

ASTM International F38



By James Jewell, Membership Secretary

At this time of year I take stock of what ASTM F38 has been doing to improve UAS access to civil airspace or create standards that help to increase the safety case of UAS flight in general. I am pleased to report that F38, over the past year, has been very active overall in assisting the UAS community make the safety case for small UA's entry into the U.S. National Airspace System (NAS).

The FAA issued Order 1110.150 on 4/10/2008 to create an Aviation Rulemaking Committee to make recommendations to the FAA as it prepares to write a Special Federal Aviation Regulation (SFAR) that will provide a path for Small Unmanned Aircraft Systems (sUAS) to access limited parts of the NAS on a regular basis. The Order listed the following Issues for Study:

1. Hazard and safety risk analysis
2. Registration Process
3. Pilot Training requirements
4. Crew Medical Requirements
5. Requirements for system certification and continuing airworthiness
6. Economic Impact
7. International Harmonization
8. Communication latency and vulnerability.

The committee's sponsor is the Associate Administrator for Aviation Safety. The overall thrust of the SFAR is to provide limited access for Small UAS's in order that the FAA can safely acquire experience and data with smaller unmanned airframes, with the understanding that by refining what sUAS need to do to make the safety case, the SFAR can be extended to larger UA's.

The ARC was Co-Chaired by Bruce Tarbert (FAA UAS Integration Lead) and Ted Wierzbanski (AeroVironment) and was composed of members from Industry, Academia, and Government. The members were served by Subject Matter Experts to assist in formulating recommendations to the FAA. The ARC met over the term of approximately 6 months and submitted its recommendations to the FAA. Dan Schultz, the ASM Staff Manager for F38, was invited to be a Member of the ARC. Dan called upon F38 members Jeffrey "Goldy" Goldfinger (ASTM F38 Chairman), Gerry Marsters, Terry Erickson, David "Grizz" Grilley and this author to participate as Subject Matter Experts (SME). Additionally, new F38 members Ted Wierzbanski(AeroVironment), Joe Boyd MITRE), Paul McDuffee (InSitu), and Patrick Egan (RCAPA) were either Members or SME's on the ARC.

I will not attempt to review nor list the recommendations of the ARC. Suffice it to say that the recommendations were comprehensive and defined a taxonomy of Small UASs broken down into a Class for those under 2 Kg, a second Class break at 10 Kg, and a final Class break at 25 Kg. The Final Report can be found on the FAA's website.

The FAA is currently writing the Rule, to be posted for public comments via a Notice of Proposed Rulemaking (NPRM) by June 2011 with a final date for issue by December 2012.

While it may at first be interpreted to be a incremental approach

to facilitating UAS integration into the NAS, keep in mind the following. UAS integration into the NAS is new to the FAA and an incremental approach allows the FAA to accumulate data to assist it in making a safety case for larger UASs, and as importantly, it is easier for the FAA to accommodate requests for an exception granting a waiver for a UAS which does not fit precisely into the Category Schema once a Rule has been written upon which to grant a waiver from. Waivers will be considered IF the operator makes a sufficiently persuasive safety case.

All sUAS will require an ID tag (placard) on the UAS identifying TBD information about the UAS operator and system.

To facilitate writing the SFAR, the FAA put a solicitation on the street for response by Standards Developments Organizations (SDO's) to express interest, via a proposal, to forge standards which are intended to become a technical foundation for the SFAR. These Standards are intended to be included in the SFAR, by reference. This process of including standards by reference, similar to the process used for the Light Sport Aviation Rule, allows for the sUAS SFAR to be continually maintained, and be up to date as technology changes, without going through the entire rulemaking process.

After reviewing the expressions of interest proposals, ASTM UAS Committee F38 was selected to create 14 priority sUAS standards initially.

F38 held a strategic planning meeting in Crystal City on Feb 17-18, 2010. The meeting was held with FAA's Steve Glowacki and Ben Walsh in attendance. Magid Kamalabad has been designated as the FAA POC for all F38 standards work. Magid will coordinate standard distribution and review by FAA technical reviewers internally, assigned based upon standard content. As a result of this meeting, F38 is currently engaged in a fast track standards development program to include 14 new standards to be forged by October 2010, with four standards to undergo the first ballot beginning April 8, 2010.

The following matrix is a summary of the standards that the FAA has asked us to develop as priority one and priority two standards.

Prior.	Sub	Document
1	F38.01	Revision to F2584 Practice for Maintenance and Development of Maintenance Manuals
1	F38.01	Specification for the Design and Construction of Group 1 sUAS
1	F38.01	Specification for the Design and Construction of Group 2 sUAS
1	F38.01	Specification for the Design and Construction of Group 3 sUAS
1	F38.01	Specification for Quality Assurance in the Manufacture of sUAS
1	F38.01	Specification for Command and Control of sUAS
1	F38.01	Practice for Identification and Marking of sUAS
1	F38.02	Practice for Selecting sUAS Takeoff and Landing Sites

- 1 F38.03 Practice/Guide for Conducting Field Maintenance of an sUAS
- 1 F38.03 Specification for Pilot's Operating Handbook (POH) for sUAS
- 2 F38.01 Test Method for Frangibility of an sUAS
- 2 F38.01 Specification for Electric Propulsion
- 2 F38.01 Specification for Fuel Cell Propulsion
- 2 F38.01 Practice for Production Acceptance of sUAS (multi-copy production)
- 2 F38.02 Practice for Recording Operations Data
- 2 F38.03 Practice/Guide for Training and Certification of sUAS Pilots, Instructors, and School Houses
- 2 F38.02 Guide for Conducting sUAS Flight Operations in Civil Airspace
- F38.03 Position and Altitude Reporting for sUAS

succumbed to a long and brave fight against cancer. It is impossible to list Nuke's contributions to the industry and to F38. He is gone and he will be missed. For anyone who has known Nuke, he will never be forgotten. To ensure that future generations also remember Nuke, F38, along with the RTCA SC203 UAS Committee, and AUVSI are creating a memorial award in his name.

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These topical standards will be iteratively balloted through subcommittee and full committee until completed and published in 2010, targeting an October-December time frame. While not issued in time for this publication deadline, F38 has been informed that a further, more comprehensive list of standards, with Priority 1 classification will be issued in real time. Therefore the list above will be expanded substantially.

All in all, this has been a very good year for F38 and its vision of safe integration of UAS into civil airspace through Standardization.

In one important way it has been a very bad year for ASTM F38 and for the UAS community. One of our most important contributors, a founder of F38, a warrior, a superior engineer, and a close personal friend, Laurence "Nuke" Newcome has