AMA D1 NPRM Amateur-Built Comment

My name is Andy Argenio and I am writing today not as an Academy of Model Aeronautics Executive Board Member but as the Chairperson of AMA's Advanced Flight Systems Committee that's responsible for developing safety programming for new and emerging technologies and their utilization in model-aircraft. I am concerned with the proposed rule with respect to the exclusion for amateur-built aircraft, however, the definition of what constitutes an "amateur-built" is not adequate and the preamble does not effectively delineate the true categories of UAS-Amateur-Built.

The continued insistence of FAA to use a "one size fits all" methodology throughout this NPRM is also evident in this section. Proposing to apply the same policy that is used for manned aircraft to model aircraft is flawed and requires review. The complexities of manned aircraft and models differ in not only construction but the process of making them airworthy.

For continuity and clarification, there are actually five levels of "manufactured" model aircraft excluding a kit which requires building and covering the frame of the fuselage, wing, stab and rudder and then all the additional fabrication and assembly mentioned for the ARF model aircraft that follows.

1. **Ready to Fly (RTF)** - requires no additional components just minor assembly
2. **Bind & Fly (B&F)** - requires a transmitter and battery and some assembly and gluing.
3. **Plug & Play (P&P)** - requires transmitter, receiver, battery installing receiver, some assembly gluing.

   With PNP and even BNF models, to acquire an ideal flying model the trimming and adjusting of control surfaces, both physically and through transmitter programming, requires several test flights.

4. **Almost Ready Fly (ARF) requires the check lists that follow**

The largest number of model aircraft in today's market include "Almost Ready to Fly" which loosely relates to a "kit homebuilt" manned aircraft but still with differences, both require a significant investment in time and effort to complete to airworthy condition.

The "ARF" model is essentially a shell of an airframe with pre-covered wings, fuselage, horizontal, vertical stabilizers and control surfaces. What follows is a basic "To Do List"

- ✓ Motor mounts needs to be sized and fabricated for either electric, glow, gas or turbine power and the power system installed.
- ✓ Cowling and venting has to be fabricated for engine/motor.
- ✓ Muffler mounting formers need to be fabricated and installed to frame. .
- ✓ Cutouts and mounts need to be fabricated in order to install all the servos.
- ✓ Control surfaces need to be hinged to the wings, rudder and stab and control horns need to be affixed to the surfaces for connection to control linkages and the mounted servos.
- ✓ All related electronic and mechanical components including the receivers and their power sources whether fuel or batteries and RF isolation as well voltage regulation provisions need to be provided and installed.
- ✓ Landing gear mounts fabricated for specific fixed or retractable gears and flap systems if required.

The aircraft may appear to be complete at this point but one of the most time consuming and crucial step is required next.

- ✓ Physically adjusting and radio programming of control surfaces.

- ✓ Establish control surface deflection rates and needed exponential control functions to accommodate different flight modes.
- ✓ Mixing of electronic control functions to overcome adverse yaw or to enhance flight maneuvers.

As you can see "Almost Ready to Fly" is really a misnomer, they require care and deliberate, time consuming construction and set up which translates to greater than 50% of construction effort and time.

In the proposed rule, as written, there will be significant difficulty in applying the rule on the recreational UAS (model) industry due to the popularity of recreational UAS that are "ARF" aircraft and the intent of separating hobbyists who build, assemble (complete), equip with electronics and power plants, set up and test fly from the off the shelf Ready to Fly (RTF) products. It is important to understand that "Almost Ready to Fly" category model UAS require skill, knowledge, and technical ability that falls under the intent of Amateur-Built as a definition.

If this rule goes forward without edit, the effect will be difficulty and subjectiveness in the field with how the FAA exactly applies the policy. A better explanation and clear definitions should have been included in the main body of the NPRM as well as the preamble. A poorly worded, inaccurate definition moving forward will severely damage the entire hobby. **A best practice, creating a clearer distinction within model aviation making a more accurate integration will be to include "Almost Ready to Fly" models as Amateur Built.**

I am also concerned that the proposed rule requires amateur-built aircraft to display a serial number, an unnecessary requirement for an aircraft that will only fly at FAA-recognized identification areas and within visual line of sight. Furthermore, serial numbers would potentially destroy recreational UAS (model) which may be detailed scale replicas of manned aircraft often used in national and international competitions.

Hobbyists spend hours poring over each detail of replicas to ensure accuracy. Adding serial numbers would potentially ruin the scale quality of the model. Additionally, by its very nature, modeling includes modifications and interchangeability of certain parts for performance and innovation, rendering any serial numbering system ineffective. Nearly all model aircraft structures are covered in a skin of polyester which over time may rip or become brittle. It is common for the modeler to strip and recover a models. .

In conclusion, I strongly urge you to revise the definition of amateur-built model aircraft to clarify the intent of the NPRM, to abandon the assumption that manned and model aircraft can be put into a "one size fits all" classification system and that Almost Ready to Fly model aircraft be considered Amateur Built.

I also urge you to remove any requirement for an external serial number for recreational UAS since all model aircraft are required, by the existing registration process, to include a registration number, the AMA long established safety code requires identification with a member number and strongly recommends name, address and phone number, hence, providing several methods of identification.

By addressing these issues, the FAA will protect the many model aviation businesses that sell model aircraft parts. In addition, the FAA will protect opportunities to learn about STEM, as AMA regularly hosts competitions, events and programs for young people to build model airplanes, some in kit form, and some ARF.