

ASTM International Committee F38 on UAS

By James Jewell, Membership Secretary



I am honored once again as the Membership Secretary of ASTM F38 UAS Committee, to address the worldwide UAS industry, with greetings from the members of F38, a dedicated collection of UAS professionals representing the industry as producers, users, academic research, DOD, and general interest members who now total over 190 members internationally. We are pleased to number among our members Peter van Blyenburgh, President of UVS International, and including many members of the various CAA and entities worldwide to help guide our workflow and priorities.

The F38 effort is managed by an Executive Committee under the leadership of the Chairman, Col. (ret.) Michael Howell and Vice Chairman Jeffrey «Goldy» Goldfinger and a core group of dedicated experts among who also chair our active subcommittee structure Terrence Erickson (F30.01 Airworthiness, David «Grizz» Grilley (F38.02 Operations) and Dave Gibbs (F38.03 Operator Training and Certification).

A year ago I updated the international UAS community on the ASTM F38 UAS Committee's progress creating consensus standards which are intended to be used as elemental building blocks which can be included, by reference, as components of UAS regulation. In last year's note we also discussed another useful way to use consensus standards. That is, to create Suites of Complementary Standards, which when use together, will support or accomplish tasks larger than might be accomplished when relying on a single standard. For example, if you are ready to file an application for a Certificate of Airworthiness, we believe that an applicant can help make the «Safety Case» regarding overall system integrity through the use of the rapidly expanding portfolio of F38 standards.

The concept of Suites of Standards was presented in the context of a suite of mini UAS Standards – mini UAS Airworthiness standards, mini UAS Operations standards, and mini UAS Operator Training or Certification standards working together to manage or to affect some larger useful task. These tasks may be related to surveying an airframe, power-plant, avionics package for airworthiness, or using an operational standard to give guidance regarding on how to operate a mini UAS under a paradigm of visual line of sight, under remote control, in class G airspace under 1220 ft AGL. Or it might be a training standard which provides practical benchmarks, for a candidate pilot or GCS operator to demonstrate proficiency to a certified examiner. It might be used as a guide to the safe operation of a mini UAS under certain conditions of operations in certain classes of airspace. What we infer is that if we operate an airframe that meets these specs, under these conditions and within this paradigm, by a pilot trained to these specifications, an operator can rationally assume that it has lowered substantially the probability of failure and the inherent risk associated with flight operations.

This approach might for example be used when operating

a mini UAS in a restricted airspace, say at a range designated to provide airspace. In this case this approach could be used to mitigate risk and to complement the range operations manual.

Another use might be, the use of the mini UAS Suite combined with a new work product WK13686, entitled «Guide for Suggested Procedures for Applying for a Special Certificate of Airworthiness (C of A) Experimental (UAS) or a Type Certificate for an Unmanned Aircraft System». This practice is envision as a generic, two part guide, to the intrinsic steps and methodology required by most CAA's which when followed can lead to an understanding of the core sequential process and procedures thus increasing the chances for a successful application for a Certificate of Airworthiness. Clearly since no one CAA has published regulations specific to a UAS this document illustrates the historical steps usually required by a CAA to achieve such an Airworthiness Certificate. The document is constructed so that appendices can be added that are specific to any given CAA. The FAA's requirements when published in an anticipated SFAR for mini UASs, as this regulation, rule or requirements are made available to guide the industry.

Today only a handful of Certificates of Airworthiness Certificates have been awarded in the United States. Each CofA is a meticulously, iteratively derived, hand crafted body of work mediated by the FAA and constructed by an interactive process between the FAA and the operator, to make the safety case for operating a particular airframe, within an area of airspace, at a specific time and so forth. It is currently limited to a Special Airworthiness Certificate, Experimental Class with the associated grants and limitations associated with this class. Each applicant has had to learn the steps and methodologies to enable it to talk to the FAA in language the FAA understands according to a sequence and format it accepts. In many cases this terminology and framework is bewildering to newly minted vendors in the aviation UAS sector. This methodology, language and sequence is what the WK13687 attempts to present to the industry, to the benefit of the industry and the FAA in order that the regulator need not retrain the applicant each time a new application is filed.

Further, in addition to the fundamental operating and safety checklists the CAA absolutely requires, and which will likely be modified as the intrinsic risk of an operation entails (larger airframes or changes in class of airspace for operations), it is hoped that if an applicant can come to the regulator with clear and consistent documentation which shows that they have complied with say;

- WK13935 Standard Guide for Mini UAS Airworthiness;
 - WK13989 Practice for Mini-UAS, Visual Range Operators;
 - F2500-07 Standard Practice for Unmanned Aircraft System (UAS) Visual Range Flight Operations;
- guided by using:
- WK8962 Standard Practice for Remote Control Pilots operating within Visual Range Written in language;

consistent with:

- F2395-07 Standard Terminology for Unmanned Air Vehicle Systems
- and conceived in a sequence which follows;
- WK13686 Guide for Suggested Procedures for Applying for a Special Certificate of Airworthiness (C of A) Experimental (UAS) or a Type Certificate for an Unmanned Aircraft System

The F38 Executive Committee is hopeful that the job of making the safety case to the regulator is several degrees less difficult on both the applicant and the regulator, because the applicant is better prepared to prosecute the application from beginning to end.

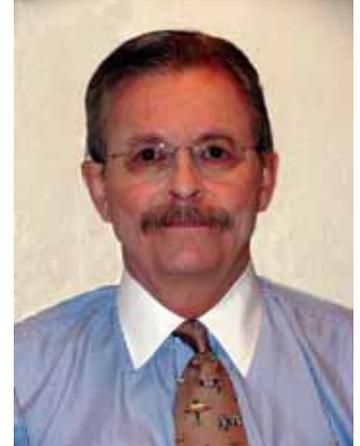
If this took too many words to express a simple idea, mea culpa. I try to adhere to the policy of addressing the «What Have You Done for Me Lately» style of reporting so in that vein I can say that at the last writing F38 has published 7 Standards. Today I can report that we have published 10 standards, have 11 WK items as WIP and have made significant modifications to 2 previously published standards. At our next face to face meeting in Denver, CO in May 2008 we have 4 additional standards on final ballot so by the time you read this it is likely that F38 will have published 14 UAS standards in support of the industry. We invite you to join us in Denver and to join F38 - please send an email to me, as F38 Membership Secretary, at james@uavm.com.

In particular I would like to draw your attention to the revision of F2395-07 Standard Terminology for Unmanned Aircraft Systems. This standard has been completely rewritten and is consistent with that terminology adopted

by the United States DOD JIPT. It helps when we attempt to communicate that we are all speaking from the same syllabus where a term has one and only one meaning and when we know what the plural of UASs is.

The paragraphs preceding were merely an attempt to illustrate how standards may be used together to accomplish important goals.

I trust 2008 will see ever accelerating change in our industry and technology offerings. Standards are not static either and we will attempt to adapt as the industry's needs change. (www.astm.org/uav.htm)



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