



Canadian Association of Rocketry Association canadienne de fuséonautique

Technical and Safety Review

CAR/ACF High Power Technical and Safety Review Process

Current Revision: v1.6

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Revision History:

Aug 4, 2005 - Ian Stephens, based on Dave Ross AHPR document 2003
Mar 1, 2006 – Shane Weatherill; updated CAR/ACF HQ Address
Jan 30, 2009 – Shane Weatherill; updated CAR/ACF HQ Address
Sept 8, 2009 – Shane Weatherill; minor changes
Jan 26, 2017 – David Buhler; updated CAR/ACF HQ Address
Jul 18, 2017 – Shane Weatherill; updated Requirement 1

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Overview

With the prospect of advanced HPR activity in Canada to the pending Transport Canada recognition of Advanced HPR (AHPR), it is appropriate for CAR/ACF to develop and keep up-to-date the Technical and Safety Review (TSR) process for extreme HPR and Advanced HPR projects. These projects are continually advancing the skill and knowledge of CAR/ACF members that are outside the strict definitions of Model and HPR rocketry. Typically, these projects are highly individualistic, undefined and can only be dealt with on a case by case basis. It is only appropriate that CAR/ACF review them, much like L4 Certification projects, only more so.

It is important to note that this policy and process is to ensure that projects are as safe as possible. This includes, for example, making sure that the proposed launch site is appropriate for the rocket; that the avionics are capable of controlling the flight in the event of an adverse condition; and that the flier (or team) has done the necessary planning and design work to ensure a stable and safe flight.

This process is mandatory for any project:

1. with a planned apogee of greater than 35,000 AGL;
2. with a total installed impulse greater than 40,960 Ns (Adv HPR);

The process itself is quite simple – the flier or team prepares a document describing their project and submits it and a cover form to CAR/ACF HQ for review, at least 60 days prior to the planned flight date. CAR/ACF HQ reserves the right to require more time to approve a project should the project be incomplete or require changes. The process is described in detail below.

Use the **Technical and Safety Review Cover Form**, available for download from CARWeb, at www.canadianrocketry.org, or from your local club's CAR/ACF Liaison, or write to CAR/ACF to have one mailed to you.

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Requirements

To submit a project for a **CAR/ACF Technical and Safety Review**, the following requirements must be met:

1. The flier of record must be certified at the level of the rocket being flown;
2. The flier or team must prepare and submit a detailed technical description of the project, addressing the following topics:
 - 2.1 Overview and Flier/Team experience
 - 2.2 Airframe Configuration, Design, Construction
 - 2.3 Propulsion System Description
 - 2.4 Avionics Description
 - 2.5 Recovery System Description
 - 2.6 Flight Profile(s)
 - 2.7 Launch Site Requirements
 - 2.8 Launch Criteria
 - 2.9 Checklists and Countdown
3. The flier or team must complete the **Technical and Safety Review Cover Form**.
4. The flier or team must submit the technical description of the project and the **Technical and Safety Review Cover Form** to CAR/ACF HQ at least 60 days prior to the planned launch event.

Process

The detailed process consists of the following steps as outlined below.

1. The flier or team prepares their Project Description and **Technical and Safety Review Cover Form** in either hardcopy or PDF files via email.
2. The flier or team submits the package to CAR/ACF HQ at least 60 days prior to the planned launch event.
3. CAR/ACF HQ will forward copies of the **Technical and Safety Review Cover Form** and project description to the following CAR/ACF Committees:
 - 3.1 Executive
 - 3.2 DRC Committee (Airframe Integrity and Flight Profile Review)
 - 3.3 RSO Committee (Range Safety Implications)
 - 3.4 EX Motor Committee (Motor Safety and Reliability)
4. Each CAR/ACF Committee shall review the documentation and provide feedback to the CAR/ACF Executive.
5. The CAR/ACF Executive shall prepare a written review of the project. This written reply document shall consist of comments from the above committees.
6. This written review shall constitute an acceptance or denial of the project under CAR/ACF rules and regulations. In the event of approval this project analysis and review may highlight the positive aspects of the project.
7. In the event that the project does not meet the standards maintained by all 4 reviewing committees, then CAR/ACF will deny the project. Project organizers are welcome to rectify the outstanding issues and re-apply.

Additional Information

The CAR/ACF Technical and Safety Review shall not contain any technical details. It is solely a statement of project acceptability under CAR/ACF Rules, Safety Codes and Regulations. It shall be available to all interested parties.

If the ongoing development of the project causes concern to any of the above review committees, CAR/ACF reserves the right to review and amend this process on an ongoing basis even if this means denying a project previously deemed acceptable.

Failure to comply with the requirements and results of the **Technical and Safety Review** can result in membership termination.

Frequently Asked Questions

Q: I've already submitted my project description to TRA by filling out the TRA class 3 package, do I have to go through this process too?

A: Yes, you would only have to do the TRA class 3 package if you planned to only fly the project under the TRA banner. You are still bound by the Transport Canada Document "Launching HPR in Canada" while flying in Canada no matter the organization banner you fly under. This may require different information that what is required in the TRA Class 3 package.

Q: Can't I just send the TRA class 3 package to CAR/ACF HQ, isn't that good enough?

A: As above it may be the first step in the process as long as the requirements listed above are met. CAR/ACF and Transport Canada, representing the public, need detailed information in order to ascertain the level of risk to the public and to communicate any concerns to the flier or team.

Q: There is some proprietary information related to my project and I don't want to share it.

A: In order to do a thorough review, each of the CAR/ACF Committees needs to see all the information, thus we need full disclosure. Since CAR/ACF is concerned with amateur, sport and non-commercial rocketry, it may be inappropriate to consider some aspects of any project proprietary from a commercial perspective.

Q: I'm going for a record and I'm using some super secret new technique that I don't want to share until after my flight.

A: Again, in order to do a thorough review, each of the CAR/ACF Committees needs to see all the information, thus we need full disclosure. Safety is our number one concern and it's more important than any perceived need for secrecy.

Q: There seems to be a ton of paperwork required for this, why can't I just submit a one or two pager?

A: The **Technical and Safety Review** covers the extreme end of the HPR spectrum and all AHPR activities, so it needs to have a thorough project description and review process. It is a requirement for future insurance considerations as well as ensuring Transport Canada that we can regulate our own activities while keeping public safety as our number one concern.

Q: CAR/ACF HQ has denied my project and I disagree – I'm going to fly it anyway.

A: A Project that has been denied after the **Technical and Safety Review** will not be allowed to launch at a CAR/ACF sanctioned launch. RSOs will be apprised of the denial and may face disciplinary action if a denied project is allowed to fly at a CAR/ACF sanctioned launch. The flier or team who fly their project while it is denied will have their membership(s) revoked.

A flier or team who have their project denied are free to rectify the concerns raised by the reviewing committees and resubmit the project description to CAR/ACF HQ for a fresh review. This is the only "appeal" available. Address the concerns, then resubmit.