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TECHNICAL COMMISSION

Agenda Item 31: Aviation Safety and Air Navigation Standardization

PROMOTING THE SAFETY OF SMALL GENERAL AVIATION AIRCRAFT USING ALTERNATIVE STRATEGIES FOR PRODUCT REGULATION

(Presented by Brazil, supported by the Latin American Civil Aviation Commission (LACAC) Member States[1])

EXECUTIVE SUMMARY

An ever-growing number of Civil Aviation Authorities have been using internationally recognized consensus standards, developed in collaboration with industry stakeholders and foreign aviation authorities, for the airworthiness certification of light-sport aircraft. In most countries, like Brazil, this aircraft category is not submitted to a type certification process or a production certification of the manufacturer. Instead, the authorities accept the consensus standards and usually issue airworthiness certificates after reviewing the manufacturers' documentation of compliance with consensus standards presented under a declaration model. This strategy minimizes certification and rulemaking costs for the small aviation industry and authorities while meeting an acceptable level of safety and reducing regulatory time costs. This approach has the potential to promote global safety, as well as industry development, of small general aircraft, particularly in developing countries. However, the lack of harmonization between States on the procedures used to approve aircraft under product regulation imposes a limitation to the full development of the light-sport aircraft industry, imposing difficult challenges to international trade.

Action: The Assembly is invited to request ICAO to create a working group to study the issues explained in this paper and to provide solutions to reduce technical barriers to the international trade of safe aircraft approved under alternative product regulations, amending Standards and Recommended Practices (SARPs) or guidance materials, as needed.

Strategic Objectives:	This information paper relates to the Strategic Objective on Safety.
Financial implications:	Resource savings in certification and rulemaking.
References:	Annex 8 – *Airworthiness of Aircraft*

[1] Argentina, Aruba, Belize, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela (Bolivarian Republic of).

1. INTRODUCTION

1.1 Most of the certified small general aviation aircraft have an old certification basis. This aircraft category is being replaced by experimental aircraft in many places worldwide. Certification authorities struggle to create new regulation models capable of encouraging manufacturers to develop new safe small aircraft.

1.2 The United States Federal Aviation Administration (FAA) originally created the light sport aircraft category in 2004 focused on relatively small, slow, and simple aircraft. Since then, this category has been increasingly adopted by authorities worldwide into their regulatory framework.

1.3 Over the years, this category has gained growing acceptance in the general aviation market mainly due to the simplicity of the regulatory model and its cost savings while meeting the level of safety appropriate for such aircraft. In most countries, this category is not submitted to a type certification process or a production certification of the manufacturer. Instead, the Authorities issue airworthiness certificates based on manufacturers' statements of compliance with the consensus standards accepted by the Authorities.

1.4 The proposal presented in this WP is compatible with a risk-based approach because such alternative strategies are aimed at scenarios where the risk exposure is low. Classical type and production certification approaches must still apply to all medium to high-risk scenarios, such as large aircraft for passenger transportation. The present alternative strategies for product regulation could be applied to small aircraft private operations, aerial photography, flight training, and others.

2. AN ALTERNATIVE STRATEGY FOR PRODUCT REGULATION

2.1 The consensus standards for the light sport category have been developed and updated by the ASTM International Committee F37 on Light-Sport Aircraft through global collaboration among civil aviation authorities and industry. Following the publication or review of a consensus standard by the ASTM Committee F37, the Authorities publish their acceptance of that consensus standard for certification of a light sport aircraft.

2.2 In order to keep the consensus standards development process reliable and robust, the developing environment must continually ensure key aspects: openness, due process, the balance of interest, an appeals process, and consensus gathering. These aspects help avoid unfair competitive advantage or bias toward a few large manufacturers.

2.3 Below are some main positive aspects of the development of consensus standards for the light sport category:

a) specific rules tailored to the needs of the category rather than to the totality of all small general aviation;

b) standards can be adjusted more quickly to changing business environments; and

c) innovative designs and safety-enhancing technologies can be fostered.

2.4 This approach allows manufacturers to self-declare that each aircraft meets the authority's consensus standards. The manufacturer is solely responsible for the aircraft's review, testing and approval, and manufacturing quality assurance system in accordance with the consensus standards. This procedure is

an alternative to the high costs associated with type and production certificate processes and provides greater safety than experimental aircrafts without substantially increasing the burden on the industry.

2.5 An important fact to be highlighted is that experience has shown, over the years, that the accident rate of light sport aircraft tends to be the same as that of certified aircraft of the same size in personal use, affirming the appropriate level of safety of the category.

3. LIGHT SPORT AIRCRAFTS IN BRAZIL

3.1 In 2010, Brazil National Civil Aviation Agency (ANAC) established a rule for manufacturing and designing light sport aircrafts.

3.2 The rule aimed to address the following problems in the Brazilian small general aviation market:

a) high demand for experimental aircraft, less expensive than certified ones, but with an unknown safety level;

b) high costs of type and manufacture certification process;

c) a low number of certified national manufacturers; and

d) aged and low-tech certified aircraft fleet.

3.3 Over the years, dozens of aircraft manufacturers have joined the light sport category in Brazil, obtaining acceptance by ANAC. Five of them are national manufacturers previously playing only in the experimental aircraft market. Other national manufacturers are in the process of being accepted by ANAC. These outcomes indicate that the Brazilian regulatory strategy has been contributing to enhancing safety and industry development.

3.4 While there is much room for expansion in the Brazilian light sport aircraft market, there are challenges to its international trade. The fact that Annex 8 provisions are solely based on type and manufacturing certification discourages many States from trading light sport aircraft with each other. This issue is further explained in the next section.

4. LIGHT SPORT AIRCRAFT WORLDWIDE

4.1 Most countries have several similarities regarding the light sport aircraft category:

a) level of safety: Consensus standards developed by the ASTM International Committee F37;

b) approval costs: lower costs compared to those associated with type and production certificate process;

c) technical characteristics: no more than two seats, a single engine, maximum take-off weight of not more than 600 kg (650 kg for amphibious aircraft), a non-pressurized cabin, and a maximum stalling speed of not more than 45 knots;

d) types of aircraft: airplanes, gliders, powered parachutes, weight shift aircraft, balloons, and airships; and

e) operational purposes: private use or commercial use limited to tow a glider or flight training. VFR only.

4.2 On the other hand, there are differences between national regulations:

a) technical characteristics: Some countries accept electrical engine, variable pitch propeller, retractable landing gear, and maximum take-off weight of up to 1,361 kg;

b) airworthiness requirements: Some countries require type and production certification instead of manufacturers' statements of compliance. Others impose additional requirements for technical features not covered by the consensus standards, such as retractable landing gear; and

c) types of aircraft: Some countries consider only airplanes. Others include gyroplanes.

4.3 This lack of harmonization between the States imposes barriers to international trade for the light sport aircraft industry. For those specific technical features not covered by current consensus standards, actions can be taken by the States to develop the necessary standards in a collaborative environment rather than individually. Given that most States rely on compliance with consensus standards, the differences, in general, are primarily procedural, while differences in safety outcomes are unclear and expected to be minimal.

4.4 Another barrier to international trade is the absence of clear procedures for dealing internationally with safety concerns, mainly regarding the responsibilities of the exporting party for providing safety solutions and Mandatory Continuing Airworthiness Information (MCAI).

4.5 These challenges point to a need for ICAO to develop international standards to a common approach to the approval of these aircraft, reducing or eliminating redundant approval activities between the Authorities. An international harmonization would bring potential benefits, especially for developing countries, fostering international trade, industry development, and global safety: reduced costs, easier fleet renewal by safer aircraft, and reduced barriers to industry development.

5. CONCLUSION

5.1 Alternative aircraft approval regulations have gained growing acceptance in the general aviation market, showing potential to promote global safety and industry development, particularly in developing countries. However, the lack of international harmonization on the procedures used by the Authorities to approve these aircraft limits their trade and benefits worldwide.

5.2 The Assembly is invited to request ICAO to create a Working Group to study the problems explained above and to provide solutions to reduce technical barriers to the international trade of safe aircraft approved under alternative product regulations, amending SARPS or guidance material, as needed.

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