



earthrise

Volume 4 Number 1—December 2003

earthrise

The Canadian Association of Rocketry Newsletter
Volume 4 Number 1
December 2003

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What is CAR?

- CAR is the Canadian Association of Rocketry, established in 1965
- CAR is a self-supporting, non-profit organization whose purpose is to promote development of Amateur Aerospace as a recognized sport and worthwhile amateur activity.
- CAR is an organization open to anyone interested in legal and responsible rocketry.
- CAR is the official national body for amateur aerospace in Canada.
- CAR is a chartering organization for model rocket clubs across the country. CAR offers its chartered clubs contest sanction, insurance, and assistance in getting and keeping flying sites.
- CAR 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 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 is a Rocketry Association whose rules and regulations are formally acceptable to the Minister of Transport.

CAR 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.

CAR Mission Statement

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.

...Product Review: ARG Black Brant VA/VB

the decals are very thin. I broke one of mine into several pieces trying to reposition on the airframe. Once again, proceed with caution when applying the decals!

The end result is a good-looking scale model of the Black Brant VA/VB which is a nice addition to my fleet. I have not yet flown my model, but given the careful attention to scale detail in this kit, I might just want to keep this bird on my display shelf!

The Last Word

Shane Weatherill

Welcome to my first issue as Editor of the CAR Earthrise. The CAR Executive has been searching for an Earthrise Editor for the last two years. During that time, Dave Ross has taken the Editor duties along with all his other duties as the Chairman of CAR. He has done an excellent job, and I hope to maintain the high quality of Earthrise that members have come to expect.

Since this is my first issue, it seems appropriate that I introduced myself to those who do not know me. I have been flying rockets since I was in junior high school in rural Alberta. When I graduated from high school and moved on to University, I all but forgot about my rockets. I can only recall two rockets built over the span of the following eight years. Then, along came *October Sky*... After seeing the movie, I was back into rocketry hook, line, and sinker. Once I built my first mid power rocket, an Aerotech Initiator, I discovered the organized rocketry community in Calgary when looking for somewhere to fly. The first time I heard an AP motor light, I knew I was in trouble. Not long afterwards, I was introduced to the world of high power rocketry. I've since achieved my CAR HP Level 3, as well as my CAR RI Level 2.

With my new position as Editor of Earthrise, there comes some changes. Earthrise will no longer be advertising, and as a result, can no longer offer rewards (other than gratitude) to contributors. The newsletter will still be published on an availability of information basis, which means it will come out as often, or as seldom as we receive articles. I would also like each club across Canada to select a Earthrise Representative who is willing to report on major launches held by the club. This will allow the Earthrise to truly represent the rocketry community across the country.

Hope to see everyone on the range and to hear from you all in the Earthrise...

...Product Review: ARG Black Brant VA/VB

of the main body tube. The root edges of the fins extend from the aft end of the fin tube up and over the bottom portion of the main body tube and are cut to fit over the slightly larger diameter (1.72") main body tube. The fins feature aft support plates and foot plates, and forward adjustment plates. For each fin, there are two aft support plates and two forward adjustment plates which are glued flat against either side of the fin, their bottom edges flush with the fin root edge. The broad side of the fin foot is then glued to the root edge, forming a flat foot for gluing to the body tube. In addition to adding scale detail, these features make the fin/body tube joint very solid. According to Taras Tataryn at ARG, on the real BB vehicle the fin is attached only by the feet and by a pin situated between the two forward adjustment plates (used to angle the fin to induce a desired and calculated roll). I wish that I had known this before building my kit because I glued and attempted to fillet the entire root edge to the body tube. I used wood filler for the fillets and made a bit of a mess of the job because of the irregular joint caused by the foot plates and adjustment plates. Taras recommends filleting the fins only at the foot plate joints and adding a spot of cyanoacrylate (CA) glue at the forward adjustment plate joints. Indeed, I would suggest that this bit of information be provided in the instructions, along with a bit more of the interesting background on how the fins are attached on the real BB. Although I am not an accomplished scale modeler, I do like to know as much as possible of the background of the kits that I build. Others like me who have never encountered fin foot plates before will likely also be a bit puzzled about how to fillet the fins.

One thing that I really appreciated about this kit are the precision laser-cut balsa parts from Balsa Machining Service. This must be the first time that I have encountered laser-cut parts because I surely would have remembered the precision workmanship. I suffered not a single break in separating the parts from the balsa sheets, in spite of the extremely thin fin adjustment, support and foot plates. Proceed with caution when handling these parts!

I also appreciated that the instructions recommend the specific brand and color of paint to use when finishing the model. This takes the guess work out of selecting a color that is as close as possible to the real BB. For some reason, the instructions recommend painting the entire model with gloss white (after priming), and then applying the red paint. Perhaps something about the white gloss underneath helps produce the proper shade of red.

The kit includes vinyl pressure sensitive white stripes (which eliminate the need to mask and paint the stripes), as well as water transfer decals. There is one extra decal to practice with. The extra decal is useful because

A Word From the Big Chair

Dave Ross

Finally !At Last!... Its about Time !... I know, I know, and I take full blame for the lack of Earthrise for the past season. The good news is Shane has taken up the cause and is CAR's new Earthrise editor. The best thing that we can do now is flood him with articles and photos. Content is king.

Insurance

The saga continues... I have no doubt that sooner or later we will find acceptable coverage. It's just a matter of time. Currently the aviation division of AON insurance is working hard on our behalf. As soon as I hear anything the least bit positive, I will post it on the Yahoo group in font and type bigger than Anthony's.

My efforts to get us insured led me to prepare a "cover page" introduction and description of CAR. We previously didn't have anything in writing that let non-rocketry people understand what we are about. The "About CAR" section on the website has been updated to include a "What is CAR" section, a mission statement, a vision statement, and a brief description of the CAR management structure. Please consider this a perpetual-work-in-progress. Take a look, and let me know if I missed anything.

New Yahoo Group

The CAR e-mail list is the principle means of communication and discussion for CAR. We have moved the email list to canadianrocketry@yahoogroups.com. This was done to control spam, list membership and such. Many thanks to Dave for his efforts.

For more info contact: David Buhler esq. Database Slave CAR S219 L4 R2 L4CC chair TRA 9749 L3 VE6RKT dbuhler@ucalgary.ca

Earthrise is published on an "availability of information" basis. When sufficient content has been received by the Earthrise Editor from the rocketry community, the next issue will be produced. Send your articles and photos to the editor by mail or the Internet:

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ON THE COVERS

Front: Len Lekx' Yank Enterprises ISQY Tomahawk on a Pro38 J360 at Blazing Archer VI in Belleville, Ontario. The photo was taken by a modified Olympus Epic camera at an apogee of 1500 feet.

Back: Ron Veale's picture of Brian Cole's Red Arrow flown by Vince Chichak on an APS Spitfire K390 at Sullivan Lake 11.

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....A Word From the Big Chair

Official Notice of Election 2004

2004 is an election year for CAR. Elections have historically been held in December. Nominations are being accepted for all elected positions. (4 Executive and 7 regional reps) This year we already know that there are several positions that will be open and others may be added to the list throughout 2004. Stepping down are: Myself from the Chairman position, Max from the Vice-Chairman position, and Bill Wagstaff from the Ontario Representative position. CAR HQ is accepting nominations until the end of October, November will offer the candidates a period to state their positions, leading to a vote in December.

New CAR Rules

With the prospect of legal EX activity in Canada, the pending Transport Canada recognition of AHPR, as well as the growing exposure of Rocketry in the public media, it is now necessary for CAR to proactively introduce some new policies. These topics are new to CAR and deal with projects outside the strict definitions of Model and HPR. These projects are highly individualistic, by nature undefined, and can only be dealt with on a case by case basis. It is only appropriate that committee review them, much like L4 Certification projects, only more so.

Public broadcast media plays a huge role in the public perception of rocketry. Every mention of rocketry on television is either positive or negative for our activities. It is in our best interest to work hard to maximize the former and avoid the latter. Where CAR members are involved in rocketry, so is CAR.

With that in mind the CAR executive and BOD have implemented an initial set of new policies and procedures regarding EX, AHPR, and media related activities. These policies and procedures are a work in progress. Participants in these activities must expect these new requirements to be updated frequently in the foreseeable future.

EX (Experimental) Launches

EX launches at CAR sanctioned events shall be subject to the approval of the CAR EX committee and the CAR executive.

AHPR (Advanced High Power Rocketry) Projects

Any CAR Member planning an AHPR project shall:

1. Submit a written description of the proposed project to CAR HQ, as well as the launch organizer where the flight is planned.

...A Revised Method for Mounting Through-the-Wall Fins

difficult.

Once all of the fin positioning strips were in place, we could apply normal gussets from the motor mount to the fins. When these gussets had partially cured, we were able to carefully remove the fins, and flare the top of the gusset out, to provide a guide for re-inserting the fin later. After the epoxy was fully cured (best left overnight), we removed the wax paper, leaving a preformed gusset.

The motor mount was then epoxied in place, with the fins located through the outer wall and into the gussets, but not epoxied yet. This allowed us to build good gussets on the forward edge of both bulkheads, by rotating the assembly. Once the motor mount was in place, the fins were removed, a small amount of epoxy applied to the edge, and the fins were re-inserted, and immediately removed again. By checking the amount of epoxy that had squeezed up the side of the fin, we determined that we wanted a bit more epoxy. A second application was judged to be sufficient. Normal fillets were applied between the outer body and the fins. We now had some fins that would be nearly impossible to break off.

Product Review: ARG Black Brant VA/VB

Mark Roberts

If you are "into" scale models, I recommend the Black Brant VA/VB by Advanced Rocketry Group (ARG), Mississauga, Ontario. This is just one of ARG's new series of 13 scale models of the Black Brant rockets; all are in 1:10 scale. More information on the entire series can be found at ARG's Black Brant website (www.blackbrants.com). Prices range from \$15-30 (U.S.).

The ARG Black Brant VA/VB utilizes Estes-style parts, including a balsa nose cone and fins, paper body tubes, 24 mm motor tube, launch lug (for 3/16" rod), kevlar shock cord mount, elastic shock cord and 18" plastic chute. The completed model stands just over 32 inches tall and is 1.72 inches in diameter. It would probably be considered an Estes skill level 3 or 4 kit – straight forward to build but with a bit of a challenge to make it interesting. The recommended motor is the D 12-5.

The attention to scale detail in this kit makes it stand out. The most unique and scale-accurate feature is the fin attachment. A short section of body tube (the fin tube), with an outside diameter equal to the inside diameter of the main body tube (1.655"), slides partway into the aft end of the main body tube, leaving 2.25 inches of the fin tube extending beyond the aft end

A Revised Method for Mounting Through-the-Wall Fins *Leon Kemp*

A frequent dilemma faced when assembling a rocket with through-the-wall fins is how to get a good bond between the fins and the inside tube (usually the motor mount). Generally we attach and gusset the 2 (or more) bulkheads prior to mounting the motor mount assembly in the outer tube. Consequentially, it becomes difficult to get a known-good adhesion of the fins to the inside tube, and impossible to build a gusset. We ran into this problem with Peggy's LOC NORAD, with one fin coming loose during its first flight, resulting in a failed certification attempt. I have always been concerned with this as I built my various rockets.

As I was overseeing Bethany in the construction of the rocket for her L1 Junior Certification, I got an idea. If I built the gussets while the motor mount was outside of the outer tube, I could insert the fins later, and the small amount of epoxy that adheres on the edge of a fin would be able to provide a very strong bond.

Here is what we did:

First, we attached the two bulkheads and engine retainer, and applied the gussets. Then we positioned this assembly temporarily inside the main body tube. We used a long knife blade to scribe a line marking one side of each of the fins. We were careful to get the knife perpendicular to the motor mount. If we made a mistake here, we could correct it later, so an absolute exact marking was not critical.

We then applied masking tape along the scribed line, so that we would not get epoxy where it was not wanted (yet). A strip of 1/16" square balsa was then epoxied in place for the length of each of the fin lines and allowed to set up. These strips would prevent epoxy from setting up at the sharp edges of the fins while we formed the gussets. Meanwhile, we applied a 2" wide strip of wax paper along the edge of the fin that would ultimately bond to the body tube. This would prevent premature bonding of the fin to the motor mount.

After the fin positioning strips were set, we re-inserted the motor mount, and checked the fin alignment. By trimming the balsa or adding masking tape, we were able to get perfect alignment.

After removing the motor mount, we applied a second strip of balsa on the other side of the fin. We were careful to minimize the amount of epoxy that came into contact with the wax paper, as we did not want to epoxy the sharp corners in place, as this would make removing the wax paper

....A Word From the Big Chair

2. Shall receive a written review of the proposed project from CAR HQ.. This written reply document shall consist of comments from the CAR executive as well as the 3 following CAR review committees:
 - a) L4CC Committee (Airframe Integrity and Flight specifics)
 - b) RSO Committee (Range implications)
 - c) EX Motor Committee (Motor Safety and Reliability)
3. This written review shall constitute a CAR acceptance or rejection of the proposed project.
4. In the event that the project does not meet the standards maintained by all 3 of these committees, then CAR HQ will deny the proposed project. Project organizers are then welcome to rectify the outstanding issues, if possible, and re-apply.

Projects Involving Public Media

Any CAR Member planning a project that is outside the strict definitions of HPR or Model Rocketry, involving the public media, shall:

1. Submit a written project description to CAR HQ prior to any Public announcement or 3rd party promotion of the proposed project.
2. Shall receive a written review of the proposed project from CAR HQ. This written reply document shall consist of comments from the CAR executive as well as the 3 following CAR review committees:
 - a) L4CC Committee (Airframe Integrity and Flight specifics)
 - b) RSO Committee (Range implications)
 - c) EX Motor Committee (Motor Safety and Reliability)
3. This written review shall constitute a CAR acceptance or rejection of the project. In the event of approval this project analysis and review may highlight the positive aspects of the project and or benefits to media/sponsors.
4. In the event that the proposed project does not meet the standards maintained by all 3 of these committees, then CAR HQ will deny the project. Project organizers are then welcome to rectify the outstanding issues, if possible, and re-apply.
5. This CAR project review shall not contain any technical details nor intellectual properties associated with the project. It is solely a statement of project acceptability under CAR. It shall be available to any and all interested parties.
6. In the event that the ongoing development of the project causes concern to any of the above review committees, CAR reserves the right to review and amend this document on an ongoing basis even if this means denying a project previously deemed acceptable.
7. Failure to comply can result in actions, including but not limited to,

...A Word From the Big Chair

rejection of a project and/or membership termination.

To protect CAR programs, procedures, and reputation from any CAR membership or CAR certification implied approval, I emphasize that this project review must take place prior to any public announcement, sponsor solicitation or media involvement.

CAR Technical Committee Charters

L4CC Committee (Level 4 Certification Committee)

The L4CC committee is responsible for pre-flight review of rockets having total impulse of M or greater. The L4CC will have the following responsibilities:

- Members of the L4CC shall provide technical assistance and guidance to CAR Members desiring to design, construct and fly rockets having a total impulse in the M, N and O ranges, Certifying to Level 4, and all AHPR projects.
- An L4CC member shall review the information provided and provide timely, constructive comments and guidance to the builder.
- Results of the L4CC review may also be provided to a launch organiser for their information and review by the Range Safety Officer (RSO).

Appointment to the L4CC requires CAR L4 and is by nomination by the CAR Provincial Rep or other L4CC member, and acceptance by the L4CC Chairman and CAR executive.

The L4CC current members are: Bill Wagstaff, Max Baines, David Buhler (Chairman), Anthony Cesaroni, Marc Ouellette, David Ross

RSO Committee (Range Safety Officer Committee)

The RSO committee is responsible for writing and maintaining all CAR Rules and Regulations regarding an active CAR Range. The RSO Committee has the following responsibilities:

- The RSO Committee shall set and maintain CAR active range policy governing all CAR Members, and launch organizers, at all impulses.
- An RSO Committee member shall review AHPR Project information provided and provide timely, constructive comments to the RSO Committee chairman, for inclusion in his Project review.

Appointment to the RSO Committee is by nomination of an RSO Committee member and ratified by the Unanimous Approval of all existing RSO

...KISSALAT

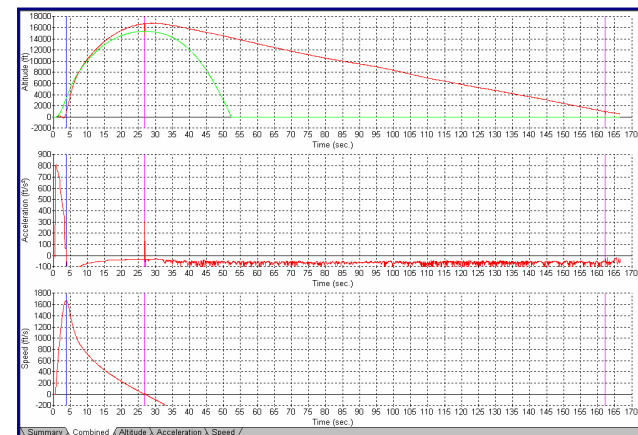


KISSALAT roars out of the launch tower at Sullivan Lake 11.

fit. Field mods... I ended moving the GPS unit into the nose cone, doing a little trimming to the proto board to fit the ogive cone and allow room for the NiCad's. It was a tight fit. As I was drilling hole for the shear pins, I was not careful enough to miss drilling into one of the NiCad's. I was stunned for a moment. Then it occurred to me if I shorted the battery in the process, it was going to become very hot very quickly. I had to rip the nicely packed nose section apart and replace the damaged battery.

The KISSALAT was launched from a tower late in the afternoon and it moooved! After burnout, it was gone. Using the tracking equipment, we were getting data back from the GPS. Unfortunately, we did not have a satellite lock so the data was not valid. Instead, we tracked it with the falcon tracker we had onboard. Scott West followed the falcon tracker on foot. Meanwhile, I started receiving valid GPS data. I started jumping up and down and calling Scott. After putting the data into the palm and hooking up another GPS unit, we discovered we were about 520 meters from the landing site. We hopped in the truck, took a round about way to get past the stream, and drove right to the rocket. There was no searching, walking back and forth, and wondering am I too far out, or not far enough. I guess I will have to figure out another exercise routine.

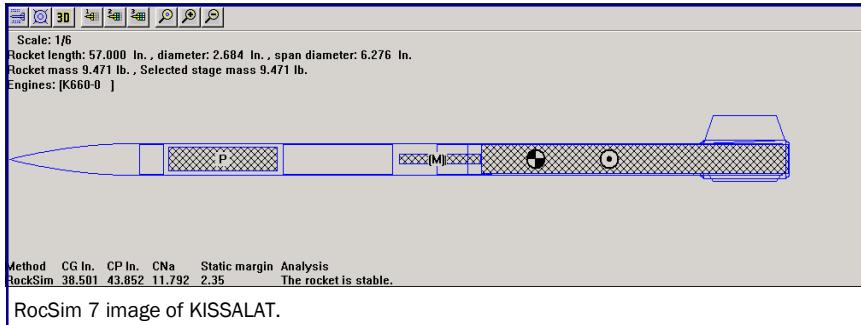
According to the FC, the KISSALAT was a record setting flight. It achieved an altitude of 16740 feet and max speed of 1668.2 feet per second (mach 1.5).



KISSALAT (K Impulse Single Stage Altitude Attempt) *David Buhler*

Ever since the Aerotech fire, I have been waiting for the 54mm K700 (98% K) to reappear. This year, when CTI came out with their full K (a K660), the scramble to get an airframe ready before Sullivan Lake 11 began.

The basic design was a minimum diameter rocket with an Acme fin can for the 54mm tube. I used the “predict optimal weight” feature of Rocsim 7 to come up with the end airframe, electronics and recovery weight. This came out to about 4 lbs or 1.8 kg.



The next step was to find out how much of the fin to cut off the fin can and still keep a descent CP/CG relation. I decided to take off 2.75 inches leaving 1.5 inches (pretty sleek). The bottom of the motor tube was recessed in the fin can by approximately a half inch. This allowed the aft closure on the casing to be hidden and provided positive motor retention. Since this airframe was going to be moving fast, I added two layers of 2 oz fiber glass, with cost effective polyresin, over Kraft phenolic tubes. The tubes were oven cured for a few hours. The lower portion on the motor tube, where the fin can was to go, was not glassed.

I built an electronics bay into a coupler to eliminate as many tube transitions as possible. The electronics bay slides into the recovery tube and sits against a 1 inch coupler. Screw holes at the upper portion of the bay to hold it in place during main deployment. This eliminated at least one transition, decreasing the drag.

At the same time Atha Aerospace was developing a GPS tracking solution, that would interface with the FC-877 for a very neat telemetry package. It was a natural fit to have the AGTS system onboard. Planning is great. I test fitted the components and added the batteries and everything looked really good. When I got on site, I discovered that I had positioned the GPS unit the wrong way. The proper orientation would not allow the batteries to

....A Word From the Big Chair

Committee members and the CAR Executive.

The RSO Committee shall consist of all CAR Certified RSO's, currently: Max Baines, Anthony Cesaroni, Vincent Chichak, Ian Frasier, Wayne Gallinger (Chairman), Lavina Harding, Pierre Laurendeau, Dominique Martel, Bill Wagstaff, Dave Wakarchuk.

EX Committee (Experimental Rocketry Committee)

The EX Committee is responsible for CAR EX policies and procedures. The EX Committee has the following responsibilities:

- Write, review and maintain the CAR Experimental Rocketry Rules and Regulations.
- EX Committee members shall review Experimental and AHPR Project information provided and provide timely, constructive comments to the EX Committee chairman, for inclusion in project reviews.

The EX committee shall initially consist of a chairman and not less than 3 members who are appointed by the CAR executive.

The first appointees are: Vince Chichak (Chairman), Mike Dennett, Dave Wakarchuk, Bill Wagstaff, who shall make recommendations regarding future appointment of members and the requirements for inclusion on this committee.

Contributing to this Issue...

Earthrise would like to thank the following contributors:

Max Baines, Len Bryan, David Buhler, Leon Kemp, Len Lekx, Adrian Liggins, Craig Makarowski, Glenn Mitchell, Mathew Ornaka, Mark Roberts, Dave Ross, Simon Stirling, Ron Veale, Shane Weatherill.

Fire and Ice 2003

Adrian Liggins

Early morning in Chipman, Alberta (50 minutes East of Edmonton): the new launch pads (courtesy of Mike Latta) and Craig Makarowski's computer-controlled state-of-the-art launch system were out in the field and ready to go. The worried looks on the flyers and the nervous glances skyward were due to the poor weather – it had been snowing, the ceiling was at about 1200 ft and the outlook did not look good. As luck would have it though, the conditions rapidly improved and by 9:45am, the roar of high power motors was breaking the chill air. Throughout the day, the temperature ranged between -13°C and -8°C , with a south-easterly wind of 10-15 km/h: the sun even came out briefly. The clubhouse, complete with open fire, provided a welcome refuge between flights for flyers and spectators (about 60) alike.



Jason Andersen's "Five Fin DD" roars off the pad at Fire and Ice 2003.

In all, there were 13 registered flyers, with representatives from the Edmonton Rocketry Club (ERC), Calgary Rocketry Association, Lethbridge Rocketry Association and Cold Lake Rocketry Club. 18 high power flights were launched, plus 23 of mid power or lower. There were 7 certification attempts, of which 5 were successful: these were by Chris Broadbent (L2), Mike Latta (L1), Adrian Liggins (L1), Matt Ornawka (L1) and Alex Parker (L1, junior). In his first level one attempt, Mike Latta's Small Endeavor did a "roman candle" impression on the pad. Jason Andersen's Five Fin DD (five fin dual deploy) level 3 attempt roared off the pad fine: the subsequent lack of deployment resulted in it whistling downwards, followed by a rapid shortening as it hit the frozen prairie.



Chris Broadbent and his Level 2 "I-XAM"

Other notable flights on the day were a scale Arcas, flown by Scott West on an Aerotech K550, while Brian Coles had a nice flight of his rebuilt BBX on an Aerotech J415. Dale Madu had an interesting end to his flight, as his scratch-built sport rocket suffered severe snowmobile trauma (read: "it got run over") while Dave Johnston was out looking for it. Dave also suffered an in-flight mishap, as his Smokin' Wood rocket separated due to forward blow-by into the drogue compartment just before burnout: nice cartwheel,

Sullivan Lake XI—Rocketry Camaraderie

Mark Roberts

Sullivan Lake XI was a blast!

It might have been the fact that Saturday had the best collection of launches that I have witnessed in a single day that made the event so enjoyable. Or, perhaps it was the clear, sunny, fall weather with little wind on Saturday that made my spirits soar. Of course, the weather posed some challenges during the weekend in the form of thunder showers on Friday night and overcast conditions on Sunday which postponed launching until noon. Maybe the drive over the Going-to-the-Sun road through Glacier National Park en route to the launch was the factor that really made this launch stand out in my mind (the journalist Charles Kuralt lists the Going-to-the-Sun road among the ten most spectacular drives in North America). Possibly it was the wide open prairie with its constantly changing variety of clouds and sky patterns that this rocketeer from the dark forests of New Brunswick found so exhilarating. Certainly, all of these factors contribute to the enjoyment level of any launch.

In the case of Sullivan Lake XI, I think there was another factor that made the launch stand out - the camaraderie and goodwill among the rocketeers. As evidence of the good spirit that I experienced at this launch, many of my fellow rocketeers, some of whom I met for the first time at Sullivan Lake XI, were more than willing to help me by loaning tools and supplies or giving me critical expendable items. I borrowed CA glue from John Chin, sandpaper from Len Bryan, a 29mm motor casing and drill and bits from Wayne Gallinger, Vaseline for greasing the borrowed motor casing from a fellow rocketeer whose name I didn't catch (my apologies to whoever it was), black powder from Vince Chichak and Andrew Longdale, and an igniter from Dave Ross. Thanks to all of these people who unselfishly shared these necessities with me. I usually come to launches better equipped and prepared than I was at Sullivan Lake. It was the combination of driving across the border (no black powder in the trunk) and arriving via an intermediate location (my usual collection of tools and supplies was not available to me) that left me empty handed. Thank you to all of these folks whose goodwill enabled me to fly my rockets. The launch organizers and those who helped with various duties also deserve a big thanks for putting on such an enjoyable launch.



Len Bryan's Art Applewhite Flying Saucer lifts off on a CTI H143SS at Sullivan Lake XI.

...Blazing Archer VII

disappeared from sight and was not recovered. Greg Lewis-Paley flew his scratch built "Firestarter" on an I for his Junior Level 2 certification (he's going to need an increase in his allowance now). Ken Bracey of Kingston Aerospace flew his scratch built "BFR" on a Pro38 J300 and air started two I287 Smokeys for a crowd pleaser, and Eric Pearson put his two stage PML Thunder n' Lightning up with a J350 to an I300.

Eric also opened up Sunday's flying with his EZI-65 and an APS "Sparky" I160 motor, which he had in his possession for a few years (thanks for sharing it with us.) He also flew his G10 Goblin on a K445. Robert Jones launched his PML ½ scale Patriot on a K570 (he does at every launch, and I never miss it). Pierre Laurendeau put up his PML BBX on a Pro54 K650 Smokey Sam.

Late in the afternoon Bill Hughes and Glenn Mitchell of the Lost Planet Airmen went for the CAR J Class Complex Altitude record (it was sitting blank, so what the heck they figured). Bill had built a 3" scratch phenolic sustainer with timer that would fire a charge to separate the booster and then light it's own motor, a Pro38 I287SS. Glenn provided the booster using his 3" PML Tomahawk's bottom section that was glassed phenolic powered by a Pro38 I285, and a nomex pad to protect the parachute from the separation charge. At precisely 2.5 seconds the separation event occurred, and half a second later the upper stage lit as planned. During that half second, the booster had passed the upper stage as the Pro38 was still burning! No collision took place however, and the sustainer continued on its flight path while the booster deployed its chute as planned. Unfortunately for the upper stage, the deployment event was less than perfect, and it tumbled down until it landed at the middle of the paved intersecting runways. Although the sustainer was a write off, the electronics were still functioning and it had recorded an altitude of a little over 4100 feet.

Flights by motor

H	I	J	K
21	24	17	9

Certifications

Level 2 /TRA L1	Level 3 /TRA L2
Doug Todd	Jeff Mensh
Greg Lewis-Paley	John Glac

All in all it was two great days with 45 registered flyers, 71 HPR flights, and 124 flights in total. Many thanks to everyone who volunteered to make this a successful event.

...Fire and Ice 2003

though. For the host team, Craig Makarowski had a solid flight of his scratch-built Blue Streak on an Aerotech I284 and his Red Wing ASP on a Cesaroni I240, while John Chin had a similarly impressive flight of his Dextor, also on a Cesaroni I240. Probably the most anticipated flight of the day was the CTI Pro54 K570 production motor demonstration, using Andrew Longdale's 4" Black Brant II. This boosted beautifully, only to be lost visually towards apogee. At time of writing, we're still looking, Andrew.

Towards the end of the day, we got out the club's low-power launch rack, to allow some of our other guests from the general public show off their handy work. Back in the clubhouse, door prizes were given away for the registered rocketeers and the general public.

At around 3:30pm, the weather closed in again, dropping the ceiling and bringing a highly successful day to an end. If you didn't make it this time around, check the ERC web site (www.icrossroads.com/~erc) and look out for Fire and Ice 2004!

The Edmonton Rocketry Club would like to express our sincere thanks to the following:

The Edmonton Soaring Club for generously allowing us the use of their facilities for this event, and their continued support during the day. The contributors of door prizes: Cesaroni Technologies Inc.; Vincent Chichak; High Power Rocket Technologies; Coast Rocketry; Hobby Wholesale. Max Baines, Scott West and Andrew Longdale, who stepped in as RSO, when the original RSO was taken ill. Dave Johnston for bringing the recovery snowmobile. Craig Makarowski and Mike Latta for the long hours spent producing the launcher and pads, respectively. Matthew Ornowka for videoing the event and providing the vid-caps seen here. Edmonton's "A" Channel for airing footage of the event. All the rocketeers and members of the public who came out and put the finishing touches to the event.



Max Baines and Mike Latta at the RSO table.

Roc Lake 6—Flying High in Canada

Max Baines

Southern Alberta - warm summer days, blue skies (Lethbridge is the sunshine capitol of Canada), wide open spaces (over 45 square miles of recovery area) and summer breezes. It is this combination that has allowed the Roc Lake rocket launch to grow over the years to become Canada's premier High Power event. And this year, for 2 unbelievably perfect days, there were NO summer breezes....None! I cannot remember the last time I have ever heard an LCO announce "Come on folks. The wind speed is Zero. Let's get some rockets up here". And I heard that more than once on both the Friday and the Saturday. And, with a standing waiver of 8000 AGL, and a whopping 16 hours of windows to 30,000 AGL spread over the 3 days, there were a lot of great flights. Over 240 in all.

Canadian High Power Rocketry, unlike its American counterpart, is very much still in its infancy. Canada's first HPR event, Sullivan Lake, was only 10 years ago... while LDRS celebrates 22 years. Prior to 10 years ago, Canadian HPR was very much a clandestine affair, smuggling an H or I motor across the border and then showing up at a launch and claiming with a straight face .."You bet! That was one of those NEW full G motors in a really light rocket....Wink Wink".

Today we see solid growth each year, with many new people joining our hobby, and new and more dramatic projects at each event. I have been to several LDRS, along with a couple of Hellfire's (one of my favorite launches) and while Canadian HP rocketry is young, there is no lack of sophistication. Lots of electronics, high quality construction, and some very extreme altitudes. And now, with 3 Canadian HP motor manufacturers, there is no shortage of motors.

The above, combined with Government agencies who are working WITH the hobby, as opposed to against it, makes this a fun and exciting time to be involved in the hobby.

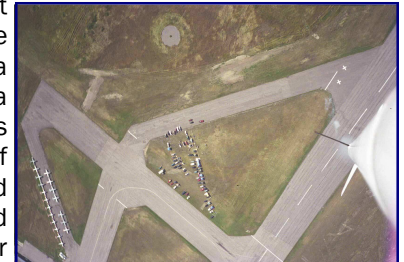
Speaking of our Canadian manufacturers, they were out in full force demonstrating some pretty cool new motors. Here I want to thank the TRA BOD for their promptness in dealing with my inquiry regarding Manufacturer Demo flights— Roc Lake is both a CAR and a TRA event, and the decision by the TRA Board pretty much brought the question of demo flights in to line with current Canadian law, so that both CAR and TRA members could use some of these new motors.

Marcus Leech of Propulsion Polymers made the long haul from Ottawa, showing off his new Hybrid M motor, and then on Sunday setting the new

Blazing Archer VII

Glenn Mitchell

Bill Wagstaff, Ottawa Rocketry Group and Tripoli Quebec again hosted this year's Blazing Archer event, the largest HPR launch in Eastern Canada. As the name suggests, it's been going on for a few years now, but this year was at a new location. In previous years it was held at CFB Mountainview southwest of Belleville. Another possible location had come to our attention, and this marked the first use of the Picton Airport for flying HPR rockets. Most of the feedback from the flyers was very positive, and we look forward to returning there soon.



Len Lekx's ISQY Tomahawk lifts off on a Pro38 J360 at Blazing Archer VII.

Some of the volunteers (which over the weekend included members from A3MAQ, Kingston Rocketry Club, and NAPAS) arrived Friday night and began setup. For ten dollars you could camp at the field for two nights, but you needed to bring everything except your own Port-a-potty. The morning brought light winds and intermediate cloud, but no threat rain for the next two days.. Kingston Aerospace was on hand with plenty of Cesaroni motors, PML kits, accessories and Black Sky products. Food was available for the first time being provided by Betty and Jenn of the Rocket Canteen. Set up continued, and after the flyers meeting at 10am the range was opened

A few model flights occurred (while HPR flyers observed the wind effects), and Bob Pouliot began the HPR activities with his Canadian Express on a Pro38 I212 Smokey Sam. As flyers continued to arrive the HPR pads became more active, and there were a couple of J launches attempted before noon. Mark Hughes unfortunately had a CATO of his PML Nimbus on a Hypertek J115. His bad luck continued in the afternoon with the two-stage launch of his PML Quantum Leap. It was a good flight, but the sustainer landed at the far end of the runway behind trees, and could not be found. (It was recovered the next day though by his Dad, who wanted the \$200 finder's fee Mark had offered.)

Some of the good flights included Len Lekx's Binder Design Raptor on an Aerotech J800 Blue Thunder, Robert Jones' K powered Black Goblin on a Pro54 5 grain Smoky Sam, and Jim Smith's LOC Magnum on a Pro54 K570. Debra Koloms had come up from the United States, and decided to fly her minimum diameter Shock Value on a Pro 54 K445 that she anticipated would get to 13,000 feet. No one can say, as it completely

...Roc Lake 6—Flying High in Canada

after the infamous South Park character Kenny. And since the day this rocket was built, Brad has been trying to kill Kenny. But, up until now, Kenny has proved incredibly resilient. Brad loaded Kenny up with a cluster of 14 of the now out of production but still ERD approved Canaroc D motors, utilizing flash in the pan and thermalite ignition. First the flash, and then 5 of the 14 motors CATO'd, leaving a smoldering and very dead Kenny-to much cheering from the crowd. Kyle, meanwhile, prepped his Poetry in Motion with a single use AT I132 and 4 outboard D-11P's (yup-these guys love clusters). The I132 was given to him by a thankful rocketeer at LDRS 18 after Kyle had found his rocket in the infamous Argonia cornfields. A beautiful flight, the long burn I lifting the rocket slowly and then the outboards providing a great column of smoke, followed by a perfect recovery as the Altaccs fired at apogee. Both Kyle and Brad are graduates of the CAR Junior High Power Certification Program, and it is great to see their continued involvement in rocketry now that they have all the distractions that come with being young adults.



Oh my God! They killed Kenny!

One of the last flights Saturday evening featured the new Pro75 5 grain M1150 in my 4 inch diameter Black Brant 11. This rocket achieved a top speed of 1211 mph (Mach 1.58) and an altitude of 18,357 feet for the highest flight of the launch.

For me, one of the hardest things to accomplish in amateur rocketry is the successful 2 stage flight. Jason Andersen accomplished this feat with his scratch built 2.38 in diameter "Double Whoosh"—twice! First flight saw him use an I240 to a G79SS, and the second with an I287SS to an H110 for a screaming flight to over 8,000 feet.

This year we welcomed rocketeers from 4 different provinces: Alberta, British Columbia, Saskatchewan and Ontario, along with 3 states; Montana, Wyoming and Washington. Plans are already underway for Roc Lake 7, and in 2 years I look forward to welcoming many of you to Roc Lake for Tripoli's first international LDRS.

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Canadian I altitude record with his long burn I-80 in a modified LOC Weasel.

Scott Harrison of West Coast Hybrids brought his new L hybrid motor. Flown by Washington State's Andrew MacMillan, this was a great flight. The motor literally screamed off the pad, and if we had been thinking, Scott and Andrew should have made claim for the Canadian L altitude record, which is currently unclaimed.

Mike Dennett from Cesaroni Technology brought out a bundle of new solid propulsion motors. First up was the 38mm I600 in Mike's own DSR38. This poor little rocket only lasted 1/2 second of the burn before shredding spectacularly as it went through Mach. DSR stands for "Dennett Standard Rocket", and I think Mike will have to be upping his standards before flying this motor again!

The I600 was also used by Vince Chichak as a test flight for his boosted dart project. A hard, fast 8/10 of a second burn boosted the dart way up there. Pleased with the data from the test flight, Vince then loaded the hot, new Pro 54 K1320 into the dart. Just over 1 second into the burn as it went through Mach the dart shook itself apart from the booster resulting in some repairable damage to both halves of the rocket.

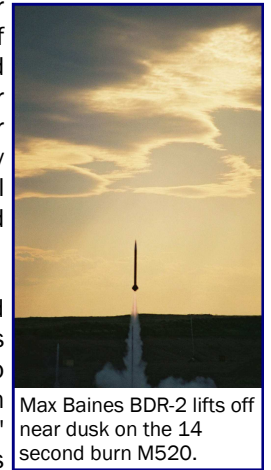


Vince Chichak poses with his K 1320 powered Boosted Dart

Tripoli Montana Prefect Dale Emery also flew the K1320 in his 4 inch Javelin for a hard, fast "Yeegah" kind of flight. Both the K1320 and I600 should be ideal for boosting heavy projects or for modeling certain military rockets where you want a real hard and fast kick off the pad

for added realism.

For me, the coolest of the demos was CTI's new (and now certified) 98mm M520 moon burner. This was launched in my 9 foot tall 6 inch diameter BDR-2 to an altitude of over 15,000 feet. Despite an awesome 14 second burn, this "Eveready Bunny" motor develops over 1000 Ns of initial thrust so it is



Max Baines BDR-2 lifts off near dusk on the 14 second burn M520.

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capable of lifting a fairly good sized rocket. Yet it does it gently— despite the 15000 ft. altitude the BDR-2 did not break mach, achieving a top speed of 650 mph. The full M version of this motor in a minimum diameter airframe will certainly set some new altitude records.

The most anticipated flight of the weekend had to be Team O-Canada's Dauphin project launching on the Pro150 O-5100 and then air starting 2 Pro 75 L-2100's. Team O, made up of Wayne Gallinger, Scott West, Dave Buhler and Ian Stephens, spent 8 months constructing this 300 pound, 22 inch diameter behemoth. The flight could not have been much better, with the O-5100 coming up to pressure almost immediately, and the 2 outboard L's igniting just as the rocket cleared the launch rail. CTI talks about their "instant ignition", and post flight analysis shows that the 2 L motors were at full thrust only 150 milliseconds after the on-board timers initiated ignition. A straight and true flight, parachutes deploying right at apogee and both the nose cone and airframe landing within 500 feet of the launch pad— doesn't get much better! Discovery channel was on hand for this event, along with a number of other



Lift off of the Dauphin.

media, and the resulting coverage will do nothing but good things for our hobby.

My special thanks to Lorna Baines and Ashley McLellan for the tremendous job they did on running the concession booth. Saturday morning, with the unexpected 300 people who showed up for the Dauphin launch, resulted in record sales of both breakfast and lunch, as well as record heat and work. Inadvertently Team O also helped create a second record for the concession with their after launch party which lasted real late into the evening— Over \$50.00 in bottle and can deposits!!!

Here a "hats off" to our LCO crew. Saturday afternoon, with just 15 minutes left on our mid-day 30K waiver, we had 3 large projects on the pads, each of which were projected to over 8,000, and 2 of which were hybrids. Cool

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under pressure, they launched Andrew MacMillan's West Coast hybrids L, Gary Jennings Albatross-2 on a Hypertek M1000, and Dale Emery's Iris on a Pro 98 M2600 Smokey Sam, and still had 5 minutes to spare. Nice job guys. For Dale's Iris, this marked its 11th M flight, and Dale is now talking about retiring this work horse rocket.

A sure sign of growth is the number of certification flights attempted. In total, we saw 18 successful cert flights. Congrats go to:

Level 1	Level 2	Level 3	Level 4
Mathew Buhler	Alex Parker	Jason Andersen	Barry Mackadenski
Gerry Dupuis	Layne Rossi	Chris Broadbent	
George Farris	Blaine Trenholm	Troy Lester	
Dustin Foulds	Greg Varga	Shane Weatherill	
Bethany Kemp	Brad Wall	Michael Wright	
Layne Rossi			
Brad Wall			

Barry Mackadenski's M1010 powered MegaNuk was certainly the most impressive of the successful cert flights. Congrats to all!

Obviously there were way too many sport flights to mention, but there are a few that stand out. Young (+ - 11 years old) Keenan Cox saw the Roc Lake web site and convinced his Dad to make the trek up from Montana to attend. This young man's enthusiasm is very infectious and after watching him launch his fleet of Estes kits on C6's, I offered him one of my last old Aerotech 18mm D-21's. Keenan put this in his Estes Comanche, and for me one of the highlights of Roc Lake was watching his face when this now seriously overpowered rocket streaked off the pad to somewhere waaaay up there. I really enjoy the love of the sport that many of our juniors exhibit.



Barry Makcadenski used Hypertek M1010 power for a successful L4 Cert flight

The Baines Brothers had a fun day on Saturday. Brad has a rocket named