To: Docket No. FAA-2007-27310

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I respectfully submit the following comments as a rocket scientist with a professional and personal interest in rocket activities. I hope these help the FAA ensure that amateur rocket activities thrive under safe conditions.

1. The preamble (see FR p.32817 last paragraph) states that "the FAA protects people and property from the dangers of advanced rocket operations by using hazard areas and operating restrictions," yet there are no "hazard areas" identified per se by any of the proposed regulatory language. The proposed regulation text includes several statements to the effect that must not "operate in a manner that creates a hazard to persons, property, or other aircraft," which is a clear acknowledgement by the FAA that these classes of rockets (even model and large model rockets) can be operated in a manner that creates a hazard. What are the hazard area requirements the FAA proposes to protect people and property from the dangers of amateur rocket operations? The proposed regulation does include an implied hazard distance of 1500 feet for high power rockets, which I suggest be clarified as discussed below.

2. I recommend that the FAA adopt the NFPA approach in establishing the minimum separation between a launch point and spectators (see NFPA 1127 paragraph 4.16) and other exposed elements of the pubic (see 1127 paragraph 4.15.3). There is precedent for a regulatory authority to promulgate NFPA requirements. The NFPA 1127 is the basis for the current best practices that have been successful in protecting people from amateur rocket activities to date. NFPA 1127 includes requirements, including many definitions of key terms, which are often necessary for clarity and appropriate for adoption by a regulatory authority. An exception is that the FAA should clarify that the term "launch" in NFPA 1127 requirements refers to the launch point when defining minimum separation distances. An excellent approach would be to keep the highly flexible performance based requirements proposed (i.e. must not "operate in a manner that creates a hazard to persons, property, or other aircraft," eliminate the specific distances (i.e. 1500 feet) in the regulation text, add that the operator must establish an appropriate hazard area, and simultaneously issue an Advisory Circular based on NFPA 1127, state in the preamble that compliance with the AC is sufficient to demonstrate compliance with the regulation, specifically the hazard area requirements. This approach would require reasonable hazard areas and enable an applicant to demonstrate compliance by following best current practices as stated in the familiar NFPA code for rockets up to the O motor level.

3. The proposed 101.25 states that, "*No person may operate a Class 3-High Power Rocket-…(d) within 1500 feet of any person or property that is not associated with the operations;*" Is this intended to ensure at least 1500 feet between the launch point (e.g. launch rail location) and members of the public, or does "operate" include activation of a recovery system or other phase of flight? A definition of operate or some other clarification is recommended.

4. The preamble (see FR p.32817 last paragraph) states that "a hazard area is any region where there is a significant potential for harm from the rocket activity. Access to a hazard area is controlled or monitored by the operator (or by others through agreements) to protect the uninvolved public." Do spectators qualify as the uninvolved public? Note that the NFPA High Power Rocket Code (1127) includes spectator areas within the "launch site." I recommend that the FAA adopt this same approach: prescribe or encourage the minimum launch site dimensions in NFPA 1127 Table 4.14.2 to maintain a safe separation between these rocket activities and all those that a completely uninvolved (i.e. not participants or spectators, etc.).

5. For amateur rockets with a total impulse above the O motor level, I recommend the FAA develop guidance in an Advisory Circular based on the "Supplemental Application Guidance for Un-guided Suborbital Launch Vehicles."

6. The preamble (see FR p.32823 third from the last paragraph) encourages any applicant proposing to altitude to follow an FAA guidance document that includes the following statements.

   > "An impact hazard area is defined as two circles and straight lines connecting the circles at tangent points to the circles. The first circle, with origin at the launch vehicle's launch point, has a radius of 1 nautical mile. The second circle, with an origin at the nominal no wind impact point of the last launch vehicle stage, has a radius of 3 σ (sigma) of the nominal trajectory as defined in Attachment 1."

   I recommend the FAA, at a minimum, clarify if/how this guidance applies to High Power rockets since the proposed rule at 101.25(d) implies a hazard area of 1500 ft. Should the guidelines hazard area be used in lieu of the 1500ft for any such launches planned to reach above 25000 ft? How should an applicant establish a hazard area based on the guidelines if the rocket is intended to fly straight up? Is the 1nm a minimum value for a hazard area to be used even if the nominal impact dispersion area is less? When computing the nominal impact dispersion area for a multiple stage rocket that includes control systems intended to inhibit ignition of the subsequent stages under conditions that would lead to excessive dispersion, should the control system be assumed to fail?