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Agenda Item 35: Aviation safety and air navigation standardization

ADVANCING THE SAFETY OF SMALL GENERAL AVIATION AIRPLANES USING INTERNATIONAL CONSENSUS STANDARDS

(Presented by the United States)

EXECUTIVE SUMMARY

The United States Federal Aviation Administration (FAA) has a history of using international consensus standards for the design and performance of civil aviation products and operations. The FAA now uses consensus standards for the airworthiness certification of light-sport airplanes, and is proposing a new regulatory structure to use consensus standards in conjunction with performance-based rules to increase safety in FAA-certificated small general aviation airplanes. Using consensus standards allows the FAA to facilitate timely incorporation of advanced designs to improve the safety of small airplanes. The use of internationally recognized consensus standards, developed in collaboration with industry stakeholders and foreign aviation authorities, encourages global regulatory harmonization to advance general aviation safety and reduce the costs associated with product certification.

<i>Strategic Objectives:</i>	This information paper relates to the Safety Strategic Objective.
<i>Financial implications:</i>	This paper has no significant financial implications.
<i>References:</i>	

1. INTRODUCTION

1.1 United States Federal agencies, with the exception of the Department of Defense, are required by the United States National Technology Transfer and Advancement Act of 1995 and the United States President's Office of Management and Budget Circular A-119 to use technical standards developed by consensus standards bodies as a means to carry out agency policy objectives, unless such use is inconsistent with law or is otherwise impractical. United States policy also provides guidance on the development and use of voluntary consensus standards.

1.2 The FAA, like other civil aviation authorities, has a long history of using voluntary consensus standards in a number of ways to carry out its policy objectives. For decades, industry standards have served as the FAA's accepted minimum performance standards for a variety of specified materials, parts, and appliances used on civil aircraft. The FAA uses voluntary consensus standards to identify fuel and oil grades, designations, and specifications as operating limitations on type-certificated products.

1.3 The FAA also uses voluntary consensus standards to support increased safety of small general aviation airplanes, including in the airworthiness certification of light-sport aircraft. The FAA is currently collaborating with industry on the development of voluntary consensus standards that may serve as means of compliance to newly proposed 14 CFR part 23 performance-based regulations governing the design of small general aviation airplanes with a maximum seating capacity of 19 passengers and a maximum take-off weight of 19 000 pounds. The FAA's proposed new rules will maintain the level of safety associated with the current part 23 regulations, while providing greater flexibility to applicants seeking certification of their airplane designs. This proposed rulemaking would hasten the adoption of innovative designs and safety enhancing technology in type-certificated products while reducing regulatory time and cost burdens for the aviation industry and FAA.

2. DISCUSSION

2.1 Performance-based Rules Complemented by Consensus Standards as Means of Compliance

2.1.1 Unlike prescriptive rules, performance-based rules establish outcomes that must be achieved while allowing flexibility in how those results are obtained. A performance-based regulatory framework offers a number of advantages, including:

- stronger focus on achieving the desired safety performance;
- greater agility in accommodating innovation and adapting to new technologies;
- improved understanding of risks; and
- stronger safety culture within regulator and industry.

2.1.2 Establishing performance-based rules can be challenging when defining requirements in terms of performance and when determining what constitutes compliance to the performance-based rules.

Additionally, compliance planning could involve more effort by an applicant due to increased regulatory flexibility to adapt new technologies.

2.1.3 The benefits of using voluntary consensus standards as means of compliance in conjunction with performance-based rules include:

- eliminate the cost to the Government of developing its own standards and decrease the cost of goods procured and the burden of complying with overly restrictive agency regulation;
- provide incentives and opportunities to establish standards that serve a State's needs;
- encourage long-term growth for enterprises and promote efficiency and economic competition through harmonization of standards; and
- further the policy of reliance upon the private sector to supply Government needs for goods and services.

2.1.4 Although use of consensus standards works in some cases, industry has expressed concerns that a consensus standard could be biased in favour of a few large manufacturers and thereby could create an unfair competitive advantage. An important factor in the FAA's acceptance of these standards is the nature of the process used in developing them. A consensus standards developing organization must possess several key attributes including: openness, balance of interest, due process, an appeals process, and consensus.

2.1.5 A performance-based regulatory framework complemented by consensus standards offers an effective means for tailoring the level of certification rigor to the variety of aviation products and operations. The FAA relies on its safety continuum philosophy to balance the needs of applicants, aircraft owners and operators with the public's demand for safety assurance. One level of safety may not be appropriate, nor expected by the public, for all aviation products and operations, and accepting higher levels of risk, with correspondingly fewer requirements for the demonstration of compliance, may be appropriate when aircraft are used for personal transportation.

2.1.6 The FAA shared its views on the safety continuum with ICAO through participation in Working Group 4 of the Airworthiness Panel. This safety continuum, or proportionality approach, is central to the Working Group's proposed creation of Annex 8, Part VB for small airplanes lighter than 750 kg (ref Working Paper AIRP/3-WP/7) and is described in Appendix JJ of Working Paper AIRP/3-WP/6.

2.1.7 Collaboration between industry and regulatory authorities when developing global consensus standards promotes international cooperation and encourages participants to meet shared challenges and reduce, eliminate, or prevent unnecessary differences in how compliance is shown with global regulatory requirements. Using global consensus standards has the potential to achieve long-term harmonization at an unprecedented level. Harmonization allows industry to design a product to a single set of global design standards allowing a manufacturer to build a product in one country and have it recognized by other civil aviation authorities resulting in significant savings for manufacturers importing and exporting aviation products. Harmonization also helps to reduce certification costs through the standardization of certification processes and reducing or eliminating redundant certification activities associated with foreign certification.

2.2 Light Sport Aircraft

2.2.1 In 2004, the FAA created a rule for the manufacture, certification, operation, and maintenance of newly designated “light-sport aircraft”. Light-sport aircraft are defined in detail in 14 CFR part 1 and can generally be described as relatively small, slow, and simple aircraft equipped with no more than two seats.

2.2.2 Rather than require type certification of the design or production certification of the manufacture of light-sport aircraft, the FAA issues airworthiness certificates based on manufacturers’ statements of compliance with voluntary consensus standards accepted by the FAA. The consensus standards process minimizes costs while meeting the level of safety appropriate for these aircraft.

2.2.3 After the light-sport rule was proposed in 2002, a number of aviation organizations chose to work with ASTM International (ASTM) to develop light-sport aircraft consensus standards. As a result, ASTM International established Committee F37 on Light-Sport Aircraft. Through global collaboration among civil aviation authorities and industry, this committee developed and published a set of consensus standards that were accepted by the FAA after the final rule was issued. Industry, FAA, and other civil aviation authorities now use these standards for light-sport aircraft certification.

2.2.4 ASTM Committee F37 remains active in developing new standards and revisions to existing standards, which have also been accepted by the FAA through a series of Notices of Availability published in the United States Federal Register. These Federal Register notifications include a statement that the FAA has found the standards acceptable for certification of the specified aircraft under the provisions of the light-sport rule.

2.3 FAA-Certificated Part 23 Airplanes

2.3.1 The FAA anticipates accepting consensus standards as a means of compliance with recently proposed part 23 performance-based regulations. The part 23 proposal would remove the prescriptive and technology-dependent provisions or methods of compliance out of regulatory text while retaining the enforceable, performance-based safety objectives in the rules. It is anticipated that much of the prescriptive and technology-dependent provisions in today’s rules will be included in the consensus standards accepted as means of compliance with the new rules.

2.3.2 The use of consensus standards would be one means of compliance with the performance-based standards of the proposed part 23. Compliance with the current prescriptive provisions within Amendment 62 of part 23 would be yet another means of compliance available under this proposal. Applicants would still have the option to propose their own means of compliance as they do today. The process for reviewing new means of compliance would not change substantially from the process in place today.

2.3.3 The FAA notes that industry groups associated with the part 23 regulatory proposal identified ASTM as the appropriate organization to initiate the development of consensus standards, and that ASTM permits any interested party to participate in the committees developing consensus standards. Several civil aviation authorities from around the world are actively participating in the development of consensus standards intended as means of compliance with the FAA’s new part 23 proposed rules.

2.3.4 The FAA expects other consensus standards bodies to allow similar opportunities for interested parties to participate in their standards-development work. In addition to consensus standards

and the prescriptive design standards in Amendment 62 of part 23, any individual or organization may develop its own proposed means of compliance that may be submitted to the FAA for acceptance.

3. **CONCLUSION**

3.1 The FAA and other civil aviation authorities successfully use voluntary consensus standards in a number of ways to carry out their policy objectives. The FAA's historical and growing use of consensus standards is consistent with public law and the goals of the United States Government. Expansion in the FAA's use of consensus standards is underway through reform of the certification requirements for small general aviation airplanes. The use of internationally recognized consensus standards encourages global regulatory harmonization to advance general aviation safety and reduce the costs associated with product certification.

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