Radio Controlled Model Aircraft Operation
Utilizing Failsafe, Stabilization and Autopilot Systems

1. **DEFINITIONS:**

   a) **FAILSAFE SYSTEMS** are designed to minimize or prevent damage and safely terminate the flight when a radio controlled model aircraft loses radio signal. Modern radio systems can be programmed to position servos to a desired control setting in the event of radio signal failure.

   b) **ATTITUDE FLIGHT STABILIZATION SYSTEMS** are designed to maintain intended model aircraft flight attitudes. The pilot can program and activate a system to stabilize yaw, pitch, or roll or any one attitude or combination of attitudes. Systems are often based on inertial motion sensors utilizing 3-axis gyros and 3-axis accelerometers for attitude stabilization.

   c) **AUTOPILOT FLIGHT SYSTEMS** often incorporate the programmable flight stabilization described above with an altitude sensor and a GPS receiver for accurate positioning and to navigate/control a radio controlled model aircraft's flight path. Advanced systems offer software for entering navigable waypoints. The flight data waypoints may be saved to autopilot's/GPS memory for programed flight.

   d) **FIRST PERSON VIEW (FPV)** refers to the operation of a radio controlled (RC) model aircraft using an onboard camera's cockpit view to orient and control the aircraft (AMA Document #550).

   e) **VISUAL LINE OF SIGHT (VLOS)** is the distance at which the pilot is able to maintain visual contact with the aircraft and determine its orientation without enhancements other than corrective lenses.

2. **GENERAL:**

   a) All model aircraft flights utilizing stabilization and autopilot control systems must be conducted in accordance with AMA's current National Model Aircraft Safety Code and any additional rules specific to a flying site/location.

3. **OPERATIONS – REQUIREMENTS - LIMITATIONS:**

   a) AMA members flying radio controlled model aircraft equipped with flight stabilization and autopilot systems must maintain VLOS with the aircraft at all times including programmed waypoint flight.

   b) AMA pilots must be able to instantaneously deactivate programmed flight stabilization and autopilot systems at any time during flight and resume manual control of the model aircraft.

   c) Prior to initial programmed autopilot flight and after any changes or repairs are made to the stabilization or autopilot systems, AMA pilots must demonstrate manually controlled flight of their model aircraft successfully.

   d) Model aircraft exceeding 15lbs and/or 70mph may only use an autopilot for a programmed "return to launch" (RTL) flight and not for programmed waypoint flying of a predetermined course.

e) **STABILIZATION & AUTOPILOT SYSTEMS MAY BE USED FOR/TO:**
   - Stabilization/automatically stabilize aircraft to level flight when control sticks are centered.
   - Recovery/activate TRX switch to recover an out of control aircraft to level flight.
   - Heading/activate TRX switch to hold a model aircraft's heading for precision flight path.
   - Altitude/activate TRX switch to maintain fixed aircraft altitude while allowing directional control.
   - Return GPS/activate TRX switch to return aircraft via GPS to launch point.
   - Return FSS/failsafe activated from radio signal loss to return aircraft via GPS to launch point.
   - Fixed circle/activate TRX switch to circle aircraft at point of activation at fixed altitude.
   - Waypoint/activate TRX switch to initiate an autopilot programed aircraft flight path via waypoints.
   - Fencing/autopilot programed to display site unique boundaries on the video monitor/goggles

4. RANGE – ALTITUDE – WEIGHT – SPEED:

a) One of the requirements in Federal Law (Public Law 112-95 Sec 336 (c) (2) February 14, 2012) for model aircraft to be excluded from FAA regulations is that model aircraft be flown within VLOS of the operator.

b) Model aircraft must be flown at or below 400 feet AGL when within 3 miles of an airport as stated in the AMA Safety Code.

c) Model aircraft utilizing an autopilot for waypoint flying are limited to a maximum weight (including fuel, batteries, and onboard autopilot systems) of 15lbs and a speed of 70mph. These lower weight and speed limits are not required for model aircraft using failsafe and/or stabilization systems.

5. RECOMMENDATIONS & INFORMATION:

a) If your radio system lacks failsafe capability, consider using programmable digital servos or auxiliary failsafe modules. In the event of a radio signal failure these components will activate desired safe servo settings or an autopilot for return to base/launch (RTL).

b) When using an autopilot system the "return to launch" (RTL) feature should be programmed to return the aircraft to a safe location and safely terminate the flight should manual control of the aircraft be lost. When using RTL, pay particular attention to the manufacturer's throttle recommendations to prevent stalling. The use of stabilization systems is recommended when flying FPV to improve flight stability and video quality.

c) Pilots usually choose to incorporate stabilization and autopilot systems for model aircraft flying to enhance flight performance, correct bad tendencies of the model aircraft, maintain stability in windy weather, establish precision heading holds for takeoffs/landings, flight training for novice pilots, create a steady flight platform for cameras, and generally just to make an airplane easier and safer to fly.

d) When purchasing stabilization and autopilot systems, always try to select quality equipment from reputable dealers, ensure for compatibility with other onboard systems, and install components according to manufacturers' instructions.

6. PRIVACY PROTECTION SAFEGUARDS:

a) The use of imaging technology on radio control model aircraft with the capability of obtaining high-resolution photographs and/or video, or using any types of sensors, for the collection, retention, or dissemination of aerial surveillance data/information on individuals, homes, businesses, or property, is strictly prohibited by the AMA unless written expressed permission is obtained from the individuals, property owners, or managers.