

CARAC Part V AIRCRAFT MAINTENANCE & MANUFACTURING

Recreational Aircraft Working Group

FINAL REPORT

Background

The CARAC Part V Recreational Aircraft Working Group was formed at the CARAC Part V Maintenance and Manufacturing Technical Committee meeting held in Ottawa on January 10-11, 2006.

The Terms of Reference detailed the mission of the Working Group primarily in the form of the Objective and Scope. As discussed at the Technical Committee meeting, the Terms of Reference were framed to be quite general to allow the Working Group to deal with the greater issue of the future direction of non-certified aircraft as effectively as possible. As such the Working Group members agreed at the first meeting to directly address the Terms of Reference Objective and answer the questions posed by the Scope at the end of the Working Group deliberations.

These items are:

OBJECTIVE

The primary goal of the working group is to recommend removing unnecessary bureaucratic burdens, while maintaining or enhancing existing safety levels, and bringing the technical and operational standards into line with current and future technological advancements.

SCOPE

Working group members will review the regulations and standards relating to the operation of Powered Parachutes, Basic Ultra-light aeroplanes, Advanced Ultra light aeroplanes, Amateur Built aircraft, Owner Maintenance and the personal use of Limited category aircraft. In their deliberations, the group shall not consider any commercial use operations conducted under Part IV subpart 6 or Part VII of the CARs. Subject to these limitations, the working group shall provide recommendations to the Maintenance & Manufacturing Technical Committee as to how the regulations and standards can be amended and simplified. In particular, they should address the following questions, including, but not limited to:

1. Are the current separate classifications of recreational aircraft necessary, or could some of them be combined?
2. Should new kinds of recreational aircraft be recognized, either by the introduction of new categories, or by inclusion in the existing categories? e.g. US Light Sport Aircraft category or the LAMAC proposal for personal aircraft.

3. Can the existing standards be amended to take into account the recent and future technological advances in amateur built construction? Conversely, should the criteria for amateur built aircraft be limited to the construction of conventional, relatively low performance aeroplanes?
4. Are the present weight and capacity requirements for amateur built, owner maintenance and limited category aircraft, appropriate?
5. Should advanced technology aircraft be dealt with in a new category or group subject to unique standards?
6. Do we have the right definition for high performance?
7. Should we make provision for “builder assist” programs and other aircraft that do not meet the 51% home-built requirement?
8. Should skill and / or knowledge requirements be established for persons who maintain recreational aircraft, such as those that are applicable in the USA? If so, should “grandfather provisions” be established for existing owners who may not meet those standards?
9. Do the regulations/standards adequately address the maintenance of recreational aircraft such as, amateur built, owner maintenance, limited and ultra-lights (basic and advanced)?
10. Is it appropriate to continue to have classifications that are not subject to the need for a flight authority or can there be a wider range of aircraft that are not subject to the requirements?
11. Can changes be made to Advanced Ultra-light Aeroplanes flight authority or equivalent requirements without imposing additional construction or maintenance requirements?
12. Are the existing (operations) regulations adequate to address these aircraft?
13. Is there a viable way to amend the standards so that all classes of Canadian recreational aircraft would be acceptable for flight in US airspace, and vice-versa?
14. With regard to Limited category, does the current Minister’s Exemption appropriately address the recreational use of aircraft groups that are identified within the exemption? e.g. Non-type certificated aircraft, or ex-military aircraft.
15. Should there be a centrally managed system for reporting and notifying recreational aircraft owners of design and maintenance deficiencies?
16. Will any changes or recommended changes affect the existing use of recreational aircraft?

In addition, two extra issues were requested to be added to the list by Transport Canada Aircraft Certification and were addressed by the Working Group:

17. The relative safety of type certified and non-type certified aircraft
18. The potential impact for type certified aircraft

These specific questions will be addressed at the conclusion of this report.

The Working Group held five meetings, one in each month from February to June 2006. This final report of the Working Group was agreed to by all members of the Working Group at the June meeting. To keep this final report as brief as possible many of the intermediate steps, debates and interim deliberations of the Working Group have not been referred to.

Existing and Proposed Categories

The fundamental matters that the Working Group were asked to examine was the complexity of having the present five categories of non-certified aircraft, plus the potential addition of three new requested categories for a possibility of 8 categories. The five existing categories are:

1. Basic Ultra-light Aeroplanes and Powered Parachutes
2. Advanced Ultra-light Aeroplanes
3. Amateur-Built Aircraft
4. Owner Maintenance Aircraft
5. Limited Class

The three new requested categories are:

1. US Light Sport Aircraft
2. LAMAC Personal Aircraft
3. “Advanced Amateur-Builts” - Turbine, pressurized, non-certified aeroplanes over 5000 lbs and 4 seats that do not meet the requirements of the current amateur-built rules.

Recommendations of the Working Group

The Working Group makes the following recommendations to the Maintenance and Manufacturing Technical Committee:

General

1. **Recommendation:** Create a new single category to provide a home for all non-certified aircraft except Basic Ultra-lights. Powered Parachutes and Limited Category aircraft.
2. **Recommendation:** That all aircraft except Basic Ultra-light Aeroplanes and Powered Parachutes should be subject to a flight authority document (subject to the caveat in [Recommendation 22](#) for the Advanced Ultra-light Aeroplanes).
3. **Recommendation:** That the new category should be called “*Special Certificate of Airworthiness – Personal Transport*” and their flight authority document should identify the basis of issuance (acceptability criteria). This is to allow identification of the applicable limitations, etc, and avoid foreign authorities such as the FAA being unable to differentiate between different groups for their own purposes. This would be important, for example, in the case of owner maintenance aircraft that are not allowed to operate in US airspace. Being unable to discriminate between those and amateur built aircraft could result in the amateur built aircraft being denied entry. The amateur built flight authority would therefore read *Special Certificate of Airworthiness – Personal Transport* and the applicable qualifying criteria would be listed as *Amateur Built*, confirming that the aircraft was built in accordance with the amateur built standards.

Amateur-builts

4. This would be one of the acceptable standards by which an aircraft would qualify for the *Special Certificate of Airworthiness – Personal Transport*. Any aircraft that exceeds the [CAR STD 549 \(CAR 507 Appendix “C”\)](#) weight or occupancy limits would be placed in a separate category (identified in [Recommendation 6](#)).
5. **Recommendation:** The current [CAR STD 549 \(CAR 507 Appendix “C”\)](#) amateur-built criterion limits are appropriate in all cases. These are currently, and should remain as:
 - a. Fixed wing aeroplanes (4 seats 5000 lbs gross weight)
 - b. Helicopters (2 seats 1540 lbs gross weight)
 - c. Gliders (2 seats 1650 lbs gross weight)
 - d. Powered gliders (2 seats 2000 lbs gross weight)
 - e. Balloons (4 occupants, 2200 m³ volume and empty mass of 1000 lbs)

- f. Airships (2 occupants, 4300 m³ volume and empty mass of 5511 lbs)
 - g. Gyroplanes (2 seats 1540 lbs gross weight)
 - h. Gyrogliders (2 seats 1125 lbs gross weight)
6. **Recommendation:** That amateur-built aircraft that exceed the weight or occupancy limits of the exemption to [CAR STD 549 \(CAR 507 Appendix “C”\)](#), as well as all pressurized, turbine powered, amateur built aircraft, be placed in a new *Special Certificate of Airworthiness – Personal Transport – Advanced Amateur-built* sub-category. Aircraft in the this sub-category will be required to conform to all the requirements of the amateur-built rules and would also be subject to the assessment, operational and maintenance limitations of [CAR 507 Appendix F](#), including the requirement for maintenance releases signed by an AME. [CAR 625 Appendix “A” Elementary Work](#) privileges would be adjusted to provide some additional maintenance privileges for owners of these aircraft (to be determined later through CARAC).

Owner-Maintenance & Vintage

7. **Recommendation:** To keep the current Owner Maintenance Aircraft category as it is in the short term, except for the following:
- a. Because the requirement for who can sign the maintenance release on Owner Maintenance Aircraft is illogical and inconsistent with the rules for Amateur-builts, that the wording in [CAR 571.11](#) (2) (d) which says:

“(d) in the case of maintenance performed on an aircraft that is operated under a special certificate of airworthiness in the owner-maintenance classification, the person is a licensed pilot and an owner of the aircraft” be amended to read:

“(d) in the case of maintenance performed on an aircraft that is operated under a special certificate of airworthiness in the owner-maintenance classification, the *owner* of the aircraft.”
 - b. The current requirement to “X” dataplates should be removed as soon as possible. The practice has not proved of value in operational experience and is inconsistent with Amateur-built and Limited Category aircraft. It is likely that, at some point, these “X”ed aircraft will require new dataplates as a result.
8. **Recommendation:** To create a new “vintage category” that would mirror the proposed new US vintage category. This would essentially be similar to the Owner Maintenance Aircraft category, but with the following parameters:
- a. No aircraft weight or size limits,
 - b. Flight authority would be a *Special Certificate of Airworthiness – Personal Transport - Vintage*

- c. AME signature for maintenance releases
 - d. Expanded [CAR 625 Appendix “A” Elementary Work](#) privileges
 - e. Would use “acceptable data” for modifications.
 - f. Eligibility would be the same as the proposed US category
 - g. Entry into this new category would not be reversible. Once an aircraft was in the category, it could not become a certified aircraft again.
 - h. There would be no "X"ing of dataplates or serial numbers on engines or other components.
9. **Recommendation:** This new *Special Certificate of Airworthiness – Personal Transport – Vintage* classification would not be created until after the FAA had actually implemented it in the USA, to ensure acceptability in both countries.
10. **Recommendation:** To terminate new entries into the Owner Maintenance Aircraft category at the time when the new vintage category becomes available.

This recommendation was the consensus of the Working Group, but it is controversial. Some Working Group members have indicated that they think that the original reasons for creating the Owner Maintenance Aircraft category are still relevant and that the Owner Maintenance Aircraft category should still accept new aircraft after the Vintage category has been created. This would allow the benefits of this and the other categories to determine whether there is further demand for the Owner Maintenance category or not. If there is no further demand then it will diminish of its own accord over time and if not then it shows that it still fills a need in Canada, despite its limitations.

11. **Recommendation:** At the point that the *Special Certificate of Airworthiness – Personal Transport – Vintage* category is created existing Owner Maintenance Aircraft would then be able to
- a. Stay where they are as *Special Certificate of Airworthiness – Personal Transport-Owner Maintenance Aircraft* indefinitely.
 - b. Move to another category if they meet the criteria for that category.

Basic Ultra-lights & Powered Parachutes

12. **Recommendation:** To exclude Basic Ultra-light Aeroplanes and Powered Parachutes from the new proposed *Special Certificate of Airworthiness – Personal Transport* category. The Working Group agreed that the new category would have a *Special Certificate of Airworthiness – Personal Transport* and that Basic Ultra-light Aeroplanes and Powered Parachutes should be excluded because they meet no standards of design, construction or maintenance against which to issue a flight authority. The Working Group agreed that the current rules for Basic Ultra-light

Aeroplanes and Powered Parachutes are appropriate and that they control risks acceptably because the aircraft in the category do not carry unlicensed persons as passengers.

Advanced Ultra-lights

13. **Recommendation:** DS 10141 *Design Standards for Advanced Ultra-light Aeroplanes* would be one acceptable method to put an aircraft in the new *Special Certificate of Airworthiness – Personal Transport* category.
14. **Recommendation:** That LAMAC act as a mandatory recommending authority to TC for all new manufacturer *Declarations of Compliance* for the *Special Certificate of Airworthiness – Personal Transport - Advanced Ultra-light Aeroplanes* sub-category. This is to provide a level of oversight to the extent that LAMAC is confident that the aircraft meets the design standard DS10141.
15. **Recommendation:** That the owners of individual Advanced Ultra-light Aeroplanes applying to enter the *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes* category be required to submit a Weight And Balance Report for the individual aircraft as is currently required by [CAR STD 507.06\(13\)\(b\)](#).
16. **Recommendation:** That the current Advanced Ultra-light Aeroplane category continue to exist until the new *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplane* category is operational. At that point no new aircraft would be accepted in the old Advanced Ultra-light Aeroplane category. After that date existing individual Advanced Ultra-light Aeroplanes could be moved to the new category or could remain in the existing Advanced Ultra-light Aeroplane category at the owner's discretion.
17. **Recommendation:** That manufacturers of Advanced Ultra-light Aeroplanes be required to submit a *Declaration of Compliance* to LAMAC for recommendation, and TC for acceptance, for new Advanced Ultra-light Aeroplanes designs to be placed in the *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplane* category prior to the issue of new *Statements of Conformity* for new individual aircraft. Manufacturers of existing Advanced Ultra-light Aeroplanes currently on the *TC Listing of Models Eligible to be Registered as Advanced Ultra-Light Aeroplanes (AULA)* would be required to submit a new *Declaration of Compliance* to LAMAC for recommendation, and TC for acceptance, for existing Advanced Ultra-light Aeroplane designs that they wish to continue to produce to be placed in the *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplane* category. No new AULAs would be permitted to enter the old AULA category after the new *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplane* category is operational.

18. **Recommendation:** That existing Advanced Ultra-light Aeroplanes that stay in the old Advanced Ultra-light Aeroplane category would be able to be moved to the new *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplane* category at any time, but once transferred, would not be eligible to move back.
19. **Recommendation:** That all existing individual Advanced Ultra-light Aeroplanes be eligible for the new *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes* category regardless of whether the manufacturer still exists or not and regardless of whether the manufacturer submits a new *Declaration of Compliance* for these aircraft. These Advanced Ultra-light Aeroplanes would not be subject to the need for a new *Declaration of Compliance* or *Statement of Conformity*. A new *Declaration of Compliance* would only be required if the manufacturer wanted to build more complete aircraft or kits.
20. **Recommendation:** The new *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes* category would allow modifications with “acceptable data”.
21. **Recommendation:** That the new *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes* sub-category maintenance requirements would be CAR 625 Appendices B & C, with the owner authorized to sign all maintenance releases. Essentially these aircraft would be maintained in the same manner that amateur-built aircraft are maintained.
22. **Recommendation:** That for the incorporation of existing individual Advanced Ultra-light Aeroplanes in this new *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes* sub-category the required Flight Authority and new *Certificate of Registration* must be issued at no cost or charge to the owner if the aircraft is transferred within a specified period of time (i.e. two years from promulgation of the new category). If this cannot be done without charge during the transition then Advanced Ultra-light Aeroplanes must be excluded from the new *Special Certificate of Airworthiness – Personal Transport* category as this charge cannot be justified. A charge would be acceptable for issuance of a Flight Authority and *Certificate of Registration* for aircraft entering the category after the specified date.
23. **Recommendation:** That aircraft accepted into the new *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes* sub-category continue to be excluded from complying with most of the CARs that they are currently excluded from. These are:
- Destination Fuel requirements (destination plus 30 minutes worth of fuel) [CAR 602.88](#)
 - Survival equipment [CAR 602.61\(2\)a](#)
 - Operational and emergency equipment including: [\(CAR 602.60\(1\)\)](#)

- Operating checklist or placards
 - Aeronautical charts and publications
 - Fire extinguisher
 - Timepiece
 - Flashlight
 - First aid kit
- Emergency Locator Transmitter (ELT) - [CAR 605.01](#)
 - VFR Instrumentation [CAR 602.29](#)
 - Shoulder harness requirements CAR 605.24
24. **Recommendation:** That the *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes* be required to comply with:
- Annual Airworthiness Information Report [CAR 501.01](#)
 - Flight Authority (C of A or Flight Permit) [Ultra-light Transition Strategy 2.2](#)
 - Aircraft Logbooks - [CAR 605.01](#)
 - Maintenance schedule - [CAR 605.01](#)
25. **Recommendation:** That it be recommended to the CARAC Part IV Technical Committee that the regulations in [CAR 401.21](#) be amended, if required, to ensure that holders of a *Pilot Permit – Ultra-light Aeroplanes* can still fly former Advanced Ultra-light Aeroplanes and new aircraft in the *Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes* category.

Light Sport Aircraft

26. **Recommendation:** To allow the ASTM Light Sport Aircraft standards as one acceptable means of placing an aircraft in the new *Special Certificate of Airworthiness – Personal Transport* category.

LAMAC Personal Aircraft

27. **Recommendation:** To allow the LAMAC Personal Aircraft, as described in the LAMAC proposal, as another acceptable means of placing an aircraft in the new *Special Certificate of Airworthiness – Personal Transport* category, subject to the following differences:

- a. A maximum of 5000 lbs (LAMAC proposal to be amended to 5000 lbs)

- b. AME maintenance release required for annual inspection
- c. Expanded [CAR 625 Appendix “A” Elementary Work](#) rules developed
- d. Maintenance to [CAR 625 Appendix B & C](#)

Other Aircraft

28. **Recommendation:** That TC have a process to add new design and construction criteria to the list of those acceptable for the new *Special Certificate of Airworthiness – Personal Transport* category.

Placards

29. **Recommendation:** That the wording of all the placards used on aircraft in this new *Special Certificate of Airworthiness – Personal Transport* category and on the Basic Ultra-light Aeroplanes and Powered Parachutes and Limited Category should all be standardized. The wording should be that currently used in [CAR STD 549 \(CAR 507 Appendix “C”\)](#) for amateur-built and [CAR 507 Appendix F](#) for Limited category:

YOU FLY IN THIS AIRCRAFT AT YOUR OWN RISK. THIS AIRCRAFT DOES NOT COMPLY WITH INTERNATIONALLY RECOGNIZED STANDARDS.

VOUS VOLEZ À BORD DE CET AÉRONEF À VOS PROPRES RISQUES. CET AÉRONEF N’EST PAS CONFORME AUX NORMES RECONNUES À L’ÉCHELLE INTERNATIONALE

30. **Recommendation:** That the required placard should be permitted to be located either on the outside of the aircraft where the occupants board, or in a place visible to the passengers when seated and large enough to be legible.

Limited Category

31. **Recommendation:** That the Limited Category rules be amended to remove the requirement for the date of manufacture. This is often hard to establish, is not required and is unnecessarily consuming TC resources to address.
32. **Recommendation:** That the Limited Category rules be amended to change the eligibility criteria. The recommended new criteria is:

Any aircraft that is not:

- a. an aircraft in respect of which a type certificate has been issued;
- b. an aircraft in respect of which a type certificate has been issued by a foreign civil aviation authority and that is currently in production.

- To ensure that the Limited Category correctly captures aircraft that do not fit into other categories, it must have the current limit of a maximum of four occupants deleted. Instead, the number of seats would be a factor in the TC assessment of the aircraft and the applicable limitations assigned. Aircraft with more occupants should be permitted, but with appropriate restrictions to provide adequate management of the risks. Note: Many aircraft with more than 4 seats will be turbine and pressurized or large aircraft and will fall under CAR 604 POC requirements as well, thus imposing further requirements.
33. **Recommendation:** Due to the problems that the inclusion of “1000 hp” in the Limited Category Maintenance Group 1 criteria has caused in TC operational use, it is recommended that this designation be dropped and that it be replaced with examples of aircraft that qualify for this group in an information note.
 34. **Recommendation:** That the reference to “light transport” be deleted entirely from Limited Category Maintenance Group 1 criteria, as it has caused confusion in the past, and is not defined or well understood.
 35. **Recommendation:** That TC review the need for an expiry date for Restricted Certification Authorities for certification in the Limited Category. TC should devise a better way of acknowledging AME qualifications that is not as manpower intensive to administer.
 36. **Recommendation:** Because museums and other not-for-profit foundations are having a difficult time funding their fleets of Limited category aircraft, it is recommended that CARAC Part VI and/or Part VII Technical Committees review the current cost reimbursement rules with a view to allowing these organizations to recover expenses when providing flights in their own Limited category aircraft as a special case.
 37. **Recommendation:** That [CAR 605.84](#) (1) be amended to show that Limited Category aircraft are not subject to Airworthiness Directives. The wording of this CAR currently captures them and it has been confirmed that this was not the original intention of this regulation.
 38. **Recommendation:** That TC review the rules for modifying Limited Category aircraft with a view that they be changed to treat significant modifications on these aircraft in a similar manner to major modifications on certified aircraft. The current CAR 101 definition of major modification is:

"major modification" - means an alteration to the type design of an aeronautical product in respect of which a type certificate has been issued that has other than a negligible effect on the weight and centre-of-gravity limits, structural strength, performance, power plant operation, flight characteristics or other qualities affecting its airworthiness or environmental characteristics; (*modification majeure*)

The recommendation is that these be permitted with “acceptable data” on Limited Category aircraft.

Miscellaneous

39. **Recommendation:** That [CAR 605.84](#) (1) be amended to show that the new *Special Certificate of Airworthiness – Personal Transport* category aircraft are not subject to Airworthiness Directives.
40. **Recommendation:** The question of whether new manufacture aircraft such as the proposed LAMAC Personal Aircraft should be permitted to be mass produced for the *Special Certificate of Airworthiness – Personal Transport* category will be subject to a TC risk assessment as part of current TC policy. This Risk Assessment should exclude the currently acceptable non-certified aircraft that are already mass produced – Basic Ultra-light Aeroplanes, Powered Parachutes, Advanced Ultra-light Aeroplanes, Owner Maintenance Aircraft and Limited Category aircraft and concentrate on the concept of new, non-certified, mass produced aircraft.
41. **Recommendation:** The Working Group recommends adopting the wording on builder-assist decided at the Toronto meeting in the current and future amateur-built rules *Exemption From Section 549.01 Of The Canadian Aviation Regulations And Chapter 549 Of The Airworthiness Manual – Airworthiness Standards - Amateur-Built Aircraft*, which is:

Add the following definition:

“personally oversee” means overall control of all aspects of the project, including knowledgeable participation in all required inspections.

And amend paragraph 15 to read:

“(15) The builder may use professional assistance in the construction or assembly of parts of the aircraft, provided the work is subject to the builder’s overall control. It is the responsibility of the builder(s) to demonstrate their participation and overall control of all aspects of their project, including knowledgeable participation in all required inspections.

Information Notes:

1) In order to demonstrate personal over-sight, the builder is expected to establish record’s that include decision making and a description on how overall control of the project was maintained.

2) These records should clearly document the builder’s oversight of any professional assistance and the identity of the person(s) providing the assistance.

3) All communications with regards to the project will be between the builder and the Minister or his delegate.

4) Any materials may be used in the construction of an amateur-built aircraft, provided they are adequate for the purpose. It is recommended that established

aircraft quality material and components be used, especially in fabricating primary structure parts, such as wing spars, critical attachment fittings, and fuselage structural members. Non-aircraft materials, or materials whose identity cannot be established, should only be used after careful evaluation by the builder *and documented in the project records.*”

42. **Recommendation:** The Working Group recommends that a Service Difficulty Reporting system be developed for non-certified aircraft and their components (such as propellers) and that this be available as a user-searchable database. This should be part of, or modeled on, the certified aircraft Service Difficulty Reporting system.

Final Proposal Categories

At a final “end state” the Working Group recommends that there be three categories of non-certified aircraft:

The Basic Ultra-light and Powered Parachute category would remain exactly as it is today with the exception of the placard required:

Aircraft Class	Basic Ultra-light Aeroplanes and Powered Parachutes
Includes	Fixed wing aeroplanes Trikes (hang glider-wing based with weight-shift control) Powered parachutes (with wheels) Powered paragliders (foot launch) (Note: Powered Parachutes and Powered Paragliders are currently being spun off by TC into their own category with same basic rules as Basic Ultra-light Aeroplanes) Currently includes aeroplanes limited to 1200 lbs, two seats, 45 mph V_{SO} and a minimum useful load calculation to ensure reasonable load carrying capability.
Design Standard	None
Construction Standard	None
Maintenance Standard	None (no annual inspection required)
Maintenance release by	Owner

Inspections required for category entry	No
Modifications	Unrestricted
Operational limitations	Day VFR only No passengers (except instructors/students and other pilots with privileges on the aircraft) Helmets required Airspace limitations (currently being removed through NPA 2000-221)
Category established	1982
Category Size and Growth	As of 31 Jan 06 includes 4479 aircraft (14% of the aircraft registered in Canada). Average growth 186 aircraft per year over 24 years.
Permitted to Fly in US Airspace	Under FAA Blanket SFA
Flight authority document	None
Commercial uses permitted	Flight training/rental and towing hang gliders.
Placards required	"THIS AEROPLANE IS OPERATING WITHOUT A CERTIFICATE OF AIRWORTHINESS /CET AVION EST UTILISÉ SANS CERTIFICAT DE NAVIGABILITÉ" to be changed to: YOU FLY IN THIS AIRCRAFT AT YOUR OWN RISK. THIS AIRCRAFT DOES NOT COMPLY WITH INTERNATIONALLY RECOGNIZED STANDARDS. VOUS VOLEZ À BORD DE CET AÉRONEF À VOS PROPRES RISQUES. CET AÉRONEF N'EST PAS CONFORME AUX NORMES RECONNUES À L'ÉCHELLE INTERNATIONALE

The new proposed *Special Certificate of Airworthiness – Personal Transport* category would look like this:

Aircraft Class	<i>Personal Transport</i>
Includes	Aircraft that do not currently have a type certificate and meet an accepted design <u>or</u> construction standard as listed below.
Category Concept	<p>This category would include several sub-categories each with their own entry requirements:</p> <ul style="list-style-type: none"> • <i>Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes</i> • <i>Special Certificate of Airworthiness – Personal Transport – Owner Maintenance</i> • <i>Special Certificate of Airworthiness – Personal Transport – Amateur Built</i> • <i>Special Certificate of Airworthiness – Personal Transport – Advanced Amateur Built</i> • <i>Special Certificate of Airworthiness – Personal Transport – Light Sport</i> • <i>Special Certificate of Airworthiness – Personal Transport – LAMAC Personal Aircraft</i> • <i>Special Certificate of Airworthiness – Personal Transport - Vintage</i> • <i>Special Certificate of Airworthiness – Personal Transport – other categories as accepted</i> <p>Aircraft would be accepted on the basis of their compliance with an accepted design <u>or</u> with an accepted construction standard. Aircraft must comply wholly with that standard.</p>
Design Standard	<p>“Accepted Design Standards” which would include:</p> <p>For <i>Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes</i>: LAMAC DS 10141</p>

	<p>For <i>Special Certificate of Airworthiness – Personal Transport – LAMAC Personal Aircraft</i>: LAMAC “Design Standards for Personal Light Aircraft”</p> <p>For <i>Special Certificate of Airworthiness – Personal Transport – Owner Maintenance</i>:</p> <p>CAR STD 523 (Normal, Utility, Aerobatic and Commuter Category Aeroplanes)</p> <p>CAR STD 522 (Gliders and Powered Gliders) and foreign equivalents</p> <p>For <i>Special Certificate of Airworthiness – Personal Transport – Vintage</i>:</p> <p>CAR STD 523 (Normal, Utility, Aerobatic and Commuter Category Aeroplanes)</p> <p>CAR STD 522 (Gliders and Powered Gliders) and foreign equivalents</p> <p>For <i>Special Certificate of Airworthiness – Personal Transport – Light Sport</i>: ASTM design standards for Light Sport Aircraft</p> <p>Other accepted standards</p>
Construction Standard	<p>“Accepted Construction Standards” which would include:</p> <p>For <i>Special Certificate of Airworthiness – Personal Transport – Amateur Built</i>: CAR STD 549 (CAR 507 Appendix “C”) (Amateur Built aircraft)</p> <p>For <i>Special Certificate of Airworthiness – Personal Transport – Advanced Amateur Built</i>: CAR STD 549 (CAR 507 Appendix “C”) (Amateur Built aircraft) with the exception of weight and /or seat limits. Aircraft would be subject to the same assessment, operating and maintenance rules applied to the Limited Class.</p> <p>For <i>Special Certificate of Airworthiness – Personal Transport – Light Sport</i>: ASTM construction</p>

	<p>standards for Light Sport Aircraft</p> <p>For <i>Special Certificate of Airworthiness – Personal Transport – LAMAC Personal Aircraft</i>: LAMAC “Construction Standards for Personal Light Aircraft”</p> <p>Other accepted standards</p>
Maintenance Standard	CAR 625 Appendix “B” & “C”
Maintenance release signed by	<p>“Owner” for all sub-categories except:</p> <ul style="list-style-type: none"> • <i>Special Certificate of Airworthiness – Personal Transport – Vintage</i> would require an AME maintenance release • <i>Certificate of Airworthiness – Recreational – LAMAC Personal Aircraft</i> which would require an AME maintenance release • <i>Special Certificate of Airworthiness – Personal Transport – Advanced Amateur-built</i> which would require an AME maintenance release <p>Note: These three categories would have expanded CAR 626 Appendix “A” Elementary Work privileges.</p>
Requirements for category entry	<ul style="list-style-type: none"> • For <i>Special Certificate of Airworthiness – Personal Transport – Amateur Built</i>: MD-RA inspection for aircraft accepted on the basis of CAR STD 549 (CAR 507 Appendix “C”) • For <i>Special Certificate of Airworthiness – Personal Transport – Advanced Amateur Built</i>: Inspection for aircraft accepted on the basis of CAR STD 549 (CAR 507 Appendix “C”) and assessment for operational and maintenance requirements on the basis of Limited Class rules. • For <i>Special Certificate of Airworthiness – Personal Transport – Vintage</i> and <i>Special Certificate of Airworthiness – Personal Transport – Owner Maintenance</i>: Option of

	<p>an inspection for aircraft being moved into this category from certified or any other category</p> <ul style="list-style-type: none"> • <i>Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes</i>: Statement of Conformity and weight and balance for DS10141 conforming aircraft. • For <i>Special Certificate of Airworthiness – Personal Transport – LAMAC Personal Aircraft</i>: Professional builder with an accepted inspection program or manufacturer with an accepted inspection program
Modifications	In accordance with “acceptable data”
Operational limitations	<p>All aircraft under <i>Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes</i> would be exempt from:</p> <ul style="list-style-type: none"> • Destination Fuel requirements (destination plus 30 minutes worth of fuel) CAR 602.88 • Survival equipment CAR 602.61(2)a • Emergency Locator Transmitter (ELT) of CAR 605.38 • Operational and emergency equipment including: (CAR 602.60(1)) <ul style="list-style-type: none"> • Operating checklist or placards • Aeronautical charts and publications • Fire extinguisher • Timepiece • Flashlight • First aid kit
Flight authority document	<i>Special Certificate of Airworthiness – Personal Transport – (specify sub-category).</i>

The Limited category would be amended to look like this:

Aircraft Class	Limited Class
Includes	<p>Any aircraft that is not:</p> <ul style="list-style-type: none"> a) an aircraft in respect of which a type certificate has been issued; b) an aircraft in respect of which a type certificate has been issued by a foreign civil aviation authority and is currently in production. <p>Any number of occupants may be authorized.</p> <p>There are no aircraft size or weight limitations in this category.</p>
Design Standard	None specified
Construction Standard	None specified
Maintenance Standard	<p>CAR 625 Appendix “B” & “C”</p> <p>CAR 625 Appendix “D” for turbine and pressurized aircraft</p> <p>The applicant must show that sufficient applicable information, equipment, and supplies are available to enable the proper maintenance of the aircraft, and that suitably trained and experienced persons are available to perform the work.</p>
Maintenance by	<p>AME for gliders, balloons, piston-powered rotorcraft, basic training and communication aeroplanes, and equivalent aircraft types. (Information note to give examples)</p> <p>Restricted Certification Authority holder for turbine-powered rotorcraft; World War II era aircraft, including fighters, medium bombers and transports; basic jet trainers; advanced piston-powered trainers; Korean War era aircraft, including first generation jet fighters; and equivalent aircraft types.</p>

	AMO for all others.
Inspections required for category entry	A conformity inspection
Modifications	Any modifications or repairs that affect the structural strength, performance, power plant operation or flight characteristics of the aircraft shall be subject to “acceptable data”.
Airworthiness Directives	Not applicable
Flight authority document	<i>Special Certificate of Airworthiness –Limited.</i>

Transition Plan

Under the recommendations that the Working Group has made some aircraft categories will combine, some will disappear and some will remain as they are. The following chart will provide information on the Working Group’s intentions.

Current Categories	While in Transition	Final End State
Basic Ultra-light Aeroplane and Powered Parachute category	No change	No change
Advanced Ultra-light Aeroplane category	Aircraft transitioned to <i>Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes</i> (for a limited time at no fee) or remain in old Advanced Ultra-light Aeroplanes category for life of aircraft.	<i>Special Certificate of Airworthiness – Personal Transport – Advanced Ultra-light Aeroplanes</i> No new aircraft permitted in old Advanced Ultra-light Aeroplanes category but existing aircraft can remain in category for life of aircraft.
Amateur-built category		<i>Special Certificate of Airworthiness – Personal Transport – Amateur-built</i>
No existing category		<i>Special Certificate of Airworthiness – Personal Transport – Advanced Amateur-built</i>

Owner Maintenance category	<i>Special Certificate of Airworthiness – Personal Transport – Owner Maintenance</i> or transition to <i>Special Certificate of Airworthiness – Personal Transport – Amateur-built</i> if major portion rule met. New aircraft still allowed into <i>Special Certificate of Airworthiness – Personal Transport – Owner Maintenance</i> but owners will be made aware that category is in transition.	Most aircraft transitioned out of current Owner Maintenance category to <i>Special Certificate of Airworthiness – Personal Transport – Owner Maintenance</i> , <i>Special Certificate of Airworthiness – Personal Transport – Vintage</i> or to <i>Special Certificate of Airworthiness – Personal Transport – Amateur-built</i> if major portion rule met. No new aircraft permitted in <i>Special Certificate of Airworthiness – Personal Transport – Owner Maintenance</i> but existing aircraft can remain in category for life of aircraft.
No existing category		<i>Special Certificate of Airworthiness – Personal Transport – Vintage</i> established when FAA creates new category or if they do not create a new category.
No existing category		<i>Special Certificate of Airworthiness – Personal Transport – Light Sport Aircraft</i>
No existing category		<i>Special Certificate of Airworthiness – Personal Transport – LAMAC Personal Aircraft</i>
No existing category		<i>Special Certificate of Airworthiness – Personal Transport – (other sub-category as accepted)</i>
Limited Category	.	<i>New eligibility criteria plus other minor changes</i>

Scope Questions

To ensure that the aims of the Working Group were met, the 16 “scope” questions posed by the Terms of References and the two additional questions were specifically answered:

1. Are the current separate classifications of recreational aircraft necessary, or could some of them be combined?

The Basic Ultra-light Aeroplane, Powered Parachutes and Limited categories should remain largely as they are – the rest, including proposed categories, can be combined as indicated.

2. Should new kinds of recreational aircraft be recognized, either by the introduction of new categories, or by inclusion in the existing categories? e.g. US Light Sport Aircraft category or the LAMAC proposal for personal aircraft.

These should be incorporated in the new proposed combined category.

3. Can the existing standards be amended to take into account the recent and future technological advances in amateur built construction? Conversely, should the criteria for amateur built aircraft be limited to the construction of conventional, relatively low performance aeroplanes?

The existing amateur-built rules actually handle aircraft within the current category adequately. It is recommended that any aircraft that exceed the current parameters of the amateur-built rules or are turbine powered and pressurized should be placed in a new Advanced Amateur-built sub-category subject to the existing amateur-built rules with the assessment, operational and maintenance rules of the Limited Category. This will allow the existing risk analysis procedures of the Limited category to be applied to determine safe operating procedures for these aircraft.

4. Are the present weight and capacity requirements for amateur built, owner maintenance and limited category aircraft, appropriate?

Some changes are required to the Limited category to permit aircraft that do not fit in other categories to be placed there, as well as creating a new “Advanced Amateur-built” sub-category. This includes removing the prohibition against aircraft with more than four occupants for the Limited and Advanced Amateur-built categories as well as allowing larger amateur-built aircraft. In both cases these aircraft will be subject to the Limited category’s existing assessment, operational and maintenance determination process.

5. Should advanced technology aircraft be dealt with in a new category or group subject to unique standards?

Yes - Amateur-built aircraft that exceed the weight and seat limits of [CAR STD 549 \(CAR 507 Appendix “C”\)](#) and pressurized, turbine powered amateur built aircraft, should be placed into a new sub-category as described in question 4.

6. Do we have the right definition for high performance?

The current rules need some minor adjustments to align amateur-built with other aircraft, but the CARAC Part IV Technical Committee should more appropriately consider this question. This Working Group recommends that the definition of high-performance be deleted from the exemption to [CAR STD 549 \(CAR 507 Appendix “C”\)](#) and amateur-built should be treated on the same basis as all other aircraft

7. Should we make provision for “builder assist” programs and other aircraft that do not meet the 51% home-built requirement?

Yes, but the current amateur-built rules should be maintained, with strengthened wording clarifying the Builder-Assist rules as recommended. Other aircraft that do not meet the 51% rule are appropriate in Canada, but in other sub-categories of the new category proposed. For certain kinds of advanced amateur built aircraft, professional builder assistance should be mandatory.

8. Should skill and / or knowledge requirements be established for persons who maintain recreational aircraft, such as those that are applicable in the USA? If so, should “grandfather provisions” be established for existing owners who may not meet those standards?

No – the Working Group can find no reason to recommend the imposition of a “repairman’s certificate” or anything similar at the present time. Our present rules, which have been in place for over 50 years, have been proven to control the maintenance risks for these aircraft. For more complex aircraft in the Limited category, Advanced Amateur-built, “Vintage” and “LAMAC Personal aircraft” the Working Group is recommending AME Maintenance with an expanded CAR 625 Appendix “A” Elementary Work list.

9. Do the regulations/standards adequately address the maintenance of recreational aircraft such as, amateur built, owner maintenance, limited and ultra-lights (basic and advanced)?

The present rules are adequate to control risks in this area. The Working Group has made recommendations with regard to maintenance that will provide even stronger maintenance requirements, particularly for Advanced Ultra-light Aeroplanes.

10. Is it appropriate to continue to have classifications that are not subject to the need for a flight authority or can there be a wider range of aircraft that are not subject to the requirements?

Yes – provided that they do not carry non-pilots as passengers. The Working Group agreed that it was appropriate to have a flight authority for aircraft that carry non-pilots as passengers.

11. Can changes be made to Advanced Ultra-light Aeroplanes flight authority or equivalent requirements without imposing additional construction or maintenance requirements?

Yes - the Working Group believes this is possible and desirable to do so. The recommendations include a *Special Certificate of Airworthiness* for Advanced Ultra-light Aeroplanes, mandatory weight and balance reporting at time of flight authority issue, modifications allowed in accordance with “acceptable data” and maintenance to CAR 625 Appendix B & C along with a requirement for log books and AAIR reporting.

12. Are the existing (operations) regulations adequate to address these aircraft?

Yes - the Working Group believes that they are and that they should be maintained.

13. Is there a viable way to amend the standards so that all classes of Canadian recreational aircraft would be acceptable for flight in US airspace, and vice-versa?

Discussions with FAA representatives on this subject were held as part of this Working Group. They have indicated that the current Owner Maintenance Aircraft will never be acceptable in the USA. With this in mind the Working Group has recommended transitioning these aircraft to more acceptable rules.

14. With regard to Limited category, does the current Minister’s Exemption appropriately address the recreational use of aircraft groups that are identified within the exemption? e.g. Non-type certificated aircraft, or ex-military aircraft.

Yes – in fact the Working Group believes that changing the eligibility criteria to allow a wider range of aircraft in the category should achieve this.

15. Should there be a centrally managed system for reporting and notifying recreational aircraft owners of design and maintenance deficiencies?

Yes – The Working Group has made recommendations for a Service Difficulty Reporting system for non-certified aircraft and components.

16. Will any changes or recommended changes affect the existing use of recreational aircraft?

The Working Group believes that the changes proposed will allow more aircraft and more types of aircraft to be flown in Canada, but that uses will not generally change. There are some specific recommendations about commercial use, which ask other appropriate CARAC Technical Committees look at these issues.

17. The relative safety of type certified and non-type certified aircraft

There are a number of studies that have been completed with data from TC, FAA and EASA that show that there is no significant difference in the safety records of certified versus non-certified aircraft.

18. The potential impact for type certified aircraft

This issue can only be addressed through a comprehensive risk assessment, the completion of which is outside the scope of this Working Group. Such a risk assessment will be completed by TC on any recommendations after the Working Group report is accepted by the CARAC Part V Technical Committee and before any resulting NPAs are drafted.

Conclusions

The members of this Working Group believe that if all the changes proposed here are implemented that Canada will have a system for non-certified aircraft that:

- Consists of only three categories (but allows for identification of the basis upon which the aircraft was accepted)
- Is easier and more cost effective for TC to administer
- The administration of which could be delegated if required
- Will allow more Canadians to own and fly more aircraft while following simpler rules
- Is easier to understand, more consistent and more logical
- Manages risks even better than at present

Dissents

This Working Group Final Report is submitted without dissents.