



Aviation Rulemaking Committee on sUAS

Status Update - An Industry Point of View

By Ted Wierzbowski, Industry Co-Chair

On 13 February 2007 a Federal Register Notice in the United States (US) clarified Federal Aviation Administration (FAA) policy on small Unmanned Aircraft Systems (sUAS) operations. Prior to this clarification most sUAS in the US were operated by public (military and non-military government) and civil (commercial) entities under the provisions of Advisory Circular (AC) 91-57 «Model Aircraft Operating Standards» that was issued on 9 June 1981. This AC did not limit weight or speed of the aircraft and only «encouraged voluntary compliance» with the following precepts:

- Fly \leq 400 feet above ground level (AGL);
- Advise Air Traffic Control (ATC) if within 3 miles of an airport;
- Manned aircraft have right of way.

After this clarification was issued by the FAA, any size sUAS that was not being flown by modellers for recreational purposes could only be flown in the US if it was flown:

- Under the provisions of Certificate of Authorization (COA) if operated by a public entity;
- Under the provision of a Special Airworthiness Certificate - Experimental Category if operated by a civil entity; or
- In restricted, warning, and prohibited area airspace under the sponsorship of the government entity controlling that airspace if operated either as a public or civil entity.

As a result of this clarification the costs and schedules associated with sUAS development, testing, and training for both public and civil applications were substantially increased, or, in some cases, indefinitely delayed, due primarily to the imposition of prohibitions on:

- The use of sUAS for public applications unless a COA was approved for flights of a specific type of sUAS in a specific location or flights were conducted in restricted, warning or prohibited area airspace;
- The testing of sUAS for civil applications unless a Special Airworthiness Certificate - Experimental Category was issued with respect to a specific sUAS in a specific location and a specific type of mission (research and development, training, and demonstrations only);
- The actual use of sUAS for civil applications which, in essence, restricted various commercial operations that were using (or planning to use) sUAS - primarily as an aerial photography platform for real estate, environmental, agricultural, and other applications.

However, this clarification also advised the public that the FAA would evaluate alternatives to authorize certain kinds of sUAS operations without the above restrictions. This evaluation of alternatives resulted in the FAA establishing an Aviation Rulemaking Committee (ARC) comprised of members from the sUAS industry, operators, aviation associations, and other government agencies.

The sUAS ARC was formally chartered by the FAA on 10 April 2008 (FAA Order 1110.150) and was tasked to develop recommendations to address commercial and recreational/hobbyist (remote control models) operations within the National Airspace System (NAS). The membership of the ARC represented a diversified cross section of the aviation community with widely differing interests and perspectives on sUAS operations. The ARC held numerous face to face meetings and teleconferences

with both the full ARC membership as well as various focused workgroups formed to support the efforts of the ARC. Flight demonstrations of various sUAS as well as model aircraft were conducted to provide ARC members first hand exposure to various types of aircraft that would fall under their recommendations.

The ARC membership acknowledged that sUAS would increasingly become a vital part of the aviation community and would be required to integrate efficiently and safely into the NAS. However, the ARC also acknowledged that all sUAS operations desired by various users could not be addressed in any reasonable timeframe and decided that it would only take a «small bite of the elephant» so that limited sUAS operations could begin in the near term. Once safety data on these limited operations could be compiled more expanded operations could be allowed in the future.

On 1 April 2009, just over ten months after their first meeting, the sUAS ARC provided a comprehensive set of recommendations to the FAA that, if adopted, would allow for some limited initial sUAS operations in the US. In developing these recommendations, the ARC acted under the FAA direction that initial sUAS operations would be limited to daylight operations and would be conducted within visual line-of-sight of the operator under visual meteorological conditions. The recommendations from the group addressed two areas: model aircraft and sUAS operations. A definition of model aircraft was developed, along with baseline model aircraft operational limitations. sUAS recommendations based on physical characteristics such as weight, construction or frangibility, maximum operating speed, operational altitudes, and classes of airspace were also provided. The recommendations for sUAS operations focused primarily on operational limitations while recommending the use of consensus-based standards to address system certification standards including airframe, ground control station, and command and control links. Such an approach is similar to the approach used for standards development for Light Sport Aircraft.

The ARC recommendations (which can be found on the FAA web site) divided sUAS into four groups based primarily on weight (all \leq 25 Kg/55 lbs) with different operating restrictions for each group. Recommended provisions for designated test areas for sUAS development and test were also provided. Although the specific restrictions recommended by the ARC depended on the weight of the sUAS and the area in which it would be operated, the following general restrictions/operating precepts applied to all groups:

- Fly close to the ground. Normally this would be \leq 400 feet AGL but could be as high as \leq 1200 feet AGL in certain classes of airspace;
- Do not fly close to airports without permission. Allowable proximity to an airport depends on the type of airport and sUAS grouping;
- Always give manned aircraft the right of way.

These recommendations submitted to the FAA form the starting point for the rulemaking process and are only a small part of the process leading towards civil standards for sUAS. These recommendations will be evaluated and refined and a draft Notice of Proposed Rulemaking (NPRM) will be developed as part of a multi-faceted approach that includes economic reviews, safety evaluations,

impact to other air traffic, etc. There will be many inputs to the review process including consensus standards development activities, economic reviews, Safety Management System (SMS) reviews, and public comments received as part of the rulemaking process.

An important part of the evaluation process is the review of the recommendations and subsequent proposed rules from a SMS standpoint. The SMS process ensures a formalized, standardized, auditable approach to apply safety assessment procedures. Additionally, SMS activities will ensure that unacceptable risks are not introduced in the NAS. To achieve this, a Safety Risk Management Panel (SRMP) has been established by the FAA. Within just a few weeks of receiving the recommendations from the ARC, the SRMP held their first working group meeting. Using the ARC recommendations as a baseline, the SRMP will use the formal SMS process contained in the FAA's SMS Manual. The team has begun to identify preliminary hazards and the corresponding risks, taking into account both the likelihood and severity of those risks. Over the next several months, in addition to the identification of hazards, the SRMP will develop risk treatment strategies as well as develop a notional plan to track hazards and monitor the effectiveness of mitigations contained in the final Safety Risk Management Document.

If these recommendations are accepted and published by the FAA in a Special Federal Air Regulation (SFAR), any aircraft that meets the sUAS weight restrictions can be flown in the US provided it is operated as specified in the SFAR. In addition a sUAS could also be operated:

- Under a waiver to certain provisions of the SFAR if the operator provides a «safety case» to the FAA that such operations do not degrade safety;
- Under the provisions of Certificate of Authorization (COA) if operated by a public entity;
- Under the provision of a Special Airworthiness Certificate - Experimental Category if operated by a civil entity; or
- In restricted, warning, and prohibited area airspace under the sponsorship of the government entity controlling that airspace if operated either as a public or civil entity.

This would have a very significant positive effect on the sUAS industry in the US as follows:

- The costs and schedules associated with the sUAS development, testing, and training for both public and civil applications would be substantially decreased;
- The use of sUAS for some public applications will be enabled;
- The use of sUAS for some civil applications will be enabled.

The efforts of the ARC were an important starting point for sUAS regulatory development. The evolution and maturation of the recommendations of the ARC into proposed regulations is a complex and intricate activity. In the months to come, the FAA will continue to piece together the necessary parts that will enable sUAS operations in the US.

As the FAA goes down the path of regulatory development, keep in mind that the starting points for these activities were the many hours of hard work by a group of twenty dedicated individuals - the sUAS ARC members - and the subject matter experts that supported them. Being able to understand the needs and desires of existing operators and a new set of operators within the US NAS has been extremely rewarding and has provided the opportunity to view proposed operations and regulations from a different perspective.

Ted Wierzbanski
Industry Co-Chair
ARC on sUAS



EDITOR'S EXPLANATORY NOTE

What is an FAA Aviation Rulemaking Committee?

The FAA's Small UAS Aviation Rulemaking Committee (ARC) was established through the FAA Administrator to allow industry's participation in providing recommendations to the rulemaking process. An ARC is one of many advisory committees the FAA is allowed to use under the Federal Advisory Committee Act (FACA – Public Law 92-463). It is important to understand the difference between an ARC and the Aviation Rulemaking Advisory Committee (ARAC) process.

The ARAC process is used by the FAA to bring the aviation community together in a public forum for recommendations that will assist in the agency's decision-making process. An ARAC is open to the interested public; however, working group meetings are limited to working group members only.

The ARC operates under the same principles of an ARAC except the make up the ARC is determined by the FAA. The ARC is not a public committee like the ARAC and individuals have to be invited to participate in the designated ARC. The intent is to have an ARC provide the FAA with recommended rulemaking language to solve a particular issue. The ARC is a much shorter time span committee with a limited scope of activities. The end result is for the ARC to provide a set of recommendations to the FAA in the same manner as the ARAC.

Reference documents: Title 49 Transportation CFR 95-Part 95-Advisory Committees, DOT Order 1130C.