

## Academy of Model Aeronautics

### Requirements for the Operation of Remote Control (RC) Aircraft at Full Scale Airshows

#### 1. Background:

Over the years, many AMA member clubs have performed at full-scale airshows. Recently the FAA approached the AMA with a request to provide guidelines for model aircraft operations at FAA waived events where both model aircraft and manned full-scale aircraft are scheduled to perform. In response to this request, the AMA Executive Council established the following policy in July 2013:

*“Other than events involving AMA Show Teams, all model aircraft flight operations at FAA waived aviation events (airshows) must be overseen by an AMA Contest Director and conducted under an AMA issued Class D sanction. The Contest Director shall verify the competency of the pilots and the safe conduct of the flight operations.”*

This document accompanies this policy and details the requirements necessary for AMA members to perform at full-scale events. Sanctioned AMA Show Teams should continue to operate in accordance with the AMA Show Team Safety Program.

In addition, the International Council of Air Shows (ICAS), has developed a set of Best Practices which establishes a baseline from which air show operations should be conducted. ICAS strongly recommends that they be used as one part of a multi-faceted training, education and operations program.

#### 2. Terms and Definitions:

- 2.1. Radio Control (RC) Aircraft: A model aircraft capable of navigating the airspace and flown by hobbyists within visual line of sight under direct control from the pilot using radio signals for the remote control of a model aircraft.
- 2.2. TEAM AMA: AMA sanctioned RC air show teams that are experienced with full-scale aviation events.
- 2.3. Contest Director (CD): An AMA member licensed as an agent of the AMA with the authority to administrate and supervise AMA sanctioned events.
- 2.4. RC Safety Officer: A member of the aeromodeling group who acts at the direction of the Contest Director and is responsible for the safe operation of the RC air show.
- 2.5. Spotter: A member of the aeromodeling group who assists the model aircraft pilot during his/her flight by continually monitoring the environment, apprising the pilot of potentially hazardous conditions and assisting the pilot in maintaining situational awareness and the orientation of his/her aircraft in relation to the surroundings.
- 2.6. RC Flight Box: The area in front of the safety line, designated for and within which all RC flight operations must occur.
- 2.7. RC Flight Line: The area from which RC flight operations, including take offs and landings are conducted.

- 2.8. Safety Line: A line established on the RC flight line forward of which all RC flight take place and behind which flight operations are prohibited.
- 2.9. Spectator Line: A line/barrier behind which all spectators must remain. The flight box must be at least 250 ft. from the spectator line/barrier.

### **3. Requirements:**

- 3.1. Sanctioning body - Academy of Model Aeronautics (AMA), 5161 East Memorial Drive, Muncie, Indiana 47302, Phone: 1-800-435-9262, Website: [www.modelaircraft.org](http://www.modelaircraft.org). AMA is the community-based organization that oversees the aeromodeling activity within the United States and is the sanctioning body for the radio control model aircraft community.
- 3.2. All operators of RC aircraft at airshows shall operate within the relevant portions of the current AMA National Model Aircraft Safety Code and related documents, AMA Safety Regulations for Model Aircraft Powered by Gas Turbines, and the AMA Large Model Aircraft (LMA) Program requirements.
- 3.3. With the exception of sanctioned Air Show Teams, all performances will be conducted under the oversight of an AMA Contest Director.
- 3.4. The CD shall sanction such events and report back to the AMA as required.
- 3.5. The CD must attend the full-scale pilot safety briefing, must present his/her credentials (AMA card) to the airshow event director/Air Boss upon request and provide a copy of the AMA sanction certificate designating him/her as the Contest Director.
- 3.6. The minimum staffing for this event is a Contest Director and RC Safety Officer. This is in addition to the RC Pilot doing the performance. These three positions are interchangeable; however, one person must be acting as the model airshow air boss at all times.

### **4. Currency/Experience:**

- 4.1. The CD shall assure that all RC model pilots are competent in the operation of the specific aircraft type(s) being flown.
- 4.2. All pilots should have demonstrated experience in performing at large events such as major contests, multiple participant events or other events where significant numbers of spectators are present, and must have flown their performance aircraft and practiced their act within the 45 days preceding the airshow.
- 4.3. All pilots operating turbine powered aircraft must hold a valid and current AMA Turbine Waiver.
- 4.4. All pilots operating Large Model Aircraft must hold a valid LMA certificate for the aircraft being flown.

### **5. Documentation:**

- 5.1. All pilots shall have in their possession and provide upon request all required documentation, i.e. valid and current AMA membership card, Turbine Waiver, LMA certification.

## 6. RC Flight line Operations:

- 6.1. RC pilots shall not use alcohol or prescription drugs that have “Do Not Operate Machinery” warnings for at least 8 hours before the air show.
- 6.2. The CD or the RC Safety Officer must immediately ground any pilot who is deemed to be operating in an unsafe manner.
- 6.3. Pilots should develop and practice a flight routine for their performance. An ordered list of the specific flight maneuvers being flown should be provided to the announcer. The old adage “If you haven’t done it before don’t do it here.” must apply.
- 6.4. Regardless of aircraft type, all flights shall be conducted in a manner that assures the energy of the aircraft is never directed at the spectators or towards other unprotected individuals.
- 6.5. Communications with the Event Air Boss: Two-way communications shall be maintained between the event air boss and the RC air boss throughout the RC demonstration.
- 6.6. No vehicle or personnel traffic of any kind is allowed under the RC flight box during a performance. If the host requires such traffic during the show, specific safety procedures must be established between the Contest Director/RC Safety Officer and the air show host and/or Air Boss to assure the continued safe conduct of the RC exhibition. Any such arrangement should be well conceived, preferably in writing. The CD/RC Safety Officer should never agree to any plan that he/she deems unsafe. If an unforeseen encroachment into the flight box occurs during the performance, the CD/RC Safety Officer must immediately stop the performance until the matter can be resolved.
- 6.7. Spotter: Each pilot *must* have a qualified spotter assisting him/her at all times, including during engine start-up. The spotter must continually monitor the operating environment and advise the pilot of potential hazards such as the aircraft’s location relative to newly emerging and/or potentially hazardous conditions. In addition, the spotter must be capable of assuming control of the aircraft in an emergency.
- 6.8. RC aircraft shall always give the right of way to full-scale aircraft. RC pilots must be prepared to land immediately if requested by anyone associated with the show. Typically such a request will come from the event Air Boss; however, the benefit of the doubt should be given to anyone making such a request.
- 6.9. All propeller driven aircraft shall be started with the tail of the aircraft pointed toward the crowd.
- 6.10. Turbine powered aircraft shall be started in areas with a sufficient safety buffer and positioned such that the exhaust is not pointing toward the crowd.
- 6.11. Testing of smoke systems must be done in a manner that minimizes the amount of smoke directed at the crowd.
- 6.12. All take-offs, landings and flight maneuvers such as “high performance turns” that direct the energy of the aircraft toward the crowd are prohibited.
- 6.13. At no time shall any RC aircraft be operated behind the safety line or over spectators, vehicles or buildings.
- 6.14. Actions such as touching the tail of a moving aircraft on the ground or touching any part of an aircraft while in flight are prohibited.
- 6.15. Dropping or releasing any object while in flight such as drop tanks, simulated bombs, candy or parachutes is prohibited, unless specifically coordinated with and allowed by the show organizer(s).
- 6.16. Any malfunctioning RC aircraft shall be directed away from the spectators and landed immediately in a clear area. Pilots should be prepared and reminded at each pre-show briefing of the safe area in which to land the aircraft.

- 6.17. Only personnel directly involved in the model air show shall be permitted on the RC flight line.
- 6.18. Only essential support equipment is allowed on the RC flight line and must be immediately removed after the performance. Any tools used on the flight line should be replaced in a tool box after use. Several trash bags should be available to collect any debris after the performance.
- 6.19. Smoking is prohibited on the RC flight line.

#### **Professional Pyrotechnics Displays:**

- 6.20. If a professional pyrotechnics display is planned for the full-scale portion of the air show, the CD/RC safety officer shall coordinate with the pyrotechnicians(s) relative to any concerns on use of radio frequencies.
- 6.21. If the display is located within the RC aerobatic box, the CD/RC safety officer and the operators of all RC aircraft shall be advised to avoid the "hot" area and to not fly near or over any personnel working in the area.
- 6.22. In the event that an RC aircraft lands in the hot area, the pilot must be accompanied by a member of the pyrotechnics team when entering the area to retrieve the aircraft.

#### **7. Insurance:**

- 7.1. The CD shall provide a Certificate of Insurance for each air show event, if required. The certificate should include the following:
  - 7.1.1. Name of the show sponsor(s), site owner(s) (if different), and any other entities as required by the show as an Additional Insured(s).
- 7.2. All RC pilots must be members of the Academy of Model Aeronautics. The pilot's AMA membership card shall constitute proof of personal liability coverage for all aeromodeling operations.

#### **8. Equipment:**

- 8.1. All radio equipment shall be FCC approved narrow band 72 MHz, Ham narrow band or 2.4 GHz spectrum band systems. Radios using other frequencies are not permitted.
- 8.2. All radios should have the fail safe function enabled and set to the following conditions:
  - 8.2.1. Throttle closed or idle cut off
  - 8.2.2. Flaps down (if applicable)
  - 8.2.3. Speed brakes deployed (if applicable)
  - 8.2.4. The remaining controls should be in the last position held
- 8.3. All pilots shall inspect their aircraft to assure assembly and airworthiness at the event show and the pilot shall sign a flight safety declaration of aircraft inspection form.
- 8.4. Each model must be checked and test flown two (2) weeks before each show.
- 8.5. Under no circumstance may an untested aircraft be flown in an air show.
- 8.6. Range Check: All radio control equipment shall be successfully range checked each day in accordance with the manufacturer's instructions prior to flight.
- 8.7. The CD and/or the RC Safety Officer must not allow the flight of any aircraft that is deemed to be unsafe.

- 8.8. Frequency Scanner: Where applicable, a scanner capable of discerning the 72 MHz and Ham bands shall be in use and monitored for frequency conflicts during the model air show.
- 8.9. Fire Extinguisher: At least one fire extinguisher shall be available on the flight line and in the static display area at all times.
- 8.10. Trash receptacles shall be present in the static display area.

## **9. Location:**

- 9.1. In general, the show site should be at least 3 miles from any RC flying site. Active on-sight frequency monitoring should be done to insure that the site is free of interference. An active RC flying site may be within 3 miles of the RC air show if communication and frequency control have been established with the club in advance of the show. Strict attention must be given to frequency control.
- 9.2. Crowd Control: The sponsor or the RC group must arrange for crowd control so that the show will be in compliance with the AMA Safety Code. A spectator line or barrier of sufficient length must be provided to maintain separation between the spectators and the RC operation.
- 9.3. Safety Setback: The flight box must be at least 250 feet from the spectator line/barrier, and 500 feet for turbine powered fixed wing aircraft and Large Model Aircraft (LMA).
- 9.4. Runway and RC Flight Box: The takeoff and landing area must be of sufficient length and width to allow all aircraft to take off and land safely. The RC flight box should be of sufficient size to allow for the safe operation of all aircraft and the maneuvers flown. Take offs and landings may be outside the RC flight box; however, this area must be a safe distance from the spectator line and all turns during takeoff and landing must be made away from the spectators.
- 9.5. Parked aircraft, static displays, airport support equipment, etc. should be no closer than 300 feet from the flight box area (three sides - opposite, left, and right sides of the flight box).

## **10. Personnel:**

- 10.1. Contest Director
- 10.2. RC Safety Officer/Model Airshow Air Boss
- 10.3. RC Pilots
- 10.4. Spotters
- 10.5. Ground Support Crew

## **11. Weather Requirements:**

- 11.1. Model aircraft can fly under most weather condition except high winds and steady rain. Decisions as to the acceptability of weather conditions are at the discretion of the CD/RC Safety Officer.

## **12. Emergencies/Contingencies:**

- 12.1. The show shall be halted if in the judgment of the CD or RC Safety Officer an unsafe condition, including weather, exists. The show can not continue until the problem has been resolved to the satisfaction of the CD or RC Safety Officer.

### **Briefings:**

- 12.2. The CD/RC Safety Officer must conduct a safety briefing each day prior to any flight activity.
- 12.3. All pilots in the model air show shall attend all safety briefings.
- 12.4. The CD and RC Safety Officer should review all safety considerations with all team members prior to each show. This briefing must include a discussion of the need to direct any malfunctioning aircraft away for the crowd and all full-scale aircraft.

## **13. Specialty Acts:**

- 13.1. Special acts involving combined RC model aircraft and full-scale aircraft such as virtual formation flight must be preapproved via a specific AMA waiver issued as part of the event sanction
- 13.2. The request for waiver must be submitted as part of the sanction application and must include the following:
  - 13.2.1. A thorough description of the specialty act to include the flight sequence, the performance procedures and related safety considerations
  - 13.2.2. The names of all model aircraft and full-scale pilots performing in the act, and a listing of each pilot's background and experience.
- 13.3. AMA may require the specialty act to be performed before an AMA selected evaluator prior to approving the waiver

## **14. Model Aircraft and Educational Demonstrations:**

- 14.1. Model aircraft and educational demonstrations conducted away from the show line that are part of the airshow event but not part of the airshow performance must meet the requirements of Sections 3, 4, and 5 of this document.
- 14.2. All model aircraft operations must be conducted in accordance with the AMA Safety Code and all related and applicable AMA safety guidelines.
- 14.3. Venues for this activity must be established in a safe area that will not interfere with the manned aircraft activity and are a minimum of 500 feet from the main spectator area.
- 14.4. All model aircraft flight activity must be coordinated with the airshow event director/Air Boss.

## **15. Links to useful documents:**

- 15.1. [AMA Safety Code](#)
- 15.2. [TEAM AMA Safety Program](#)
- 15.3. [AMA Safety Regulations For Model Aircraft Powered By Gas Turbines](#)
- 15.4. [AMA Experimental Radio Control Aircraft Program Requirements](#)