



Canadian Association of Rocketry

Technical and Safety Review

Overview

With the prospect of legal EX activity in Canada, the pending Transport Canada recognition of Advanced HPR (AHPR), as well as the growing exposure of Rocketry in the public media, it is now appropriate for CAR to pro-actively introduce the Technical and Safety Review (TSR) for extreme HPR and Advanced HPR projects. These topics are new to CAR and deal with projects 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 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 will be 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, 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 on an as-need basis for the foreseeable future.

It is important to note that this new policy and process is not intended to prevent any flier or group from flying their project, rather the intent is to ensure that all appropriate steps have been taken to make the project as safe as possible. This includes, for example, making sure that the proposed launch site is appropriate for the rocket; that the avionics area 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 25,000 AGL;
2. with a loaded pre-liftoff weight of 100 lbs (45.36 Kgs)
3. with a total installed impulse greater than 40,960 Ns (Adv HPR);
4. with a total installed impulse of 10,240 Ns in a complex HPR rocket (staged or clustered);
5. using a rocket motor that is not certified and has a potential total installed impulse greater 10,240 Ns, including, but not limited to bi-propellant, liquid, or "tribrids", and including manufacturer demos;

6. that is being specifically filmed by the media.

The process itself is quite simple – the flyer or team prepares a document describing their project and submits it and a cover form to CAR HQ for review, at least 60 days prior to the planned flight date. CAR 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 Liaison, or write to CAR HQ to have one mailed to you.

Canadian Association of Rocketry
71 Bermuda Close NW
Calgary, AB T3K 1G4

Requirements

There are few requirements to submit a project for a **CAR Technical and Safety Review**, they are:

1. the flier of record must be certified at the level of the rocket being flown;
2. the flyer or team must prepare and submit a detailed technical description of the project, addressing the following topics:
 - 2.1 Overview and Flyer/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
 - 2.10 Media Coverage (if applicable)
3. the flyer or team must complete the **Technical and Safety Review Cover Form**.
4. the flyer or team must submit the technical description of the project and the **Technical and Safety Review Cover Form** to CAR 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 flyer or team prepares their Project Description and **Technical and Safety Review Cover Form** in either hardcopy or PDF files via email;
2. the flyer or team submits the package to CAR HQ at least 60 days prior to the planned launch event, and **prior** to any public announcement or 3rd party promotion of the project;
3. CAR HQ will forward copies of the **Technical and Safety Review Cover Form** and project description to the following CAR Committees:
 - 3.1 Executive Committee
 - 3.2 L4CC 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 Committee shall review the documentation and provide feedback to the CAR Executive;

5. The CAR Executive shall prepare a written review of the project. This written reply document shall consist of comments from the CAR executive as well as the reviewing;
6. This written review shall constitute an acceptance or denial of the project under CAR rules and regulations. In the event of approval this project analysis and review may highlight the positive aspects of the project and or benefits to media/sponsors;
7. In the event that the project does not meet the standards maintained by all 4 reviewing committees, then CAR HQ will deny the project. Project organizers are then welcome to rectify the outstanding issues, if possible, and re-apply.

Additional Information

In order to protect CAR programs and procedures from public implied approval, it must be emphasized that the Technical and Safety Review **must** take place prior to any public announcement, sponsor solicitation or media involvement.

The CAR Technical and Safety Review shall not contain any technical details nor intellectual properties associated with the project. It is solely a statement of project acceptability under CAR Rules, Safety Codes and Regulations. It shall be available to any and all interested parties.

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 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 25K form, do I have to go through this process too?

A: Yes, you would only have to do the TRA 25K form if you planned to only fly the project in the US. Even though you might still be flying at a "TRA" launch in Canada, all rocketry activity in Canada follows Transport Canada regulations and CAR administered programs and Safety Codes.

Q: Can't I just send the TRA 25K form to CAR HQ, isn't that good enough?

A: No, we need more information that the TRA 25K form covers because the process covers Advanced High Power Rocketry as well as the extreme end of the HPR spectrum. CAR 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 flyer 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 Committees needs to see all the information, thus we need full disclosure. Since CAR 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 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 like the TRA 25K form?

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 HQ has denied my project and I disagree – I'm going to fly it anyway.

A: Since HPR launches in Canada, even TRA launches, require a CAR Certified RSO to manage the event, any project that has been denied after the **Technical and Safety Review** will not be allowed to launch at a CAR 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 sanctioned launch. The flyer or team who fly their project while it is denied will have their membership(s) revoked.

A flyer 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 HQ for a fresh review. This is the only "appeal" available. Address the concerns, then resubmit.

Current Revision: v1.5

car_technical_safety_review_v1.5_20170718.doc

Revision History:

Aug 4, 2005 - Ian Stephens, based on Dave Ross AHPR document 2003

Mar 1, 2006 – Shane Weatherill; updated CAR HQ Address

Jan 30, 2009 – Shane Weatherill; updated CAR HQ Address

Sept 8, 2009 – Shane Weatherill; minor changes

Jan 26, 2017 – David Buhlerl; updated CAR HQ Address

Jul 18, 2017 – Shane Weatherill; updated Requirement 1

Copyright 2017 Canadian Association of Rocketry