

ASTM International Committee F38 on UAS

By James Jewell, Membership Secretary



I am privileged to once again write this year's report for «UAS: The Global Perspective» on behalf of ASTM F38 UAS Standards Committee and describe what F38 has accomplished during calendar year 2008-2009. In general it was a year of consolidation as we attempted to complete the suite of mini UAS Standards, targeted to assist U.S. Federal Aviation Administration Certificate of Waiver/Authorization (COA) or Special Certificate of Airworthiness, Experimental Category (CofA) applicants to make the safety case to regulators, by adding further documentation of risk reduction to applications for airspace flight authorization.

Most significantly, F38 was invited by the FAA to occupy a full seat on the Small Unmanned Aircraft Systems (sUAS) Aviation Rule Committee (ARC) empaneled to provide industry led recommendations, to the FAA, as it prepares the creation of a new sUAS Special Federal Aviation Rule (SFAR). For more information on the ARC go to www.faa.gov and search for FAA Order 1110.150.

Dan Schultz, ASTM Director of Committee Services and a member of the F38 Executive Committee, served as the F38 representative. In addition several members of the Executive Committee were tasked by the ARC's subgroup chairmen to engage as subject matter experts. These F38 members including Jeff «Goldy» Goldfinger, Vice Chairman of F38 who served on the Operations subcommittee, Gerry Marsters, F38 Executive Committee Member at Large and a former Director of Airworthiness, Air Transport Canada who served on the Certification subcommittee, Terry Erickson Executive Committee Member at Large who also served on the Certification subcommittee, Dave Gibbs Executive Committee Member at Large who served on the Flight Crew subcommittee, Dan Schultz served on the SFAR support subcommittee, and myself, Jim Jewell, F38 Membership Secretary, who served on the Model Aviation subcommittee.

The purpose of the sUAS ARC is to make recommendations to the FAA, to facilitate forging an SFAR to provide sUAS operators a clearer, less complicated pathway to airspace flight authority than currently exists via the Special Certificate of Airworthiness, Experimental Class or the COA process for public use flight authorities. The ARC is expected to make it's final recommendations to the FAA by the time you read this. A period of internal review will take place and a draft SFAR will be posted as a notice for public comment within about 6 months.

For 2009, the FAA UAS Program Office Manager (AIR160), Doug Davis and the UAS Integration Lead Bruce Tarbert have asked ASTM F38 to take a lead role in forging standards to support the emergent SFAR.

Within the past month, the F38 Executive Committee has undertaken an extensive strategic planning process and defined a new organizational structure to ensure that we are prepared to support the FAA's requirements for sUAS standards. F38 is currently recruiting subject matter experts to draft standards and/or assist in the consensus process. Specific needs will be better known when the ARC issues it's

final report and the shape and language of the SFAR begins to emerge. F38 will populate this new organizational structure directed toward forging standards to meet the FAA's SFAR requirements and continuing with our basic mission to anticipate and coin standards that assist the industry in its ever accelerating growth curve and to help the Department of Defense and the Service Branches who use UASs to standardize usage, airworthiness, operations, and training. If you have interest in helping forge these standards or wish to reflect your organizations viewpoint in the consensus process, please contact me at the coordinates at the end of this summary.

All in all it has been a watershed year for F38 and as we contemplate the next calendar year, we foresee substantial growth in standards support for the FAA, the DoD, other Public users, as well as for commercial users of UAS's.

Standards: Frequently Asked Questions

Members of F38, particularly the Executive Committee, are routinely asked certain questions about the role of standards, regulations, the difference between a Standards Development Organization (SDO) Standard and a Mil Standard or Mil Spec, and a few other key concepts. I thought that this year I would address a few of the more common questions we receive.

What is the difference between a standard and a regulation?
Regulations are issued by government agencies with the backing of legal authority. When a standard is declared acceptable («recognized») by a regulating authority, it can then be used as a «standardized» means for complying with regulatory requirements. Standards may be developed and issued by government agencies, industry consortiums, individual companies, or professional (SDOs) or they may be «de facto» standards accepted through wide common usage. Standards are usually voluntary in nature, meaning that volunteers contribute to their development. Their use can be required or optional in their role as – «a means of compliance» – with regulatory requirements.

What is the value of standards to unmanned aviation?
In unmanned aviation standards can provide a common language for regulators and industry members alike, with respect to key issues ranging from airframe design to standard operations. A standardized approach to the certification of aircraft expedites regulatory approval, and assists manufacturers in obtaining goods and services that can be reproduced identically, time and time again. This can result in reduced cost as well as providing insurance underwriters with the ability to assess operational risk and set rates for covering liability or hull insurance accordingly.

How does ASTM produce standards?
ASTM uses ANSI-accredited, voluntary consensus procedures that comply with the World Trade Organization's requirements for the development of international standards. ASTM's process is guided by the following principals:

- There must be a balance of interests to prevent any one organization or collection of organizations from dominating

the outcome.

- A consensus (vice unanimous) process / vote is used to approve technical content.
- There is a formal consensus process / method of arbitrating negative ballots.

What is ASTM F38 and who is participating?

ASTM Committee F38, one of ASTM's 140 technical committees with over 20,000 members worldwide, covers the standardization of materials, procedures, practices, guides and operations for unmanned aircraft systems. F38's vision is «Routine, Safe UAS Operations through Standards». Our 180 plus volunteer members develop these standards with an eye towards adoption by manufacturers, commercial and government operators, and regulatory authorities. F38 participants represent a balance of producer, buyer and other interests from all over the world.

What is the relationship between ASTM F38 and other UAS-related SDOs?

F38 members also participate on other SDO committees. We encourage this practice because there is plenty of work to be done and no single SDO can maintain all the necessary expertise, nor undertake work effort to address all of our community's needs.

How do you prevent duplication of effort between SDOs?

Through both formal and informal communications between our respective members and communications with other SDO leadership, we are routinely made aware of what each committee is working on in order to avoid wasteful duplication. Joint annual workshops also contribute to this process. F38 is hosting a workshop at the 2009 AUVSI conference in August.

What is your relationship to Regulators?

ASTM International has a long and rich history with regulators around the world. ASTM standards are the basis for national standards and regulation on over 74 countries. In the aviation sector, the Civil Aviation Authorities (CAA's) of New Zealand, Australia, Israel, the United States, Brazil, South Africa and other countries have used our Light Sport Aircraft (LSA) standards (forged by ASTM Committee F37) as the basis of their regulation and/or for certification of individual LSA aircraft. For aircraft electrical wiring, ASTM Committee F39 standards may be used in lieu of the FAA AC 43-13, supporting FAR Chapter 11. F38 and other ASTM subcommittee standards have been adopted by the U.S. DoD for use in supporting acquisition activity, and the FAA has recently asked F38 to participate in activities related to creating an SFAR focusing on small UASs, and then to subsequently develop standards to support small UAS regulations .

How do standards help in the Aviation Rule-Making Process?

Standard development and currency requirements is expensive and time consuming – particularly for agencies whose core business and competency is not necessarily to develop, publish and distribute standards. In the case of aviation rule making, we have seen the use of standards to support regulatory requirements – such as the reference to ASTM specifications and methods of test for aviation fuels. In other areas, we have seen regulations constructed as lean, performance-based frameworks, heavily reliant on standards for outlining details of aircraft certification, operation and continued airworthiness. Historically, the FAA has relied on the RTCA organization to create MOPS and MASPS, both standard types that allow manufacturers and users to ease the certification pathway. This is the case with LSA, and appears to be the strategic pathway for sUAS regulatory development. Standards development organizations provide

a open forum that blends user, producer, and regulator needs into a standards-product conceived in sunshine flexible to enable real time changes as technology and safety needs evolve.

In General how does this help the Process?

SDOs act as a 'resource multiplier» for Public Agencies. By assigning minimal staff to interact with an SDO, alongside other industry members, the agency conserves manpower resources and does not have to employ full time standards technology SME's. Agencies can learn from industry in these open forums, prompting the rapid transfer of information on new technologies to regulators...and ultimately into standards – when standards are included in regulation by reference. Inclusion by reference means laws and regulations maintain currency as technology changes, without having to undertake a lengthy rulemaking path to incorporate new technologies into acceptable means of regulatory compliance. Standards, unlike rulemaking leading to regulations, can be changed in real time (weeks to months vice years) to accompany new technology or procedural methodology leading to increased safety or reduced risk. Standards must be reviewed and/or republished periodically in order to maintain currency, and subsequently re-circulated very quickly, all at no time or cost to the agency referencing them.

Because standards are incorporated by reference and are periodically reviewed by SDO's for currency and applicability, they can be used to keep the technology foundations of Regulations current on a continuing basis.

I sincerely hope these questions and answers help to clarify the role and importance of Standards and how ASTM F38 relates to, and attempts to assist the various players in the Unmanned Systems Continuum. I believe that we are approaching the point in time when Unmanned Aircraft Systems will finally begin to realize significant commercial success in the next few years. I believe that we all can begin to take pride when we examine the vast new economic engine we are creating, and, at a time, when the world needs technology to create economic growth.

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