
EARTHRISE

Volume 1, Issue 1 January 1999

A WORD FROM THE BIG CHAIR:

For those of you who do not already know, Earthrise is owned and published by the Canadian Association of Rocketry (CAR) and its purpose is to disseminate information on CAR business to its members. What you will not see in Earthrise is launch reports or product reviews, this you will still receive in the publication Journal of Miniature Astronautics that comes from Advanced Rocketry Group in Mississauga. To the best of my knowledge JofMA will remain unchanged except for CAR reports which will now be published in Earthrise much in the same manner that N.A.R. has Model Rocketeer and Sport Rocketry. For more information on the history of C.A.R and EARTHRISE read Bill Morgan's report on page **FILL THIS**

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In an effort to bring CAR into the new Millennium, we are taking steps to form CAR into an association much the same as N.A.R and Tripoli, taking the best from both and yet still keeping CAR a Canadian organization. In this issue Bill Wagstaff's report on the recent meeting between CLSO, NRCAN and CAR fills you in on what CAR has been doing for all High Power enthusiasts in Canada. The report also hints on other areas that CAR is working on. In future issues, more information will be documented, as it becomes available. In the next year CAR will try to bring in some new and exciting areas to the association that I hope you will all benefit from. Some of these items are an updated insurance policy, and the incorporation of CAR as a not for profit organization. There are other items that we are looking into but I don't want to say too much at this time as they are only in the preliminary stages.

Bill Morgan has also submitted an "Incident Report" for publication and can be found on page fill in. This is required by the CAR policy that states all such incidents shall be investigated by the launch RSO and a report submitted to CAR H.Q. so that it can be published and all may learn from it and keep it from happening again. This and other RSO responsibilities will be outlined in the soon to be published "RSO Requirements and Responsibilities" guide book from CAR.

I, as the National Chairman of CAR, would like to take this opportunity to welcome the new organization NAPAS to the rocketry world and we wish them much success in their work. It is hoped that in future CAR and NAPAS will form a close working relationship as CAR does with NAR and Tripoli. In the next issue of EARTHRISE we will have a report on the NAPAS inaugural general meeting on February 6th, 1999.

As you are all aware CAR is a volunteer run organization and if it were not for the efforts and dedication of its volunteers there would not be a CAR. We owe all of them, past and present, much gratitude.

If you have any suggestions as to how CAR is run, its programs or of any changes you would like to see, please feel free to contact me. After all this is your organization and I want to make it want you want it to be.

Well that's all I have to say for now except, if I may steel a line from JFK and say, Ask not what CAR can do for you, Ask what I can do for CAR.

Vince

Mr. Vincent E.M. Chichak
National Chairman
Canadian Association of Rocketry (EST. 1965)
CAR S165 NAR 74311 TRA 6873

Summary Report of meeting January 8,1999

Between CAR, CLSO and NRCan.

Author: Bill Wagstaff

Attendance:

Vince Chichak, National Chairman, Canadian Association of Rocketry
Bill Wagstaff, National Legislative Liaison, Canadian Association of Rocketry
Lavina Harding, Canadian Launch Safety Office
Jack Ireland, Canadian Launch Safety Office
Dave McCulloch, NRCan Explosives Regulatory Division

This meeting was the third in a series seeking to define a regulatory environment for the conduct of High Power Rocketry by Canadians. CAR, CLSO and NRCan each represent a different interest. CAR represents the hobbyist, CLSO the Minister of Transport's interest in aviation safety, and NRCan the Minister of Natural Resources' interest in explosives safety.

The first of these meetings was held in Lethbridge, Alberta between CAR and CLSO. At this meeting the CLSO document *Requirements for Launching High Power Rockets in Canada* was presented in draft form. This document has been circulated for the review of CAR members, and feedback from those members who commented has been combined into a reply from CAR to CLSO.

The second meeting was held in Winnipeg, Manitoba between CLSO and NRCan. CAR was not invited to attend this meeting, but it is our understanding that the two ministries resolved at this meeting their mutual roles in regulating the hobby.

January 8, 1999 – 8:15 AM

Vince and I arrived a bit early, as there had been a snowfall overnight and we weren't quite sure how long the drive from my place in Stittsville would

take. We were issued visitor badges by the commissionaire, and headed up to the 15th floor. Arriving there, I led the way to the ERD offices and greeted Ysabel Brazal, who processes all of our import permits for rocket motors. Dave McCulloch appeared, and I introduced him to Vince. As we were about 15 minutes early and Lavina and Jack had not yet arrived, he suggested that we have a coffee in the cafeteria and then return.

We returned at 8:30 to find that Lavina and Jack had just arrived. After exchanging pleasantries, we were showed to our meeting room by Dave. Lavina distributed copies of the latest draft of *Requirements for Launching High Power Rockets in Canada*, Dave distributed copies of a NRCan document entitled *Control of Model & High Power Rocketry in Canada*, and I distributed copies of the CAR response to the first draft of *Requirements for Launching High Power Rockets in Canada*.

The remainder of the day was spent on three distinct activities:

- Discussion of the roles of CAR, CLSO and ERD in the control of hobby rocketry in Canada.
- Review and discussion of the latest draft of *Requirements for Launching High Power Rockets in Canada*.
- Numerous sundry issues brought forward by CAR for discussion.

I will summarize the results of each activity separately.

Roles of CAR, CLSO and ERD

The most significant point was a clarification of the role of ERD, who have not until now been actively involved in our ongoing discussions.

ERD is responsible for:

- authorization of motors
- importation of motors
- transportation of motors by road (in partnership with Transport Canada)
- sale of motors
- storage of motors
- certification of Canadians to purchase and use motors

CLSO is responsible for control over motors and rocket activities from the time of arrival at the launch site until departure as described in *Requirements for Launching High Power Rockets in Canada*.

CAR is responsible for:

- representing its members in regulatory discussions
- providing the Canadian certification exam
- providing training and supervision of its members in high power activities
- maintaining records of its membership and their levels of certification
- providing launch insurance coverage for its members
- providing a set of standards and procedures for the qualification of Range Safety Officers
- providing a flight log and a process for ensuring that member certifications remain current
- providing a document outlining requirements for reload motor use

In future, certifications will be issued under the authority of ERD. ERD will maintain a database of all certified persons in Canada, and their level of certification. CAR will administer the Canadian certification exam to its members, will provide an environment for the member to fly their certification flight, and will advise ERD of a member's advancement in certification level. Other rocketry organizations in Canada will perform the same role for their members, and will administer the *same* exam to their members. ERD may issue a certificate to the individual (suitable for framing ☺).

Certifications will have to be maintained in future. A certified person will have to conduct at least one flight at the impulse level of their certification every two years in order to maintain their certification. To support this requirement, certified persons will carry a flight log, which is to be updated by the RSO whenever a high power flight is conducted.

In support of ERD's role in the control of hobby rocketry in Canada, they have committed to revising the existing publication *The Control of Model Rocketry in Canada* to include HPR, and to bring the document into alignment with current regulations. They have also committed to maintaining this document on an ongoing basis.

Review of current *Requirements* document:

The current draft of *Requirements for Launching High Power Rockets in Canada* contained changes suggested by Garth Illerbrun in an independent submission, changes suggested during the Lethbridge meeting, and changes resulting from the Winnipeg meeting. During review of the changes, the official CAR response was also discussed and changes resulting from that document were integrated. CLSO will produce another version of the *Requirements* document for review in approximately March time frame. I will mention the larger changes here, skipping a lot of the detail such as minor changes to wording.

Definitions:

Approved High Power Rocket Motor – Although the definition was not changed, ERD clarified that hybrid motors will now be approved in Canada by ERD. This is a reversal of their previous position, and will not be good news to manufacturers of hybrids, who up to this time believed that no approval would be required. Ottawa Rocketry Group, who is heavily involved in hybrid motor design and development, will give whatever assistance is available to get the program under way.

Certified User – This definition was changed to cite ERD as the only certifying authority in Canada.

Government Personnel – This definition was expanded to include contractors or subcontractors to the Government of Canada involved in launch activities.

High Power Rocket – Changed to 160 ns total impulse and 1.5 Kg

High Power Rocket Motor – Limit on mass of propellant is removed. ERD is in agreement that total impulse is adequate for defining limits, and will remove the propellant mass limit from their regulations.

Hybrid Rocket Motor – This new definition is added.

Model Rocket – Changed to maximum 160 ns total impulse and 1.5 Kg maximum mass.

Rocket – Changed from *propulsive device* to *vehicle*.

Section 4 - High Power Rockets:

4.1.3 – Examples of materials are removed, leaving only *lightweight materials* as the description. The previous draft of the document had not made provision for the use of metal such as screws, wire, cable and other minimal amounts of metal. CLSO clarified at this time their view that choice of materials did not make any difference at the masses and velocities involved in HPR, and stated that lightweight metal construction is acceptable to them for High Power Rockets. This is radically different from US regulations, and will require a change in the CAR safety code to come into compliance. ERD was in agreement that metal was acceptable for High Power

4.3 – High power rocket motors for launch in Canada shall be authorized by ERD. Requirement for certification by CAR, NAR or Tripoli is removed. CLSO is not concerned about suitability for competitive use, only with NRCan's approval. Organizations such as CAR, Tripoli or NAPAS may require certification as well for use in competition.

4.5 – The motor manufacturer need not supply Igniters. Igniters need not be electrical when air starting is being practiced. Time limit of 3 seconds for ignition is removed, again to accommodate gap staging and air starting.

Section 5 – Requirements for Individuals Launching High Power Rockets:

5.2 – Requirement for CAR, NAR or Tripoli certification is removed, and replaced by a requirement for ERD certification. The associations will certify on behalf of ERD, and will use the same exam and certification levels across all associations. Canadian citizens will be able to certify and fly HPR without joining an association. Either Transport Canada or NRCan staff will administer exams and certification flights for these non-affiliated hobbyists.

Section 6 – Launch Site Requirements

6.5 – A formula for determining minimum launch site dimensions was discussed, but was not resolved. CLSO will continue work on this item and will present their results in the next draft of *Requirements for Launching High Power Rockets in Canada*.

Section 9 – Launch Requirements and Restrictions

9.1 – Reference to *certified* HPR motors was removed, leaving only the term *authorized*. Authorization is clarified as being done by ERD.

Section 12 – Contact Information

Contact information for Natural Resources Canada – Explosives Division has been added.

Sundry issues brought forward by CAR

In addition to the review of government documents, we had a list of CAR member concerns, which we wished to discuss with CLSO and ERD. I present them here in no particular order.

Igniters – The previous draft of the *Requirements* document was fairly restrictive on ignition methods, so we requested clarification of ERD's position on igniters. The following answers were provided:

- Thermalite use is okay. We discussed the use of wire-wraps, sheathed thermalite for staging, and using short pieces of thermalite for boosting electric matches and other igniters. All of these are permitted.
- Alternative igniters, which are sold as ready to use, must be approved by ERD. At this time Aerotech Copperheads and Estes igniters are approved.
- Igniter kits such as Firestar which are being commercially offered in the US will need to be approved by ERD before they can be distributed commercially in Canada. It is likely that they will be classified as flammable liquids for shipping due to their solvent content.
- ERD is aware of small-scale manufacture of alternative igniters by hobbyists for their own use, and is not inclined to regulate this area stringently unless there is a problem with accidents or complaints are made.
- Persons engaging in commercial manufacture of igniters must be authorized by ERD and their products must be approved.

Hybrid Motors – As stated above, ERD have reversed their previous position and now intend to approve hybrids. This will vastly simplify the regulations, as all motors must now be approved by ERD.

Testing and approval of new motors – CAR expressed concern at the expense to manufacturers of conducting motor testing in Canada. This expense is preventing manufacturers from offering many motors on the Canadian market. ERD conceded that this expense may not be necessary in all cases, and indicated that there are two possible routes to decreased costs for approval:

- Acceptance of some US testing without the requirement for duplication in Canada. ERD is tasked with conducting UN standard testing on explosives to be sold in Canada. In some cases this testing has already been conducted in the US by a US government agency. In cases where a product to be introduced has already been UN tested, the manufacturer can submit the test results for consideration. NRCan may accept these results at face value and issue an approval based only on the US results.
- Approval by analogy. When a manufacturer wishes to bring a product to market in Canada and that product is essentially identical in manufacture and design to an already approved product by the same manufacturer, approval by analogy may be extended. This process should be of significant value to Aerotech, who could apply to have the Econojet motors approved by analogy to their already approved E, F and G impulse single-use motors.

Importation of reload motor hardware – Aerotech has recently expressed the view that reload hardware cannot be sold in Canada. ERD stated that this is not true, and that only the propellant and delay columns are regulated. CAR asked for a letter stating this, which can be forwarded to Aerotech.

Actions arising from this meeting:

NRCan:

- Dave to work on changes to NRCan regulations as discussed above.

CLSO:

- Lavina to revise *Requirements* document
- Lavina to produce minimum launch site dimensions guideline

- Lavina to produce guideline for certification examiner qualifications

CAR:

- Produce revised HPR exam for approval by NRCan and CLSO
- Produce requirements and standards for RSO qualification
- Produce requirements for reload use in Canada
- Produce first version of HPR Flight Log, and draft process for renewal and certification tracking.

<p style="text-align: center;">Launch/Flight Incident Reports</p>
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While attending Sullivan Lake VI, Lavina Harding and Jack Ireland, of the Canadian Launch Safety Office (CLSO), witnessed the accidental launch of a high-power rocket. Eric Weder, the pad manager, and myself were within approximately 15 feet of the pad when the rocket launched. As the rocket was launched accidentally, there was no warning from the launch control officer, and the sky was not checked for clear airspace or cloud cover.

At the Lethbridge meeting between the CAR and the CLSO, it was recommended by Lavina and Jack that “Incident Reports” be prepared and distributed to the membership in an attempt to avoid similar incidents in the future. The CLSO suggested that the reports include details about the incident, what safety measures or precautions were in place at the time of the incident, the probable cause of the incident, what the potential safety concerns of the incident were, what corrective action was taken, and recommendations to avoid a similar incident in the future. Ideally, the Incident Report would be prepared by the RSO who was on duty at the time of the incident. Incidents that deserve reporting would include those that occur at the pad (accidental launches, etc.), or in flight (staging failures, deployment failures, etc.).

The best venues for disseminating the Incident Reports among the membership would be through EARTHRISE and the Journal of Miniature Astronautics (JoMA). EARTHRISE, as the official newsletter of the CAR, would ensure that this important information is in the hands of CAR members in a timely fashion, on a bi-monthly basis. Inclusion in the JoMA, would ensure that this information is also distributed to other hobbyists who may not be members of CAR. In addition, CAR suggests that a copy of the Incident Report be sent directly to Lavina Harding at the CLSO.

Bill Morgan, CAR S274
CAR Treasurer

The following is the Incident Report for accidental launch noted above.

Incident Report prepared by: Bill Morgan, CAR S274

Date Incident Report prepared: January 30, 1999

Date of Incident: September 26, 1998

Location: Sullivan Lake VI (Lethbridge)

Incident: Accidental launch of a high-power rocket

Details of Incident

With the help of the pad manager, my PML 3" AMRAAM was set up on Pad #6 of the Calgary Rocketry Association's 10 pad launch system. The motor was an Aerotech H180, with a wire-wrapped thermalite ignitor. When the continuity was tested at the relay box, located approximately 15 feet from the pad, the motor ignited and the rocket launched. At the time of the accidental launch, the cloud cover had descended and the rocket went through the clouds. The RSO immediately called a "heads up" over the PA system. The ejection charge was heard and in a few moments the rocket was visible beneath the cloud covers and was successfully recovered.

Launch Procedures/Safety Procedures

The CRA multiple launch system consists of 10 pads. Nine of the pads are connected in-groups to three remote relay boxes. Each relay box is connected to its own power supply, and in turn is connected to three pads. Continuity is tested at the relay box. Pad number 10 is the "away" pad for the large rockets. For this launch, the actual launch control was located approximately 90 feet from the closest relay box.

The RSO, LCO, and a pad manager performed launch management. Safety checks were performed by the RSO, who was responsible for range safety. The LCO controlled the actual launch of each rocket upon confirmation that the range and sky were clear from the RSO. The pad manager was responsible for ensuring that rockets were set up on the assigned pads, ignitors installed and connected, payloads armed, and for continuity testing. Prior to each rocket launch, the sky was scanned for aircraft and conditions.

Safety Concerns

- Potential of injury to people near the pad;
- Concern for aircraft as the rocket was launched into the clouds; and,
- Inability to confirm recovery system deployment until the rocket was back below the cloud cover.

Cause of Incident

The relay box was current checked and the output found to be only 100uA, insufficient to light the ignitor. However, when the box was jarred or bumped, the current jumped to 10+ amps. The relay box was removed and inspected. Upon disassembly of the relay box, a protection diode lead was found to be very close to actually touching the continuity button contacts. With slight movement of the box, the two would make contact, allowing sufficient power to flow to the ignitor.

Corrective Action

The diode lead was put back into position and the relay box assembled and tested. As a precaution for the first few launches, the continuity at that pad

was tested at the main launch control panel, and not at the relay box. There were no further problems subsequent to the repair.

With respect to the low cloud cover, all subsequent launches with altitudes expected to exceed 2,000 feet were suspended until the cloud ceiling changed.

Recommendations

- Prior to the day's launch, the current flowing during a continuity test should be tested with a meter. This will ensure that there will be insufficient amperage flowing during continuity testing to light the most sensitive ignitor expected at the launch;
- If continuity testing is to be conducted at a remote relay box, and not at the main launch controller, only the pad manager should do the test once all others have left the launch pad area.

On a personal note, both Eric Weder and myself agreed that while our view of the launch was awesome, we would not wish to repeat it. To say we were surprised when the rocket launched would be an understatement! I didn't stop shaking for about 10 minutes. You cannot take too many safety precautions.

CAR H.Q. has several back issues of:

- Astromag May/Aug. '96
- Astromag Sept./Dec. '96
- JofMA May '98
- JofMA Sept. '98
- JofMA Dec. '98

Back issues are \$4.00/issue plus \$2.00 Shipping and Handling/order.

CANADIAN ASSOCIATION OF ROCKETRY - 1998
Financial Statement – January 01, 1998 to December 31, 1998

Balance as of January 01, 1998 **\$4,023.35**

1998 Income

Membership Dues, High Power User Fees, Sport Rocketry \$5,749.59

1998 Expenses

Liability Insurance (Renfrew Insurance)	\$972.00
Journal of Miniature Astronautique (ARG)	\$2,456.00
100 Embroidered CAR Crests (Impressions in Thread)	\$312.44
Service Charges (Bank of Montreal)	\$49.50
Head Office Expenses (postage, customs, Sport Rocketry)	\$1,034.44
CAR Banner	\$77.04
Refund on Membership Dues	\$6.00
Payment to Calgary Rocketry Association (Sullivan Lake Fees)	\$40.00
Airfare for Ontario Rep. (Annual Directors' Meeting)	\$820.69
Car Rental for Ontario Rep. (Annual Directors' Meeting)	\$118.77
Accommodation for Ontario Rep.	\$194.88
Dinner for CLSO Officials (Sullivan Lake)	<u>\$70.00</u>
	\$6,151.76

Net Income – January 01, 1998 to December 31, 1998 **(\$402.17)**

Balance as of December 31, 1998 **\$3,621.18**

Prepared by Bill Morgan, Treasurer
January 06, 1998

Upcoming Events:

Alberta Events:

Roc Lake 2 – Lethbridge Spring Fling

High Power & Model Rocket Launch

Lethbridge, Alberta

March 27 & 28, 1999

Sponsored by the Lethbridge Rocketry Association

Cost \$20.00 per adult or family, no charge for juniors

Bring proof of CAR High Power Certification
if you are flying High Power.

Contact:

Max Bains

Work: 403-320-9464

Home: 403-327-3532

Email: andrewh@telusplanet.net

Medicine Wheel II

CFB Suffield, Lethbridge, Alberta

May 29 & 30, 1999

Sponsored by the Southern Alberta Space
Hobbyists (SASH)

Upcoming Events Continued:

Contact:

Ken Latam

Email: sash@telusplanet.net

Competition Launch

Rosebud, Alberta

July 24 & 25, 1999

11:00 am to 5:00 pm.

Sponsored by the Calgary Rocketry
Association (CRA)

Cost \$5.00 per entrant

Junior (<18) and Senior events

Barbecue to be held after the Saturday events

Campground nearby

Contact:

Check the CRA Web page:

<http://www.acs.ucalgary.ca/~dbuhler/cra.htm>

The History of the Canadian Association of Rocketry

Bill Morgan (CAR# S274), Treasurer

The Canadian Association of Rocketry (CAR) has had a long history. Although model rocketry has its origins dating back to the early 1950's in the United States, organized model rocketry did not become a reality in Canada until the mid 1960's. The organization we now know as the CAR has gone through a great number of changes in the last 34 years. The following article is a brief (?) history of our organization.

The history from the early 1960's to the early 1980's comes from an article written by Peter W. Cook titled, "History of Canadian Model Rocketry", published in 1982 in "Space Modeller". In some cases I have condensed the article and in others I have taken from his text verbatim. The history subsequent to the period covered by Peter's article came from a review of CAR headquarters files, and correspondence with Garth Illerbrun, the CAR chairman from 1993 to 1998.

Many of you are aware of the exciting changes happening in all facets of our hobby, be it model or high power rocketry, and even amateur rocketry. After reading through the history of CAR, you will see that CAR's past has always been one of change and adaptation, all of which have been to the benefit of the hobby.

Model rocketry dates its origins back to 1954 when a shoe store owner in Nebraska, Orville H. Carlisle, and his brother Robert, developed the "Rock-A-Chute Mark I". He obtained a U.S. Patent in 1958 for his design, which contained all the elements of a typical model rocket in use today, including a pre-manufactured and ready to use rocket motor. A history of Carlisle's development of the model rocket and the rocket motor appeared in an article by G. Harry Stine, "The Roots of Model Rocketry", published in the January/February 1998 edition of Sport Rocketry.

With the launch of Sputnik atop an A-1 rocket in October 1957, and the subsequent interest in the "space race" of the late 1950's and early 1960's, model rocketry quickly established itself in the United States. In Canada however, under the Explosives Act, rocketry was a banned activity for all but the professional. Model rocket kits and accessories were available, however the model rocket motors could not be imported. By the middle of

1963, pressure mounted on the Federal Government from rocket enthusiasts to legalize model rocketry activities.

In 1964, the Federal Government and the Canadian Aeronautics and Space Institute approached the Royal Canadian Flying Clubs Association (RCFCA) to undertake the organization of model rocketry on a national basis. In 1965 the RCFCA formed the Canadian Association of Rocketry (CAR). At the same time, the RCFCA prepared the "Approved Regulations for Rocketry by Amateurs in Canada". The regulations were to define the conditions that would make model rocketry legal in Canada. The CAR was successfully incorporated as a distinct entity in October 1965, although it remained under the sponsorship of the RCFCA.

In April 1966, legislation was passed which made model rocketry legal in Canada, subject to a number of restrictions. These restrictions were as follows:

- rockets may be launched only in the presence of a Licensed Firing Supervisor on established military ranges or other sites approved by the local municipal government;
- rockets could only be launched at least 10 miles from an airport to a maximum altitude of 1200 feet;
- motors may only be obtained by Licensed Firing Supervisors; and,
- all rocketeers must be members of the CAR.

To become a Licensed Firing Supervisor one had to be a Senior CAR member (21 years or older) and pass a written examination that covered everything from safety standards, to motor operation, and even first aid.

The popularity of model rocketry grew tremendously in the United States, and even internationally, in the late 1960's. However, the restrictions imposed in Canada on model rocketry severely limited its growth here. Although model rocketry was becoming a popular international sport, the RCFCA/CAR did not have the resources to encourage and sponsor competition in Canada.

Out of frustration with the existing regulations governing the hobby, and the lack of active sponsorship from the RCFCA/CAR, a group of rocketeers

established the Youth Aeronautic and Aerospace of Canada (YAAC). The YAAC was established to “create more interest among the youth towards rocket and aerospace sciences, and build up a large strong organization of such, so that we may hope to change some of the strict rules pertaining to model rocketry in Canada”. The YAAC had divisions from British Columbia to Ontario and even developed its own sporting code. However, as anyone participating in model rocketry still had to be a member of CAR, it remained the national rocketry body.

In June 1970, the YAAC met with Energy, Mines and Resources, the Department of Transport, and the RCFCA in an attempt to ease some of the restrictions governing model rocketry. Changes to resulting from that meeting included an understanding by the Government as to the distinction between amateur and model rocketry, and an easing of the 10-mile limit to 5 miles. Subsequent to the meeting, the YAAC came to the decision that the CAR was the best vehicle to serve rocketeers. The YAAC decided to disband and work towards the promotion of the CAR.

In 1971, the Youth Science Foundation (YSF) was approached by the RCFCA to manage the CAR. The YSF was well suited for the task as it had similar objectives to CAR but with a broad science scope. Conducting national science fairs, the YSF had the manpower and resources to support the CAR. As part of the re-organization, various technical subcommittees were organized, and a regular newsletter “EARTHRISE” was published.

Model rocketry became a popular international sport, and in 1972 the First World Space Modelling Championships was held in Vrsac, Yugoslavia. Canadian rocketeers competed in this event on the international stage. The following year, the CAR published its own Sporting Code, based in part on the older YAAC code. It held its first national meet and competition, CARNAT-1, in Edmonton.

The latter half of the 1970’s saw a number of significant regulatory changes that had a positive impact on model rocketry. The requirement for a Licensed Firing Supervisor was lifted, and in co-operation with the Department of Energy, Mines and Resources, a manual detailing all safety requirements by which the rocketeer was to abide by was developed. The sale of model rocket motors was simplified by easing the restrictions on retailers. As a result, model rockets and motors become accessible through more retail outlets. Things were finally going in the right direction.

CAR established a National Committee that included provincial-based representation. CARNAT-2 was held in Olds, Alberta followed by CARNAT-79 in Toronto. Model rocketry was popular and accessible to all. However, despite the increased popularity in model rocketry, membership in the CAR plunged from approximately 2,500 members to 200. Due to the relaxation of the regulations, membership was no longer a requirement to fly model rockets. In addition, interest in model rocketry waned along with the decline in manned space programs.

In the early 1980’s a small group of hard core enthusiasts kept the flame alive and began a re-organization of the CAR. The emphasis was now on competition. The CAR revised the Canadian Model Rocket Sporting Code, and established and maintained the Canadian Model Rocket Performance Records. A five-man team participated once again in international competition at the 1980 World Space Modeling Championships held at Lakehurst, New Jersey. Once again the CAR held a national meet and competition, CARNAT-81, again in Olds, Alberta. Subsequent CARNATs were held in CFB Valcartier, Quebec, and at Keswick, Ontario, in 1982 and 1983, respectively.

Things were pretty bleak for the CAR for the next several years, with the membership being virtually non-existent. As of January 1987, the CAR was no longer associated with the YSF. The CAR became a totally independent association, and had to rely solely on its own members for funding, which was down to less than 20. The last issue of EARTHRISE was published in July 1987. With reorganization of the CAR, the newsletter was revived in late 1987, initially titled “True North”. The newsletter was subsequently changed to “Trajectory” after discovering the name was copyrighted by the Canadian entry in the 1987 America’s Cup Yacht Race! By 1990, the 25th anniversary of the CAR, membership had “grown” to approximately 50 members. Something would have to happen for the membership to grow. That was to be High Power Rocketry.

While these events were unfolding in Canada, High-Power Rocketry was being developed within the United States, allowing adult modellers and post secondary institutions access to commercially manufactured high power rocket motors.

The CAR, through the efforts of the Calgary Rocketry Association (CRA), began lobbying Energy, Mines and Resources in early 1989 to allow the import of composite rocket motors. In addition, they lobbied to change the

existing safety code to allow rockets of up to 2,500 gm in weight and motors of up to 640 n/s of power.

By 1993, Energy, Mines and Resources had the first Draft High Power Rocketry Regulations in place. In September 1993, the first CAR sanctioned High-Power Rocket launch was held at Sullivan Lake, Alberta. Memberships in CAR grew as High-Power Rocketry increased in popularity.

Under the High Power Rocketry Regulations, access to High-Power rocket motors was restricted to senior members of CAR (18 years of age or older) who have completed the CAR High Power User Certification Program. The program was controlled by the Explosives Branch of Natural Resources Canada (formerly Energy, Mines and Resources) and the rules, regulations, and statutes for the program were set forth in the “The Control of Advance High Power Rocketry in Canada”.

Subsequent to 1993, the CAR has worked closely with NRC to continue to revise and update the Model and High Power Rocketry regulations and safety codes. NRC prepared draft legislation released during the summer of 1998 incorporating many of the CAR’s recommendations. One of the more significant changes to come about as a result of the CAR’s lobbying efforts was to have “G” class rocket motors classified as a model rocket motor.

Transport Canada through the Canadian Launch Safety Office, the other major federal department controlling our activities, continues to show support and direct assistance in locating launch areas throughout the nation where our activities can be conducted safely with no conflict or danger to civilian or commercial air traffic.

High-Power Rocketry is expected to grow in popularity, and the CAR and its affiliate clubs will continue to be at the forefront. Along with the six successful Sullivan Lake launches hosted by the CRA, High Power Rocket launches have been held at other venues in Alberta, Saskatchewan, Manitoba, Ontario, and Quebec. We expect that during the later half of the decade other groups including the A3MaQ in Quebec, the Toronto Rocket Club, and the Saskatchewan Rocketry Association, to name a few, will also be hosting High-Power events on a routine basis.

The CAR is also working on reciprocal agreements with our sister organizations within the United States (NAR, and Tripoli) for recognition of

CAR's High-Power certification process. When finalized, certified CAR members will have access to American High-Power launches.

What will the future bring? Keep reading future issues of “EARTHRISE” and keep checking the CAR Web page to find out. Plans are in the works for another CARNAT in the year 2000, CAR’s 35th anniversary.

I hope the history of the CAR that I’ve presented has captured most of the highlights of the organization’s 34-year history. Obviously the CAR would not be the organization that it is without the help of volunteers. The number of people who have made significant contributions to the CAR in the past is great, however a special thanks should go to those who volunteered to hold the CAR Chairman position: William Paris; Peter Cook; Taras Tataryn; Fritz Gnass; and Garth Illerbrun (I hope I got them all!).

Bill Morgan (CAR# S274), Treasurer
bill-morgan@home.com

About the author:

I live in Calgary where I am a Professional Geologist. I work for an engineering firm, Clifton Associates Ltd., as a senior project geologist. My work is primarily in the fields of soil and groundwater remediation, with a special focus on issues related to railways. I am soon to be 40 years old, and am married with one 10-year-old son. I’m not a true BAR - my older brother was the one who flew rockets when we lived in Detroit back in the late 1960’s, I was just the recovery crew. I enjoy all aspects of the hobby, from Model to High-Power rocketry, sport, and competition. I flew a modified LOC Graduator on an H140 for my 320 n/s certification at Medicine Wheel II. I plan on obtaining my 640 n/s certification at the next Medicine Wheel using my PML 3” AMRAAM. I am active in the Calgary Rocketry Association (CRA), also as treasurer (I honestly did not realize that I was volunteering for both when I was asked!). Please visit the CRA Web page: <http://www.acs.ucalgary.ca/~dbuhler/cra.htm>

Now that we’ve told you all about the CAR, how about telling us about your club. It can be the club’s history, or just who and where you are located. Tell us where you fly, how many members you have, what the club’s focus is, and more importantly, how people can get in touch with you. Let’s get the information out there!

CLUB MEETINGS AND LAUNCHES:

Calgary Rocketry Association

First Quarter 1999 Meetings and Launches

Meetings:

February 7, 1-3p.m. – Fiberglassing

March 7, 1-3p.m. – Building Session – AVI Delta KattBoost
Glider

Launches:

February 21, 10a.m. To 1p.m.

March 21, 10a.m. To 1p.m.

Check the CRA Web page for details/changes:

<http://www.acs.ucalgary.ca/~dbuhler/cra.htm>

Edmonton Rocketry Group

Meetings and Launches

Meetings:

1st Saturday of each month

Launches:

2nd and 4th Sunday of the month

Please submit your meeting and launch information for next issue.

In future this newsletter shall have more advertising space available. All proceeds received will go to CAR in order to support this newsletter.

Rates will be:

Classified : \$2.00/add

Commercial : ¼ \$10.00/issue

½ \$20.00/issue

Full \$40.00/issue

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