AMA® RULEBOOK

2026-2027

Radio Control Aerobatics

RULES GOVERNING MODEL AVIATION COMPETITION IN THE UNITED STATES

Amendment Listing

Amendment Topic	Publication Date	Description
Change Judging Individual maneuvers	1/1/2020	Section D, last paragraph
Rounds counted to determine contest results	1/1/2020	13.1 Determining the winner
Downgrades on Immelmann and Bunt	1/1/2020	Judges Guide – Paragraph E Description of Maneuvers– Loop/Roll Combinations- 1
Propulsion source limitations	1/1/2020	Section 4.1
Propulsion source limitations	1/1/2022	Section 4.1
Description of Maneuvers	1/1/2022	AMA Pattern Judges Guide, Section E, Loops
FAI events, Indoor and Outdoor, to follow FAI rules	1/1/2022	7. Pattern Event Classes
Eliminate AMA RC Pattern Judging Guide	1/1/2024	Use FAI F3 R/C Aerobatic Aircraft Manoeuver Execution Guide
Adopt FAI Technical Specifications for Aircraft	1/1/2024	Section 4.3

Flight Logging Devices	1/1/2024	Section 4.4.3
Contestant Judging	1/1/2024	Section 9
Section 14 replaced	1/1/2024	Section 14

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RADIO CONTROL, GENERAL (FOR NONSCALE EVENTS)

1. Applicability

In addition to the following General Radio Control rules and the specific rules for each radio control event, radio control model aircraft construction, flying, and competition are also governed by the rules of the following sections: Sanctioned Competition, Records, and General. Although the following general and specific rules primarily govern competitive activity in AMA events, it is strongly recommended that in the interest of safety and consistency they be followed in all radio control activity.

2. Safety Declaration

At all sanctioned contests, each contestant shall sign an AMA Flight Safety Declaration (perhaps as part of an entry form), attesting to the fact that he/she has previously and is now capable of confidently performing the maneuvers comprising his competitive event. Furthermore, the contestant shall also similarly declare that any and all aircraft he/she uses in said competition have been test flown at least to the extent that they have performed the same competitive maneuvers and are therefore qualified to be flown in the contest and in the presence of fellow contestants, contest officials, and all others who may be in the flight area during the competition period.

RADIO CONTROL PATTERN FOR EVENTS 401, 402, 403, 404, 406, 407.

1. Applicability

All pertinent AMA regulations (see sections entitled Sanctioned Competition, Criteria for Cancellation of Contests, Selection of Champions and Radio Control, General) shall apply except as specified below.

2. Objective

To control by radio a model airplane so that various planned maneuvers may be accomplished. The criterion is the quality of execution of the maneuvers compared to the defined geometric descriptions and specified procedures. Maneuvers shall be judged according to the AMA Radio Control Pattern Judges Guide.

3. Licensing Requirements

All radio equipment and operation must conform to the regulations of the FCC. The AMA membership card of each entrant shall be checked at every sanctioned meet. An FCC amateur license is required for use of 50 and 53 MHz.

4. Model Aircraft Requirements

Failure to comply with the following could result in disqualification of the contestant's plane by the Contest Director (CD).

4.1. Propulsion source limitations

Any suitable propulsion source may be used except those requiring solid expendable propellants, gaseous fuels (at room temperature and atmospheric pressure) or liquefied gaseous fuels. **Electrically powered model aircraft are limited to a maximum of 51 volts for the propulsion circuit, measured prior to flight while the competitor is in the ready box. A tolerance of 1% will be allowed for possible inconsistencies in measurement instruments and measurement operator error for battery voltage.** A CD may waive all or some of the requirements for voltage measurement if not practical.

If voltage measurement is being enforced, random checks may be conducted at any time during the contest. If a model fails to meet the requirements, the contestant's flight is zeroed. In this case, the contestant may be subject to the measurement test for every remaining contest round at the CDs discretion.

If an enforced event utilizes a Preliminary and Finals format, a contestant's model that qualifies for the Finals must be checked before the first Finals round prior to a flight while the contestant is in the ready box. If a model fails to meet the requirements, the contestant's flight is zeroed. In this case, the contestant is subject to the measurement test for every remaining Finals round. All other contestants may be subject to random measurement tests for the remainder of the Finals rounds.

4.2. Noise Limit

Each internal combustion engine shall be equipped with an effective silencer. The maximum noise level for all AMA classes shall be 96 decibels measured at three (3) meters from the centerline of the model. All measurements will be taken perpendicular to the fuselage centerline from the right hand side of the model. The nose of the model will be pointed directly into the wind and the microphone will be placed on a stand 30 centimeters above the ground and in line with the motor. No noise reflecting objects shall be nearer than three (3) meters to the model or microphone. The measurement will be made while the throttle is at full power. If the noise level is exceeded during the test the contestant will be allowed to fly the flight. Immediately after the flight the model will be tested again. The model may be refueled if necessary. If the model again exceeds the noise limit a score penalty of five (5) percent of the raw flight score shall be assessed for those models registering over 96 dB and a 10 percent penalty for those registering over 98 dB. The CD or Event Director (ED) shall have the option of deleting the noise level requirement at any sanctioned event. The CD or ED will be responsible for the calibration of the equipment used during the contest.

At any contest that will enforce the noise limits, all contestants must have access to the equipment to check their models prior to the start of the event. If this cannot be done then the noise limits will not be enforced

4.3. Weight and Size

Model Aircraft will be required to meet the Size and Weight requirements in the Effective version of the FAI Sporting Code - Section 4 Volume F3 for all classes with the following exceptions: 1) Any AMA legal airplane* is allowed to fly in the Sportsman Class, 2) the weight requirement does not apply to the Intermediate class , 3) There will be an additional 2% allowance for the Advanced class.

*Note, these exceptions only apply to Weight and Size and any deviations do not permit additional functions like flight stabilization devices.

4.4. Equipment Functions

There are no limitations to the type of control equipment or to the number of control functions. Limitations of other functions are as outlined. As used below, telemetry is defined as a RF communication link that passes data from a model to a receiver on the ground

4.4.1.
Telemetry that is communicated to the pilot or their caller will only be permitted in competition for the purpose of model safety. Any telemetry communicated to the pilot or their caller for a competitive advantage is not allowed during competition. Telemetry data shall not be used as a basis to request a re-flight.

Examples of telemetry that can be communicated to the pilot or caller:

1. Receiver power supply voltage.

2. Total fuel or motor battery voltage or capacity consumed/remaining.

3. Radio link status or fail-safe activation.

Examples of telemetry that cannot be communicated to the pilot or caller:

1. Airspeed, altitude or attitude data.

2. Position data such as GPS.

3. Power plant data such as RPM limits, throttle setting, current draw, etc.

4.4.2.

The intent of this section is that the pilot must initiate all input commands to the aircraft. Use of autopilot control or aircraft axis stabilization during competition is prohibited. Automatic control sequencing either in the transmitter or the model is prohibited. Any equipment containing such abilities must have them disabled during competition and are subject to spot-checking by the CD.

Examples of control functions allowed:

1. Control surface throws or power plant limits that are changed by the pilot.

2. Any control that is initiated and terminated by the pilot using any sort of transmitter control such as transmitter switches or sticks, accelerometers in the transmitter or voice commands.

3. Programmable mixes either in the transmitter or the aircraft systems. Any form of manual input by the pilot can adjust these mixes.

4. Power plant management such as mixture control or systems that normalize the power delivered to a motor over time.

5. Timed functions that delay or transition a single command.

Examples of control functions not allowed:

1. Preprogramming that will automatically perform a series of commands based on a timeline.

2. Automatic leveling or electronic stabilization in any axis.

3. Power plant management systems that adjust power with regards to model performance, position or attitude.

4. Positioning systems utilizing any sensors such as air data, GPS, distance, etc.

5. Learning functions involving maneuver-to-maneuver or flight-to-flight analysis.

4.4.3. Flight Logging Devices

Flight logging devices are allowed to be used in competition with the following restrictions: 1) data from the flight logging device must not be visible or audible via any form of telemetry or communication by the pilot or their caller during the competition flight, 2) under no circumstances shall the data collected by the Flight Logging Device be used as evidence to support a formal protest, to cause any action to request a judge to change their score or to bring into question a judge's ability or rate their performance as a judge, or used to request a re-flight.

4.5. Eligibility of models

Contestants may fly any aircraft which conform to the rules of the class in which they are entered and may share, borrow, repair, or interchange aircraft components or complete aircraft as they see fit during the competition, providing the resulting complete aircraft conforms to the equipment requirements as stated in this section, and satisfies the provisions of Paragraphs 4.7.1. and 6.1.

4.6.

The builder-of-the-model rule shall not apply to Pattern events.

4.7. Identification

All models shall be identified per AMA Competition Regulations General Information All Categories, General section, paragraph 4 Identification.

4.7.1.

Borrowed or shared aircraft shall carry temporary identification, as shall repaired aircraft if deemed necessary by the CD. Such identification shall consist of the AMA license number of the contestant operating the model affixed to or written on the model in any way which conforms to the standard set forth in 4.7. Temporary identification numbers may be affixed in any manner which will withstand the rigors of flight.

5. Number of helpers

Each contestant is permitted one (1) helper during the flight. Two (2) helpers may be present during the starting of the engine(s). Once airborne no person other than the contestant shall operate the transmitter controls. Operation by anyone else shall require disqualification of the flight.

6. Safety requirements

Considerations of safety for spectators, contest personnel, and other contestants are of utmost importance in the event, and the following safety provisions must be observed. Failure to comply with the following could result in disqualification of the contestant's plane by the CD.

6.1.

The CD at an AMA sanctioned event has the authority to perform safety inspections of any equipment and to prevent any participant from using equipment which in the CDs opinion is deemed unsafe.

6.2.

The "flightline" shall be defined as a straight line, infinitely long in both directions, in front of which all flying is done and in back of which all officials, contestants, and spectators are positioned. The judges shall be positioned right at the flight line, and, in fact, it shall be established by the judges' position. If at any time during a flight, including the takeoff and landing, the plane goes behind the flight line, the maneuver being executed or the previous maneuver (if the plane is between maneuvers) shall be scored zero (0). If two (2) zeros are earned during the same flight for flight line infractions, the remainder of the flight shall be scored zero (0), and the contestant shall be ordered to land the plane. Continued flying behind the flight line shall result in disqualification of the contestant by the CD.

6.3.

Dangerous flying of any sort, or poor sportsmanship of any kind, shall be grounds for disqualification of the contestant involved.

6.4.

The contestants shall remain in the pilot box while flying and in particular shall stay off the runway and/or landing area. The contestant may approach the runway with the permission of the judges when landing or when aborting a flight.

6.5.

All planes must have rounded prop spinners or blunt faced hubs such that no propeller shaft protrudes. Rounded devices shall have a radius of point not less than three (3) millimeters.

6.6.

Knife-edge wings are not allowed.

6.7.

The maximum sustained winds during a pattern contest shall be 30 knots. The CD shall suspend flying when the sustained winds (excluding gusts) exceed this limit. Flying shall be restarted when the wind recedes. The CD may also suspend flying due to wind when in his/her opinion, flying has become unsafe due to field or other circumstances. The CD will make the final decision as to the wind speed and that decision may not be questioned by contestants.

6.8.

The contestant may ask the CD for a flight delay or re-flight due to unsafe conditions; if the judges concur, the delay or re-flight may be granted. However, the contestant's own aircraft cannot be the cause of the unsafe condition. A flight delay or re-flight shall not be granted for equipment malfunctions at 4A and 5A contests. The CD may make exceptions at other contests.

6.9.

At no time will a model be left unrestrained or unattended while running or with the electric motor power circuit(s) physically connected unless the model is on the runway. If maintenance or testing needs to be done and the model must be running or have the electric motor power circuit(s) physically connected, this must be done in an area designated by the CD, be physically restrained, and must be attended at all times. First infraction of this rule will result in a warning. Second infraction will result in loss of the highest round. Subsequent infractions will result in loss of the highest round remaining and, at the CD's discretion, disqualification of the pilot.

6.10.

All models that have the capability of Fail Safe in the radio shall have the throttle set to Fail Safe in a way that the motor/engine comes to a complete stop or a minimum idle if it were to lose signal from the transmitter. The CD may spot check the Fail Safe function at any given time during the contest.

7. Pattern event classes

The outdoor Radio Control Aerobatics event shall be divided into five (5) classes. The first four (4) classes shall (in order of increasing difficulty) be referred to as Sportsman, Intermediate, Advanced and Masters. The fifth class shall be referred to as the FAI class. Competitors must be advised prior to the start of the contest of any planned deviations from standard AMA rules pertaining to the events they have entered.

The Indoor Radio Control Aerobatics event shall be divided into three (3) classes.

The first two (2) classes shall (in order of increasing difficulty) be referred to as Sportsman and Intermediate. The maneuver schedules and definitions for the two classes will be developed and published by the NSRCA in a similar manner to the standard outdoor pattern schedules. The third class shall be referred to as F3P (407).

The outdoor FAI class and the indoor aerobatics classes will follow all the rules and guidelines of the current F3A and F3P Radio Controlled Aerobatics rules that are published by the FAI and CIAM. The AMA Competition Regulations will be applied when the FAI Sporting Code is silent on or does not provide guidance concerning the conduct or rules of the FAI - F3A or FAI - F3P events.

8. Contestant classification

The contestant's first contest of the calendar year will establish the contestant's competition class for that year. This class may be one class lower than his or her class from the previous year or may be any higher class relative to their class from the previous year. A contestant who has not previously flown in a competition may select any class as their class. Contestants may enter their current AMA class or the FaiF3A class at any contest but not both. The class advancement sequence is Sportsman, Intermediate, Advanced, and Masters. A contestant may voluntarily move to any higher class at any time but must remain in that higher lass at least until the contestant's first contest of the following calendar year. If the contestant's declared class is not offered at a contest or that contestant is the only entrant in a class, that contestant has the option to fly in any higher class for that contest and then resume the declared class thereafter.

9. Contestant Judging

Fair and accurate contestant judging is essential for operation of an R/C Aerobatics Contest. Contestants should familiarize themselves with the current judging standards, the maneuver descriptions and downgrades as well as remain impartial. The CD may, at their discretion, require participants in a contest to attend a judging seminar or pass a judging exam as a condition for entry to the contest under the following restrictions: 1) a contestant must be able to complete this requirement at the contest site during registration and before the first pilot's meeting, 2) the CD will ensure that the required resources to complete the requirement are made available to the contestant and 3) any fees in implementing the requirement will be part of the contest budget. This requirement applies to all classes across AMA and FAI classes, including requiring completion for events outside the pilot's classification.

10. Number of flights

At the beginning of a contest, before any flying is done, the CD shall announce the number of flights that will be flown. This number should be reasonably determined based upon the number of contestants and the time available. Once this number has been announced, this is the exact number of flights that should be flown. The winners in each class will be the contestants who are ahead when this

number of flights is finished. Fewer flights may be flown if weather conditions cause some loss of flying time during the contest. Contest officials shall make every reasonable effort to ensure that all contestants receive equal opportunity to fly.

11. Official flight

There is an official flight when an attempt is made whatever the result.

10.1.

There is an attempt when:

a. The contestant announces the start of the takeoff maneuver or

b. The model fails to commence the takeoff maneuver within the three (3) minutes allowed to each competitor. If the engine stops after the contestant has announced the start of takeoff and before the model is airborne, it may be restarted within the three-minute (3) period. However, no points will be awarded for the subsequent takeoff maneuver.

10.2.

Each contestant is entitled to one (1) attempt for each official flight. The CD shall have sole discretionary authority to grant a single repeat attempt if for some unforeseen reason beyond control of the contestant, the model fails to become airborne (i.e., safety delay due to other aircraft traffic, weather or etc.). If the flight is interrupted by an unforeseen reason beyond control of the contestant (i.e. sudden deteriorating weather or air traffic but excluding any mechanical failure of the aircraft) the competitor is entitled to a re-flight with only the remaining unscored maneuvers being scored. The re-flight must occur by the end of the current round and the result of the re-flight will be final.

10.3.

In the case of a collision during a Pattern flight, the contestants must immediately recover their aircraft. They may resume their flights with the same aircraft if the aircraft are judged to be airworthy or with a backup or repaired aircraft. They will begin with the maneuver that was in progress or with the next scheduled maneuver if the collision occurred between maneuvers. The previously defined starting times will apply for a resumed flight and the contestant will be allowed no more than two (2) passes in front of the judges for the purpose of trimming the plane. Scores of the previous maneuvers will be added to the scores of subsequent maneuvers in the resumed flight. The flight must be completed by the end of the round being flown, or within a time frame designated by the CD.

10.4.

Competitors must be present and ready when they are called to the flight line. Once a round is complete there will be no makeup flights. Competitors who are not present will receive zero (0) points for each flight they are not present. Late entries will receive zero (0) points for each flight they are not present.

12. Time limits

Each contestant has three (3) minutes to start the engine and commence the takeoff maneuver. When the contestant fails to commence within the three (3) minutes and is so informed by the timer, he/she must immediately clear the area for the next contestant. No engine restarts are allowed after the wheels leave the ground on takeoff. Restarting is permitted within the first three (3) minutes, but only if prior to takeoff (also see paragraph 10).

13. Point system

All classes shall be judged and scored on a 10 to zero (0) basis to the nearest one half (1/2) point, with each individual maneuver score being multiplied by an assigned "K" factor degree of difficulty modifier. The flight score is the sum of the "K" multiplied maneuver scores.

13.1.

When a judge fails to fully observe the maneuver in progress that maneuver score must be a "NO" for "Not Observed". That judge's score will then be given the average of the scores of the other judge's scores when more than 2 judges are present or the score of the other judge when there are only 2 judges. In the case where all judges score a maneuver "NO" the contestant will be allowed a re-fly of the sequence through the maneuver or maneuvers that had a "NO" score. The judges will only score the maneuver in the re-fly that had the score of "NO". All other scores from the previous flight will be used.

14. Determining the winner

In each class, only completed rounds in which all entrants in that class have flown or have had official opportunity to fly under the rules set forth in Paragraph 10, shall be counted. Individual classes competing at the same event may fly differing numbers of rounds to determine the winner based on class size. Any deviations from the Contest Format based on class size below should be published in the Contest Event Description.

Each flight score shall be normalized in the following manner. When all contestants for a class have flown in front of a particular set of judges once, the highest score shall be awarded 1,000 points. The remaining scores for that set of judges are then normalized to a percentage of the 1,000 points in the ratio of actual raw score over round winner's raw score

multiplied by 1,000.
Sy Score Y=_____ x 1,000
Sw
Score y=points awarded to the contestant
Sy=raw score of the contestant
Sw=raw score of winner of round

For example: A total of 10 contestants are entered in Sportsman. After all 10 have flown in front of judge set A, the winner of that round has a raw score of 81. He/she will receive 1,000 points. Competitor Y has a raw score of 75.75 divided by 81 multiplied by 1.000 equals 925.9 points which is Y's score.
Note: If a class (example here Sportsman) is split between two (2) lines, the score can only be normalized after the second round when all 10 have flown in front of judge set A.

The Contest Director may elect to use Tarasov-Bauer-Long (TBS) statistical averaging scoring system for any class assuming there are at least 5 competitors and 5 judges.

14.1. Classes with 15 or less contestants

The winner shall be the only flight score when only one (1) round is flown; the highest total of the best two (2) flight scores when two (2) or three (3) rounds are flown; the highest total of the best three (3) flight scores when four (4) rounds are flown; the highest total of the best four (4) flight scores when five (5), or six (6) rounds are flown; the highest total of the best five (5) flight scores when seven (7) rounds are flown; and the highest total of the best six (6) flight scores when eight more rounds are flown. Points from repeat flights may not be added to earlier flights. Each flight is complete in itself. In case of ties, the best non-scored flight of the contestant shall be used to determine the higher placement. For all AMA classes, all judge scores are to be included in the tabulation of scores regardless of the number of judges used.

14.2. Classes with 15-30 Contestants

At large contests such as a National level contest, the number of contestants may exceed the time available to run a complete round in front of the same judges at the same site. While the pilots are judged by the same judges in each round, the duration of judging and moving between sites may cause fatigue bias in the scoring. In this case, the contest will use a preliminaries/finals format to allow the top scoring pilots to fly head to head in front of the same judges under the same conditions. The number of preliminary rounds will be decided by the CD based on the event

schedule. The scoring for the preliminary rounds will follow 13.1. The top 33% of pilots in the event (round up) will continue to the finals rounds. The number of finals rounds, Nf, is also at the discretion of the CD, determined before the contest based on the event schedule. The finals pilots will carry into the finals their preliminary rounds total score divided by the number of rounds contributing to that score. For example, if there were 6 preliminary rounds, the pilot's preliminary score would be their top 4 rounds divided by 4 (effectively their average score). The finals pilots will fly Nf finals rounds and score will be the preliminary round average score plus the top Nf -1 finals rounds score (the lowest finals round score, per pilot, is dropped). The finals pilots are then ranked by this final score to determine the winner.

For example, a pilots preliminary round average score is 980. In the finals, 3 rounds are flown and the pilot scores 1000, 1000, 990. The pilot's final score is 2980 (the 990 finals round is dropped and the pilot is forced to keep their preliminary round average score, regardless of scores in the finals rounds).

14.3. Classes with greater than 30 Contestants

The Matrix system is intended for use in situations where the number of contestants exceeds that which can be run on 1 site, in front of 1 set of judges, and within the time limitations of the event. For example, the Masters class at the NATS often falls into this category. Pilot Groups and Seeding: The contestants shall be grouped by seeding the top 16 contestants using their finishing positions at prior year's Nationals, irrespective of class. The ED shall determine the seeding using this, and any other means they deem appropriate. The final seeding is ultimately subject to the EDs discretion. The seeding of the contestants shall be published and made available upon request no later than the end of the Pilot's Meeting held the day prior to the start of competition.
Each pilot group shall be populated as follows: Pilot Group A: Seed #1, Seed #8, Seed #9, Seed #16. Pilot Group B: Seed #2, Seed #7, Seed #10, Seed #15. Pilot Group C: Seed #3, Seed #6, Seed #11, Seed #14. Pilot Group D: Seed #4, Seed #5, Seed #12, Seed #13. The remaining contestants shall be evenly divided among each group, keeping the total number of contestants in each group as even as possible. The explanation, construction and scoring instructions for the Matrix system are in 13.3. Where possible and practical, each contestant will fly 6 matrix rounds. Finals format: If a Finals event is included, the number of finalists will be 20% of the total or a practical number to match the time available. The Finals format is also subject to the time available. The CD can opt to run a 4 round final, or a 3 round (or less) final. To allow for weather issues, the best 1 of 1, 2 of 2, 2 of 3, or 3 of 4 normalized finals scores will decide the winner. Equal judging exposure will be applied and only completed

rounds will be counted in the final standings.

14.4. The Matrix system

Purpose: The Matrix system is intended for use in situation where the number of contestants exceeds that which can be run on 1 site, in front of 1 set of judges, and within the time limitations of the event. It is our goal to achieve a suitable rotation of contestants while using 2 sites and 4 flight lines.

Matrix Construction:

A simple matrix can be constructed using 4 groups.

2 Sites with 2 flight lines each equals 4 flight groups.

Flight Groups:

In the sample shown, the contestants are divided into 4 groups (A-D).

The groups are divided into 4 flight groups for each day.

Day #1 (A-C) (B-D)

Day #2 (A-D) (B-C)

Day #3 (A-B) (C-D)

Day #1 Groups (A, C) fly on site #1 and Groups (B, D) fly on Site #3.

Day #2 Groups (A, D) fly on site #1 and Groups (B, C) fly on Site #3

Day #3 Groups (A, B) fly on Site #1 and Groups (C, D) fly on Site #3

Flight Orders:

Flight orders are created from the flight groups. The flight orders are rotated to avoid having the same contestant fly first more than once.

Sample flight operations for Day 1 on Site#1:

Each site has 2 flight lines (A and B)

Group (A) starts flying Round #1 on Line (A) Site #1. Group (C) starts flying Round #2 on Line (B) Site #1. When they complete their round and

the judges have a break, Group (A) moves to Line (B) and Group (C) moves to Line (A). When flying resumes Group (C) will complete Round #1 and Group (A) will complete Round #2. The result is group A and C have all flown round #1 and Round #2 in front of the same set of judges.

Determining Finalists: Site #1 and #3 are flying simultaneously. When round #1 and #2 are complete, the scores for each round at each site are normalized.

After the scores are normalized from Round #1 on Site #1, those normalized scores will determine where each contestant ranked in numerical order from 1 through however many contestants flew in front of that set of judges. The same procedure of normalizing scores and ranking contestants will be used for Round #2 on Site #1. Each contestant will keep his/her single best ranking (1, 2, 3, etc) score from those two rounds. The same procedure will occur on Site 3 for their Rounds #1 and #2. At the end of Day 1, each contestant will have a ranking number (1, 2, 3) assigned to them based on their performance in front of the same judges against the contestants they actually flew against. That number will be used and tabulated later to determine the finalists.

The same procedure will be used on Days 2 and 3. At the end of Day 3, every contestant will have flown 2 rounds against every other contestant outside of his/her group and have a ranking for each flight based on normalized scores and equal judging exposure. Each contestant will keep his/her three best ranking numbers (lowest number) plus his/her single best discarded ranking number. The three best ranking numbers must come from one of the two rounds flown each day. The single best discarded ranking number may come from any of the three days. Those four numbers will be tabulated and the 8 contestants, or ED predetermined number, with the lowest numbers will go to the Finals. In the event of a tie for the 8th or final contestant, the tie-breaker will be determined by using both scores the contestants earned on the day they actually flew on the same line in front of the same judges. In the event that two or more contestants are still tied for the final position, the tied contestants will all fly in the Finals. The Finals winner will be determined as detailed in 13.1. No preliminary scores will be carried over to the Finals.

14.5. FAI Events

FAI Events will be run aligned with the contest format for a World Championship event as published in the FAI Sporting Code with the following exceptions:
1) The number of competitors that advance to Semi-Finals and Finals will be at the discretion of the CD and communicated before the contest

begins. For example, at the Nats event, if 25 contestants participate, the CD can determine that all 25 contestants advance to the Semi-Finals and also decide the number of Finalists.
2) The Finals round will only be used at the Nats or a contest determined to be a Team Selection.

15. Flight pattern and maneuvering area

The maneuver schedules of all classes must be executed in the order in which they are listed during an uninterrupted flight within a maneuvering area or "box" bounded by lines 60 degrees each side of center. The vertical height shall not exceed 60 degrees from the horizontal. The boundaries of the maneuvering area shall be marked by the placement of surface lines of white or contrasting color originating at the contestant's position and, where possible depending on local conditions and topography, the placement of vertical poles at the center position and 60 degrees right and left on a line approximately 150 meters in front of the contestant. The judges shall be seated not more than 10 meters behind the contestant's position (the apex of the 60 degree lines) and within an area described by the extension of the 60 degree lines to the rear of the contestant. Maneuvers must be performed where they can be clearly seen by the judges. Center maneuvers should be performed centered in the maneuvering area in a plane exactly perpendicular to the judges' line of sight to the model. Scored turnaround maneuvers should not exceed the 60 degree right and left limits of the maneuvering area. Maneuvers should be performed along a line of flight approximately 150 to 175 meters from the judges, with the main criteria being visibility. Infractions of any of the above rules are cause for downgrading in addition to those downgrades listed in the Description of Maneuvers section. Unscored turnarounds in any class may exit the maneuvering area. Calling of box entry must be done so there is a minimum of a 15 meter straight line before the first maneuver. Judging of the maneuver will begin at that point (lines into and out of maneuvers are part of the maneuver and are always judged).

15.1.

Each time the model passes in front of the judges, a maneuver must be executed, except after takeoff and before landing, where in each case a maximum of two (2) passes may be made. In the maneuver lists that follow (U) and (D) denote mandatory maneuver orientation (Upwind – Downwind). This orientation or Direction of Flight shall be determined by the direction of takeoff. The direction is the contestant's choice and shall be announced to the judges prior to takeoff. In all classes, entry into the maneuvering area for the first maneuver after takeoff shall be in the same direction as takeoff.

15.1.1. The contestant or helper may request a different landing direction to that used for takeoff without penalty to avoid downwind landings. This option may only be used if the wind direction changes after the takeoff has started. If this option is used, a maximum of two (2) passes in front of the judges may be used to position the model for landing. However, any turns used for positioning the aircraft may not be made at center.

15.2.

If a maneuver other than landing is done out of order it shall be scored zero (0). Judges may inform the contestant or helper that a maneuver has just been performed out of sequence.

15.3.

If an illegal pass (crossing a line perpendicular to and centered on the judges) is made, the maneuver which should have been executed shall be scored zero (0).

15.4.

After a contestant performs a wrong maneuver or makes an illegal pass, he/she shall then be judged on the remaining maneuvers in the schedule, provided they are executed in proper sequence, and in proper upwind/downwind orientation.

15.5.

The contestant (or helper) may not touch his/her plane after it has become airborne until completion of the flight; i.e., he/she may not land the plane between maneuvers in order to make adjustments to engine, trim, etc. Failure to comply with this shall result in disqualification of the contestant for that round.

15.6.

In all classes, the contestant or helper must call out the initiation of the takeoff and landing maneuvers and box entries. Failure to call the initiation of the takeoff and landing or box entry will result in a one (1) point deduction for the upcoming maneuver.

15.7.

The execution of free-style aerobatic maneuvers or “hot-dogging” during the allowed free passes after takeoff and before landing is specifically prohibited. Contestants may maneuver the aircraft as necessary for trim

purposes, and may employ any simple 180 degree turnaround maneuver of their choice to position the aircraft for landing or entry into the maneuvering area. If, in the judge's opinion, a prohibited maneuver has been performed during the allowed free passes, the following maneuver shall be scored zero (0).

15.8. Sportsman option

At the CDs option, the Sportsman class may fly their maneuver schedule twice in succession on each flight.

Suggested procedure: The first sequence proceeds in the standard manner through the last airborne maneuver and exits the box downwind. The contestant makes an un-scored turnaround, and reenters the box upwind to start the sequence again with Straight Flight Out. The first sequence's takeoff score is used for the second sequence's takeoff score. The landing score is used for both sequences. The highest scoring sequence of each two (2) sequence flights shall be counted. The CD may use this option on a round by round basis. Use of the option is not a deviation to the rules and is not required to be detailed in sanction requests. Advertisement of this option in contest announcements is recommended but not required.

15.9.

All pattern sequences are required to end upwind.

16. Sequences

The Radio Control Aerobatics sequences will be developed periodically by the National Society of Radio Control Aerobatics (NSRCA) Sequence Committee which is appointed by the NSRCA Board of Directors. The NSRCA Board of Directors will supervise the sequence development and will submit the proposed sequences to the membership for approval before they approve all sequences for use in RCA competition. All current sequences can be found at the NSRCA website. The NSRCA will modify the sequences for classes 401, 402 and 403, Indoor R/C Aerobatics Sportsman and Indoor R/C Aerobatics Intermediate at least every four years and the sequence for class 404 will be modified at least every two years, but sequences may be updated more frequently as required. Sequences will be published no later than December for the following year. A description of each maneuver for all sequences can be found on the NSRCA website at: http://nsrca.us/index.php/sequences.

17. FAI Pattern Maneuvers

The FAI class shall fly according to the current FAI RC Aerobatics (F3A) rules. The noise limit shall be the current noise limit used in AMA competition for classes 401-404, except in the case of a USA Team Selection contest, where the noise limit shall be the current FAI noise rule. The builder-of-the-model rule, if any, shall not be enforced. The AMA Competition Regulations will be applied

when the FAI Sporting Code is silent on, or does not provide guidance concerning the conduct or rules of the FAI - F3A events.

18. Suggested Field Procedure

The procedures listed below are suggestions to CDs for operation of an RC Pattern event and may be altered to fit local conditions.

18.1.

All contestants shall be set up in "pits" at the spot assigned by the CD so they will be under his/her immediate control.

18.2.

Frequency control, if needed, will follow the established procedure at the host club flying site. Any entrant causing interference will be subject to disqualification.

18.3.

The flight order shall be determined by random draw within each class, except wherever possible, frequency shall not follow frequency, and identical frequencies on adjoining flight lines shall be separated by at least two (2) positions in the flight order. The flight order shall rotate top to bottom each round that fraction of its length which corresponds to the number of rounds to be flown; for example: One sixth of its length each round for a six (6) round contest. Alteration of the flight order by anyone other than the CD or his/her designated representative is not allowed. When multiple flight lines are used, a separate flight order shall be established for each flight line.

18.4.

The CD shall carry out the following procedure.

17.4.1.
Numbers one, two, and three on the flight order shall be on the flight line with their models, equipment, and one (1) helper if desired. Number one is contestant flying or ready to fly, number two is next person to fly, etc.

17.4.2.
Number one contestant shall have three (3) minutes from completion of preceding flight in which to release model for the start of his/her flight, unless the preceding flier's aircraft is on the same frequency. In this case, the contestant shall be provided sufficient time to perform a radio safety check prior to going on the clock. False starts are permitted within the three (3) minute limit.

Failing to start the flight within this limit, the contestant must immediately remove his/her plane and equipment to the pits. It shall be the responsibility of the CD or his/her representative to notify the contestant of the start and end of the three (3) minute period.

17.4.3.
Numbers four, five, and six on the flight order shall have their planes and equipment in a ready box located near the flight line. As soon as a flight is completed; the number four contestant becomes number three and shall be requested to move his/her model and equipment onto the flight line. If he/she is not on hand to do so, he/she shall be dropped from the flight order, and the order advanced to fill his/her place. The CD or his/her representatives shall be responsible for notifying contestants when they are to move to the ready box or flight line.

18.5.

When technically possible and when judges and space are available, it is strongly recommended that two (2) or more flights be flown simultaneously under the following conditions.

18.5.1. .
Separate takeoff and landing areas sufficiently spaced from each other to minimize engine noise and flight path interference.

18.5.2.
Individual maneuvering area markings are established for each flight line.

18.5.3.
The CD shall arrange the multiple flight orders so that delays due to frequency conflicts are minimized as far as possible.

18.6. Officials

A CD, a Dispatcher–Recorder and Judges are the essential officials for an RCA Event. If possible, the Dispatcher–Recorder should have at least two (2) helpers.

18.7.

Each flight should be judged by at least two (2) judges, with their scores averaged or totaled to give a final score for the flight. Each maneuver will be scored immediately after it is performed. Judges shall score maneuvers individually and without consultation between them. There should be enough judges available to establish a rotational procedure which will

average out variations in judging. Sets of judges shall judge all contestants an equal number of times. If different judges are used during the contest, all contestants shall have an equal opportunity to fly before all judges. Substitution of judges which precludes equal exposure by all contestants shall be avoided. If adverse weather conditions preclude equal exposure for all contestants the results of these flights may be disqualified at the discretion of the CD.

18.8.

The CD should make every effort to provide fliers with equal freedom from exposure to the sun in the maneuvering area. This may be done by orientation of the maneuvering area or by scheduling competition to avoid sun exposure.

Definitions:

Attitude: The angle of the fuselage of the model with respect to its track.

Maneuvering Area: The aerobatic zone or "box," bounded by lines radiating from the contestant's position 60 degrees each side of center, with a vertical height not exceeding 60 degrees and a depth determined by the model's line of flight.

Symmetry: The balanced and equal correspondence of opposing or superimposed maneuver elements with respect to size, shape, and position.

Track: The trajectory or flight path of the center of gravity of the model with respect to fixed ground reference.

Wind correction: An alteration of aircraft attitude made for the purpose of compensating for the effects of wind drift on the track of the model. All maneuvers in RC Aerobatics are required to be wind corrected in such a way as to preserve the shape of the maneuver in the track of the model as described in Section E of the AMA RC Pattern Judges' Guide.

19. AMA RC PATTERN JUDGES GUIDE

Judging for AMA and F3A Aerobatic maneuvers will be performed according to the F3 R/C Aerobatic Aircraft Manoeuvre Execution Guide, as found in Volume F3 Radio Controlled Aerobatics, of the FAI Sporting Code. The Guide will be periodically updated by the FAI and its agencies, whose latest version can be found at the website: https://www.fai.org/, under "Commissions", "Aeromodelling (CIAM)", and "Sporting Code".