiring an electronically-activated recovery system.
- Sold in kit form and ships with FirstFire™ initiator, all necessary adhesives and instructions.
- May be purchased by L3 certified consumers 18 years of age or older and carries a suggested retail price of \$1,999.99.



Diameter: 3.875" (98mm)
Length: 55.44" (1,408mm)
Propellant: Propellant X
Total impulse: 22,223 N-sec
(4,996 lb.-sec)
Burn time: 4.4 sec
Peak thrust: 1,461 lbs.
(6,499 N)
Delay time: N/A (plugged)
Propellant wt.: 9,779 grams
(21.56 lb.)
Loaded wt.: 15,345 grams
(33.83 lb.)



Photo by Nadine © 2018

This is a "push-in the rocket" system, meaning that my rocket is just one single tube in which I push this avionics bay system from the nose. It is meant for dual deployment of a reefed system (no drogue parachute, the main is kept closed instead). There is 4 bulkhead connectors : two have cups for pyro charges right on top to eject the parachute out of the rocket and the two other goes to the cable cutters on the parachute to "deploy" it afterwards. I need redundancy because my rocket is more than 5kg.

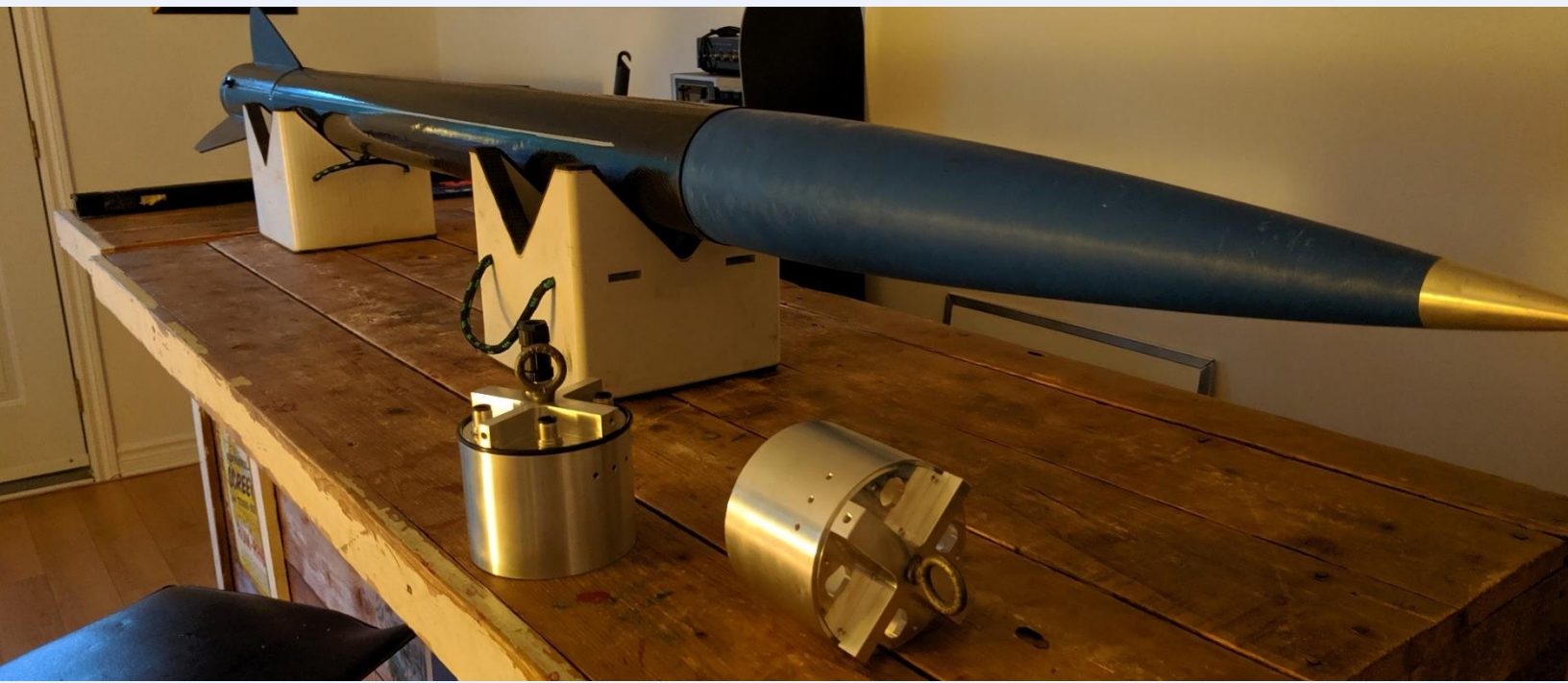
The system can interface many commercial altimeter (Eggtimer Quark, Stratologgers CF, Raven3), although I do plan to do my own.

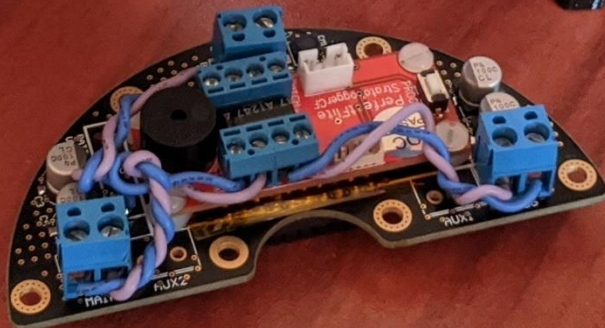
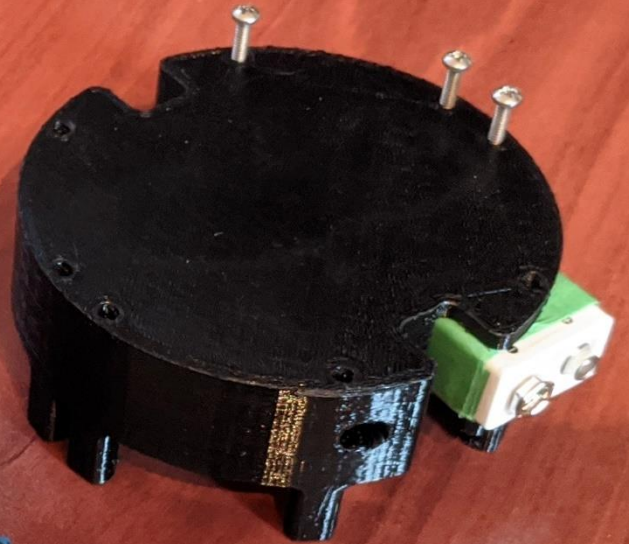
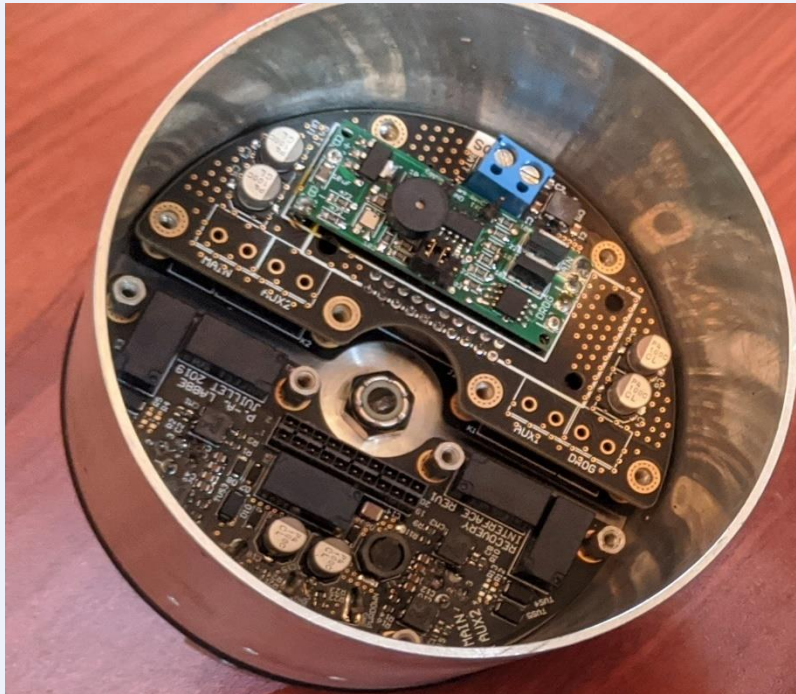
The shunting process of the ejection charges is done with latched relays which can handle 75g without any problem. As it is latched relays, their position is reset during turn off/on to make sure of their state (shunt/armed). There are push buttons accessible from small holes on the side (ON, OFF, ARM).

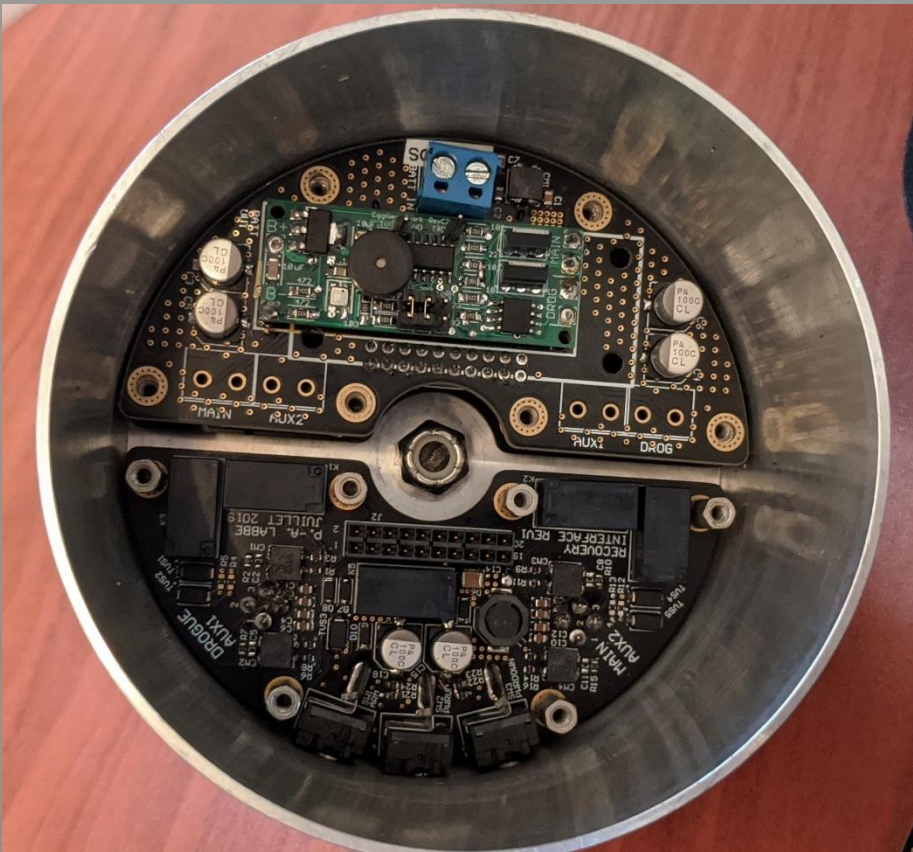
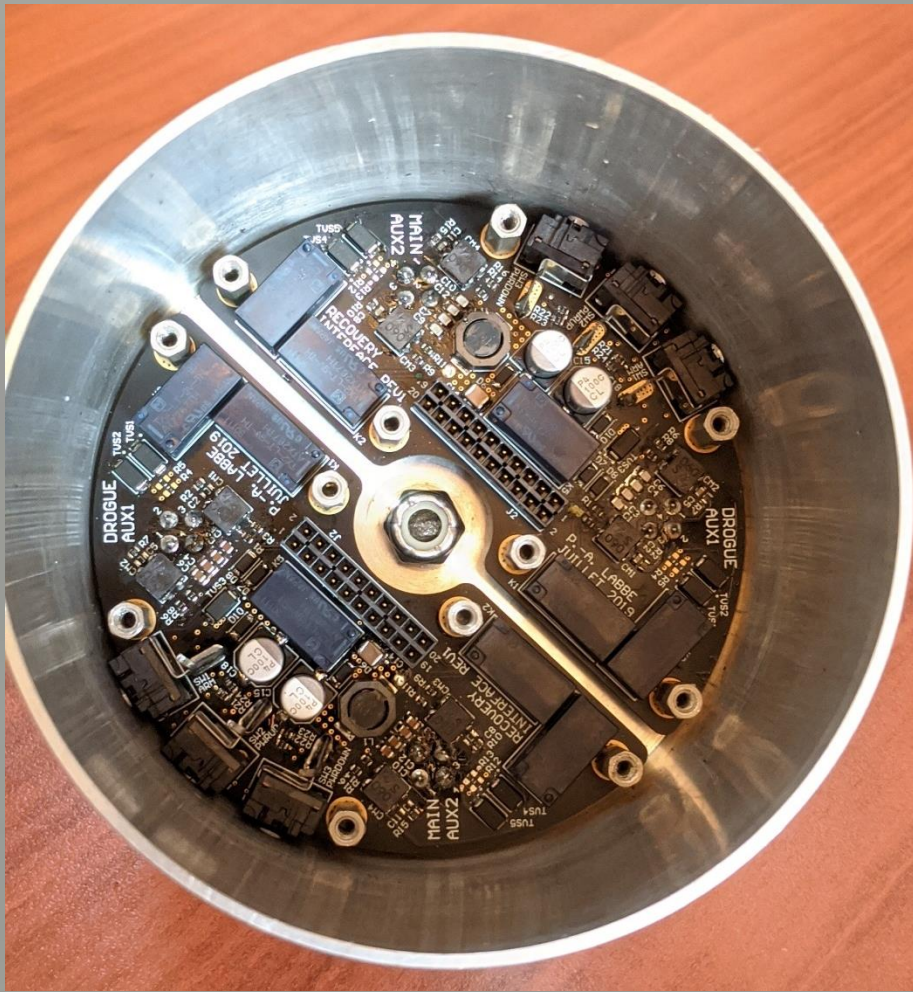
I use LiPo4 9V rechargeable batteries for the extra current and temperature handling. They are installed in a 3D printed socket that is screwed on top of the electronics.

This rocket has flown one time with a K510 Classic from CTI, as pictured in a previous issue of EarthRise. Next flight might be in October with a CTI K1085 White Thunder. It can handle up to a 98mm 6grain.

The rocket is called "Ta + vite" in honor of a beer I like from Lagabière (a microbrewery). The rocket is 4" minimum diameter with a very special airframe design.







Rock Lake 22 was a great experience once again! Early in the year when Tim and I would normally be done planning for Rock Lake, we were worrying about the pandemic. Gauging our provincial government response and hoping for the best, I was certain we would be able to hold some kind of launch, even if it was limited to local members. By mid-May we had an opening in restrictions that allowed up to 50 people at an outdoor event, Rock Lake was on! Just as we rolled out a plan for “contactless registration” the restrictions were opened to 100 people outdoors, and a normal Rock Lake was possible.

The next hurdle to clear is getting a fire permit from the local fire marshal (also known as the fire dude). I’m always a little hesitant but my first phone call was encouraging as he reported some record rainfalls had allowed for green grass and good conditions.

With pre-registration taken care of through the website to encourage contactless registration this year, our biggest bureaucratic task was taken care of and we could focus on setup and prepping rockets. Some of the regulars started showing up Wednesday evening and Thursday for setup. By noon on Thursday the range setup was mostly complete, leaving final pad angle adjustments and launch system testing for Friday morning. Launch organizer Tim Rempel flew more rockets this year than he has in the past! If your club hasn’t done pre-registration yet, I highly recommend it.

Rock Lake 22 was attended by about 45 registered fliers, so slightly less than average but enough to make a great launch. The 222 total flights were broken down as follows:

Motor	A	B	C	D	E	F	G	H	I	J	K	L	M
#	23	21	43	38	20	14	16	19	10	9	7	1	1

Three fliers gained level one certification, two gained level two certification, and one person completed the electronics endorsement.

A word of acknowledgment is always in order after a big launch is pulled off. Tim Rempel held the reins as launch organizer and RSO. Shane Weatherill and Jason Anderson shared RSO duties with Tim. Bruce Aleman patched together a new website and online registration system just prior to the launch. Fliers who helped set-up, tear down and fill the duty roster are all acknowledged for their help! Again we owe a thankyou to the landowners for this awesome location made available to us for over 20 years now.

The Site



The People







The Rockets

Cousins David and Josh Aleman fly some rockets. David's Aerobee Stretch on a J350 (top), his Nike Smoke on a G64 (bottom right), and Josh's successful Level 1 Junior Cert flight with his Mars Flyer on an H153 (bottom left).

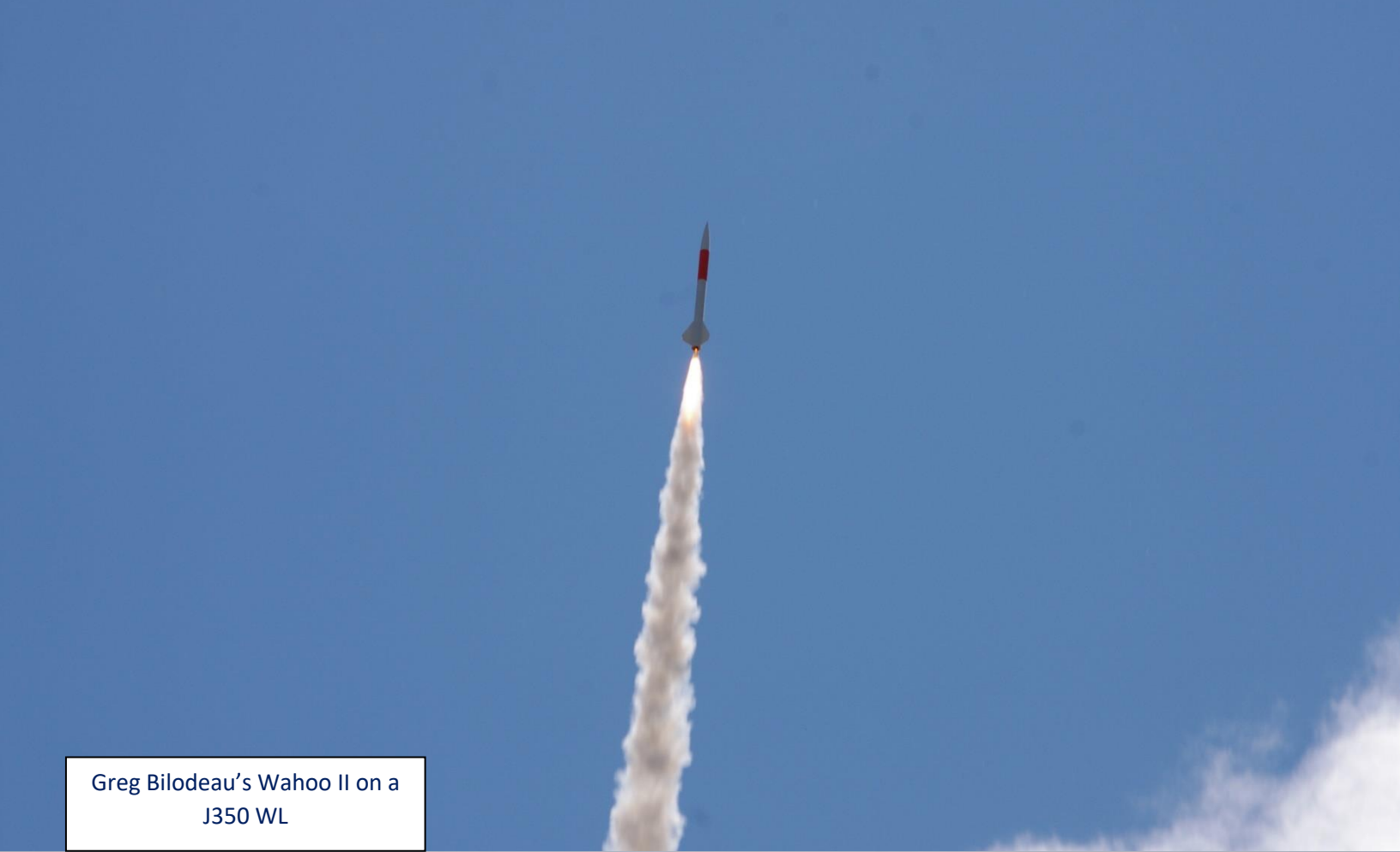




Shane Weatherill's Frenzy XL takes off on the only M flight of the weekend, an M1400.



Jason Rodney's Der Red Argent launching on an F40 WL and recovery.



Greg Bilodeau's Wahoo II on a J350 WL





Flights at Dusk!

Jason Anderson's 5 Fin on a
K490 Green (top left)

Keith Novakowski's Leviathan
on a G77 Red (top right)

Greg Bilodeau's Wahoo II on an
I357 Dark Matter (bottom)



The Models





The Videos
-Click for Links-

ROCK LAKE 22
JUNE 26-28 2020



With the way my spring turned out, I was more than prepared for Rock Lake when it came around. I had been building altimeters, tweaking av-bays, and prepping my rockets so when the range setup was complete I would be able to fly fast. A rocket launch for me usually involves several high power flights utilizing part of my fleet, interspersed by model flights to account for local conditions like wind. This year I had one highpower flight I really wanted to pull off. My 7.5" V2 has waited quietly for some years to get a flight again as I don't fly 75mm motors that often. This year I had an old K1000 Sparky that would make the perfect Friday evening launch, a cascade of sparks on a 35 lbs rocket that would only fly 3000'. Well, the launch was beautiful when it finally happened, but maybe the gremlins that tried to prevent it should have been heeded...

I prepped as usual, loaded the rocket on the pad, and armed my altimeters. The Raven One and the Eggtimer Quark fired up as expected, each set to provide one charge at apogee. The igniter was inserted, the countdown took place, and...nothing. The fabulous wireless launch system designed and built by David Buhler that has been in use for years couldn't light the ignitor. After 3 or 4 tries, I switched to a new ignitor, thinking that could be the problem. The next 4 attempts used all of the available lead clips at that bank of pads...nothing. In each of those attempts, I noted the altimeters chirping as expected when rewiring the ignitor. Finally, with several minutes left in the high power launch window, I switched to an e-match ignitor as a base, with some additional slivers of an F motor, hoping the e-match would be a low enough current to succeed. That final attempt involved two 100 meter dashes (I don't run under normal circumstances...), a mad scramble to re-insert the ignitor while three other members found the clips for all three pads which they attached to my ignitor leads. With all three pads armed, at 8:58pm, my V2 finally took flight on a column of sparks and fire. The beautiful ripping sound of the big sparky motors echoed in the gravel pit as the beast slowly arced over apogee, with the final sparks falling out of the motor nozzle. Then, the scale aspect of the flight really got serious. Neither altimeter fired the planned apogee charges. The 7.5" diameter, 60" tall, 35 pound rocket came in ballistic in full view of the (very quiet, very subdued) flight line. Everyone who witnessed this landing will remember the impact THUDDDD!

Well, if that's the way the weekend begins maybe I need to lick my wounds for a while... a couple beers with a good steak while everyone else tiptoed around me for an hour or two and I was good to go for the rest of the weekend !

The loss of the V2 also meant I was down two altimeters, so that meant I wouldn't be flying my two-stage rocket. I took stock of my remaining altimeters, batteries and motors and made a

plan. I would spend the rest of the launch attempting to fly every motor class from A through K. With a successful flight of my Wildman Junior on an I211 already out of the way Friday afternoon, I had K and I motor classes out of the way. The rest of my launch proceeded as follows, albeit out of sequence due to burnt ignitors and launch conditions.

A motor: Estes *Black Brant 3*, A8-3

B motor: Scratchbuilt *Black Brant II*, B6-4

C motor: Estes *Super Alpha*, C6-5

D motor: Estes *Red Flare*, D12-5

E motor: Mach 1 *Black Brant II*, E9-8

F motor: 3D printed *Mars Lander*, F85-7

G motor: Estes Pro Series *Nike Smoke*, G64-7

H motor: Scratchbuilt *G-Force style rocket*, H73-7

I motor: *Wildman Junior*, I211

J motor: 54mm minimum diameter rocket *No Real Hurry*, on a J415

K motor: 7.5" scratchbuilt *V2*, K1000.

All the other flights were great, I found all my rockets, and the Eggtimer Quark I soldered myself tested out successfully. All in all, the usual photography fun, LCO shifts, evening get-togethers, heat, dust and rockets made for a great Rock Lake 22. I'm off to rebuild, fix what I broke and plan for the next launch!

[Click for Video](#)



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 fuséonautique 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 fuséonautique, 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:

Bill Rockwell's Estes Interceptor E flies on an Estes E9-4.

Photo by David Aleman

La fusée Interceptor E de Bill Rockwell en vol, avec un moteur E9-4.
d'Estes | Photo par David Aleman

Earthrise Translator: Marc Chatel