

GENERAL AVIATION AIRCRAFT

ORGANIZATIONAL SPECIFICS

Standards Organizations:	ASTM International
Technical Committees:	F44 General Aviation Aircraft
Other Partnering Organizations:	General Aviation Manufacturers Association, Aircraft Electronics Association
Government Organizations:	U.S. Federal Aviation Administration, European Aviation Safety Agency
Industry Sector(s) / Technology:	Aviation
Program / Activity Website URL(s):	https://www.astm.org/get-involved/technical-committees/committee-f44

STANDARDS DRIVEN PUBLIC-PRIVATE PARTNERSHIP (PPP) OBJECTIVES

PPP Drivers:

In 2009, a joint team comprised of members of the U.S. Federal Aviation Administration (FAA) and industry conducted a [Part 23 Certification Process Study \(CPS\)](#), which recommended the reorganization of Part 23 based on performance and complexity rather than weight and propulsion divisions. Part 23 is the section of the federal aviation regulations (FAR) related to the manufacture and airworthiness of aircraft under 19,000 pounds [8,600 kg], with seating for 19 or fewer passengers. In the decades prior to the study Part 23 regulations had not kept pace with advances in aviation technology. The [Part 23 Reorganization Aviation Rulemaking Committee \(ARC\)](#) was charged with making recommendations to bring increased flexibility to the certification process for new aircraft.

In 2011, the ARC published a report that echoed the sentiments of the CPS. The ARC accepted that: “One set of consensus standards would be created and maintained by ASTM International and would follow their processes for standards development that would satisfy the FAA. Their consensus standards process ensures the standards are agreed to by a balanced group of representatives from regulators, industry, operators, and others.” In 2012, [formed the committee on general aviation aircraft \(F44\)](#) at the request of aviation industry organizations to aid the efforts of the FAA's Part 23 ARC. These rulemaking efforts were reinforced by the [Small Airplane Revitalization Act of 2013](#), which required the FAA to issue a final rule revising the certification requirements for small airplanes.

While the driver for forming F44 was a recommendation from a U.S. government rulemaking committee, it is significant that this was a global effort. At the same time the FAA was strategizing the Part 23 rules, the European Union Aviation Safety Agency (EASA) was doing the same with their [CS 23 Normal, Utility, Aerobatic and Commuter Aeroplanes](#) rules. EASA and FAA went to great lengths to harmonize their rules and collaborate with industry to ensure safety and enable innovation in general aviation. EASA speaks to their efforts in the [explanatory note for the reorganization of CS-23](#). Other civil aviation authorities worldwide, including Brazil, New Zealand, Canada, China, and others, participated in this effort.

In December 2016, the FAA published the “[Revision of Airworthiness Standards for Normal, Utility, Acrobatic, and Commuter Category Airplanes](#)” (Part 23, Amendment 64), and in May 2018, the [FAA issued the first Notice of Acceptance \(NOA\)](#) of thirty F44 standards in support of new performance-based standards for Part 23 aircraft. In the time between the final rule and the first NOA, FAA issued advisory circular [AC 23.2010-1 FAA Accepted Means of Compliance Process for 14 CFR Part 23](#)

In March 2017, EASA published [CS-23 Amendment 5](#) and in December of that same year, released their first issue of the [Acceptable Means of Compliance \(AMC\) and Guidance Material \(GM\) to Certification Specifications for Normal-Category Aeroplanes \(CS-23\)](#), which accepts F44 standards as means of compliance.

PPP Goals:

The primary goal of the work was to ensure that the former prescriptive rule language from the FAA and EASA was translated into the industry consensus standards. The anticipated new rules will state the conditions that applicants

need to meet, however, the means to demonstrate compliance – or the “how” – will be reviewed, edited for redundancies, and organized in various new F44 standards.

The scope of work was strictly limited to CS/Part 23 aircraft. However, industry representatives consistently considered what innovations were expected to enter the marketplace. Throughout committee deliberations, they were careful to ensure the scope of standards met the needs of current aircraft but did not unintentionally hinder future innovations such as electric propulsion, simplified vehicle operations, or vertical take-off and landing (VTOL) aircraft. New technologies in need of specific standardization were considered a “future action” in the initial year until the first suite of standards supporting the revised rules were accepted (which took place in 2017-2018). New technologies and approaches are considered part of the current scope of work.

Public Sector Role & Participation:

Public and private stakeholders both participated in the F44 technical committee, its subcommittees, and its working groups. Before rulemaking began, EASA and FAA staff participated in each of the working groups responsible for migrating former rule language into the standards. Once rulemaking began, some government staff withdrew from F44 activities to avoid conflict of interest.

All standards go through a balloting process, in which members vote affirmative, negative, or abstain. U.S. government representatives opted to abstain with comments, out of concern for undue influence, conflict of interest, or perception of conducting rulemaking outside of a formal rulemaking process.

Once the standards were approved, ASTM International published them and supported promotional efforts to increase awareness. During EASA and FAA public review of draft rules, ASTM provided free read-only access to the standards so the general public could review the standards and the rules at the same time. Industry, trade associations, authorities, and academia continued their work on the standards before, during, and after rulemaking and are still active today.

Global authorities and industry continue to participate directly in F44 to maintain and develop new standards. EASA and FAA continue to issue AMC/NOA's of updated standards.

Implementation Methods:

ASTM technical (main) committees are broken down into subcommittees that manage portfolios of standards on focused technical areas. Subcommittees form task groups (TGs) that work on individual drafts of standards. The committee on general aviation aircraft was divided into six technical [subcommittees](#), which covered the same areas as the sections of the aircraft certification rule (general, flight, structures, powerplant, systems and equipment, and terminology). Three administrative subcommittees were also formed:

- **Regulatory Liaison Subcommittee (F44.92):** Only government representatives can join this subcommittee. The primary goal of the subcommittee is to provide global authorities with a forum to discuss needs, concerns, or opportunities. The subcommittee meets at each of the face-to-face meetings of the committee. F44.92 was co-chaired by EASA and FAA and provided report-outs at the main committee meeting. Ultimately, this subcommittee provides global authorities with the ability to coordinate and increase the chances of global harmonization and consistent messaging back to industry.
- **Industry Liaison Subcommittee (F44.93):** Only industry representatives can join this subcommittee. The primary goal of the subcommittee is to provide industry with a forum to discuss needs, concerns, or opportunities without authorities present. The subcommittee meets at each of the face-to-face meetings while the F44.92 subcommittee meets.
- **Executive Subcommittee (F44.90):** The executive subcommittee is comprised of leadership from each subcommittee as well as other representatives in order to provide a balance of perspectives to the subcommittee. The executive subcommittee sets the strategic and technical direction of the committee.

In the first several years after F44 was formed, the committee met four times per year, alternating between the U.S. and Europe to increase representation of global stakeholders at face-to-face discussions. Task groups met weekly or biweekly virtually, and subcommittees met virtually if official business was necessary. As the committee matured and a full suite of standards necessary for the new rules were published, the committee met less often. Today the committee consistently leverages hybrid meetings and balloting is done online.

Measurement of Success:

Pre-standardization:

Prior to the formation of F44, global industry and global authorities worked to identify challenges with the existing certification rules; collaborated to determine how to best support performance-based regulations; and created a strategy to develop a solution. These efforts were successful, as the new rules were published and the standards were developed.

Standardization:

F44 published 31 standards in three years, demonstrating a level of commitment from stakeholders, as well as alignment on the mission and scope of the activity. In a very short period of time, industry was able to move 80% of the former rules into industry consensus standards and establish cross-reference back to the old – and new – rules. This aids both the public and private sectors. F44 continues to update and develop new standards to support legacy and emerging general aviation technologies. These efforts were also successful, as the authorities accepted the standards as means of compliance after their new rules were published.

Implementation:

The issuance of the rule and subsequent acceptance of the standards was just one step of many taken to prepare the global marketplace for the largest rewrite of general aviation aircraft certification in half a century. Applicants have experienced challenges with effectively leveraging the new rules. In November 2020, the Government Accountability Office (GAO) published the "[Aircraft Certification Report: FAA Needs to Strengthen Its Design Review Process for Small Airplanes](#)," which offered seven recommendations to improve the implementation of the new rules.

Key Takeaways:

1. ASTM International has an effective [process for forming new technical committees](#). Because [AUTHOR WHO IS "THEY"]: they were part of the FAA Part 23 ARC discussions, they were able to respond to industry very quickly. Bringing SDOs into the discussions early on helped them respond more rapidly and prepare stakeholders to ensure an efficient start.
2. The implementation phase of standardization activities is just as important as the development phases. To ensure a successful implementation, especially for such a significant change as the Part 23 rewrite, education and training should be planned.
3. Going to where the stakeholders are greatly improves the chances of success. For international acceptance, meetings should be held in a variety of locations. Additionally, co-locating meetings with industry events that members already plan to attend can help increase participation (especially for task group meetings).

Advice for Others:

There was a significant reliance on active participation by both industry and government. Participants occasionally have restrictions on the level of participation permitted. Educating those decision-makers about the impact of, and options for, participation is as important as understanding the process itself and how to effectively engage. The success of a standards activity hinges upon the contributions of stakeholders, so effective leadership and participation are paramount.

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