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Official

Radio Control Model Aircraft Regulations

Governing Sporting Model Aviation in America

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by the Contest Board

ACADEMY OF MODEL AERONAUTICS

INTERPRETATION OF 1963 R/C REGULATIONS

by JOHN WORTH, Chairman, R/C Section

SAFETY:

The regulations in this booklet are the same as for 1962, with the exception of a number of additions concerning safety. Mainly, the additions are the inclusion of the Pylon racing safety requirements in the Pattern and Scale events. These safety requirements are concerned with general safety inspections of models before flight, flying over spectators, dangerous flying of any sort, protected engine shafts, sharp edged wings.

It is particularly important that flying not be conducted over spectator areas. Where a controlled spectator area is provided flying is permissible for those who do not fly over this area. Where there is no spectator control, flying should not be permitted unless well away from likely crowd forming areas.

Also, the Pylon course layout is revised to conform to that which has been used at the Nationals for several years—this course resulted from on the spot safety decisions, especially in consideration of the usual Nationals crowds. Having been proved effective, it is now an official safety modification applicable to all contests. The change involves moving the Start-Finish line upwind so that a final turn must be made and models controlled sufficiently far upwind as to preclude wild finishes.

The Scale event now includes a 15 pound maximum weight limit, installed as an admittedly inadequate safety measure. Experience in 1962 indicated that a trend toward large and heavy models was beginning. To prevent exaggeration of this trend, the weight limit already in effect in the Pattern event has been extended to cover Scale.

However, it is recognized that a more satisfactory safety measure may be necessary. It is obvious that a typically fast 6 pound Pattern type model may be considerably more dangerous than a slow Scale model twice as heavy. Pending development of more adequate safety measures to cope with this contradiction, the current safety requirements must be considered as minimum measures to keep the situation from getting completely out of control.

Contest directors are obligated to see that these safety requirements are adhered to. Remember that AMA insurance does not cover models that are built and flown in violation of AMA regulations.

PATTERN CATEGORIES:

Past interpretations of Class I and II concerning control systems are still applicable. When contests are advertised as AMA sanctioned, entrants have a right to expect that the current regulations will be adhered to; not some private or regional variation. The only exception should be the case of special test events to evaluate the effect of changes to the regulations—these should be specifically authorized by the R/C Section Chairman and advertised to emphasize the difference from current regulations.

Under current regulations and until changed by official Contest Board action, the following interpretations of Class categories are in effect:

Class I—The receiver in a Rudder class plane must be of the single-channel type, either on-off CW, or on-off of a single audio tone. A control system, to qualify as single-channel in Class I, must have control primarily over only the rudder function; engine speed should not be controllable independently of or simultaneously with control of rudder position.

Class II—Control systems in this class must not be of the type where one control surface may be operated independently of another. It should be possible to tell from the action of one control surface that another control surface is being operated; in fact, it should be possible to tell from the nature of the action of one surface the effective position and direction of the other control surface movement. Coupled ailerons and rudder is considered to be one control.

General—Contest Directors should note that upholding the intent of the current regulations may overrule cases which involve deliberate or obvious attempts to qualify in Class I or II by "gimmicking" control systems so that they meet the letter of the rules. It should be realized that it is practically impossible to detail Class requirements so as to exclude all loopholes.

Class I is intended to be a simple model event, under current regulations; primarily a Rudder Only class with engine speed an allowable option control. It is not intended that control systems which obviously are more suited to Class II or II are to be used in Class I. Similarly, it is not intended that typical Class III systems be allowed in Class II because of deliberate degrading of normal performance. Example: modification of a normal Class III system so that the controls are not independent in action.

22. RADIO CONTROL PATTERN EVENT REGULATIONS

22.1 OBJECTIVE: To control by radio a model airplane so that various planned maneuvers may be accomplished. The criterion is the quality of performance, not the mechanism of control. R/C competition is based on the excellence of performance of the model's maneuvers, compared to similar maneuvers performed by a full-sized plane. Maneuvers shall be judged according to the AMA Radio Control Judges Guide.

22.2a GENERAL REQUIREMENTS: Models may be of the reciprocating internal combusion engine-powered type with no limit on engine size or length of run, or of the towline glider type, with no limit on length of towline. No model may weigh more than 15 pounds gross weight ready for take-off.

22.2b *SAFETY REQUIREMENTS:*

Considerations of safety for spectators, contest personnel, and other contestants are of the utmost importance in this event, and the following safety provisions *must* be observed.

1. All models must pass a general Safety Inspection by the Event Director or his representatives before they are allowed to compete.
2. Any flying over a controlled spectator area will be cause for immediate disqualification of that flight.
3. Dangerous flying of any sort, or poor sportsmanship of any kind, shall be grounds for disqualification of the contestant involved.
4. All planes entered must have rounded prop spinners, or some sort of safety cover on end of propeller shaft (such as a rounded "acorn nut").
5. Knife-edge wings are not allowed.

22.3 All radio equipment and operation must conform to the regulations of the F.C.C. AMA membership card and F.C.C. license of each entrant shall be checked at every sanctioned meet.

22.4 The Radio Control Pattern Event shall be divided into the following three categories:

Class I—Models which are controlled by the rudder only; the rudder is defined as as the movable surface affixed directly behind the conventional fin. Engine control and/or cut-off by radio is allowed in this class, but actuated brakes and steerable wheels are prohibited. Class I equipment is limited to the single channel type.

Class II—Models which do not fall in the first or the third classes.

Class III—Models employing systems that allow full and independent operation of any one control surface without operation of any other control surface.

Engine speed control and/or cut-off optional in the second and third classes; there is no limit to the number of controls allowed in these two classes.

22.5 A Class I plane may be entered in either of the other classes, at the option of the flier, and a Class II plane may be entered in Class III. Scores for all three classes shall be listed separately. Contestant shall be permitted to enter only one plane in the RC Pattern Event, and that in only one of the three categories listed in Para. 4. A plane is considered "entered" when it has completed an Official Flight.

22.6 NUMBER OF FLIGHTS. There shall be no limit on the number of flights (other than that imposed by time available). Contest officials shall make every reasonable effort to insure that all contestants receive equal opportunity to fly.

22.7 OFFICIAL FLIGHT. A flight is considered official if two maneuvers, other than take-off and landing, have been judged. An attempted maneuver yielding zero points is still considered "judged."

22.8 TIME LIMIT:

A Class I contestant is allotted a total of nine minutes.

A Class II contestant is allotted a total of eleven minutes.

A Class III contestant is allotted a total of eleven minutes.

In all classes the contestant must commence his flight within the first three minutes. When he fails to commence within the three minute time limit, and is so informed by the judge, he must immediately clear the area for the next contestant.

22.9 The highest score for the best single flight shall be the winner. Maneuver points from repeat flights may not be added to earlier flights. Each flight is complete in itself. In case of ties, the second best flight scores of the contestants concerned shall be used to determine winner.

22.10 POINT SYSTEM: A point system shall be used to score maneuvers. Each maneuver shall be judged on a scale of zero to five.

22.11 FLIGHT PATTERN: The contestant must fly his entire flight according to the established Flight Pattern and in the order listed.

The contestant may waive any maneuver except those numbered 2 through 6. Maneuvers performed out of order will not be judged.

The contestant must call out each maneuver before he attempts to perform it. ALL THREE CLASSES WILL USE THE SAME FLIGHT PLAN. (Except for maneuver 9a-9b).

MANEUVER:

1. *Proto Taxi.* Taxi downwind at least 50', stop, turn at least 120 degrees into the wind . . .

2a. *Unassisted ROG.* No help of any kind release of plane.

2b. *Hand Launch.* Mandatory zero points.

3. *Straight Flight.* Approximately upwind from directly over transmitter to marker 500' away. Judge will announce arrival over marker. (Judges may reduce distance in windy weather.)

Note: On maneuvers 3—6, maintain constant altitude for top points.

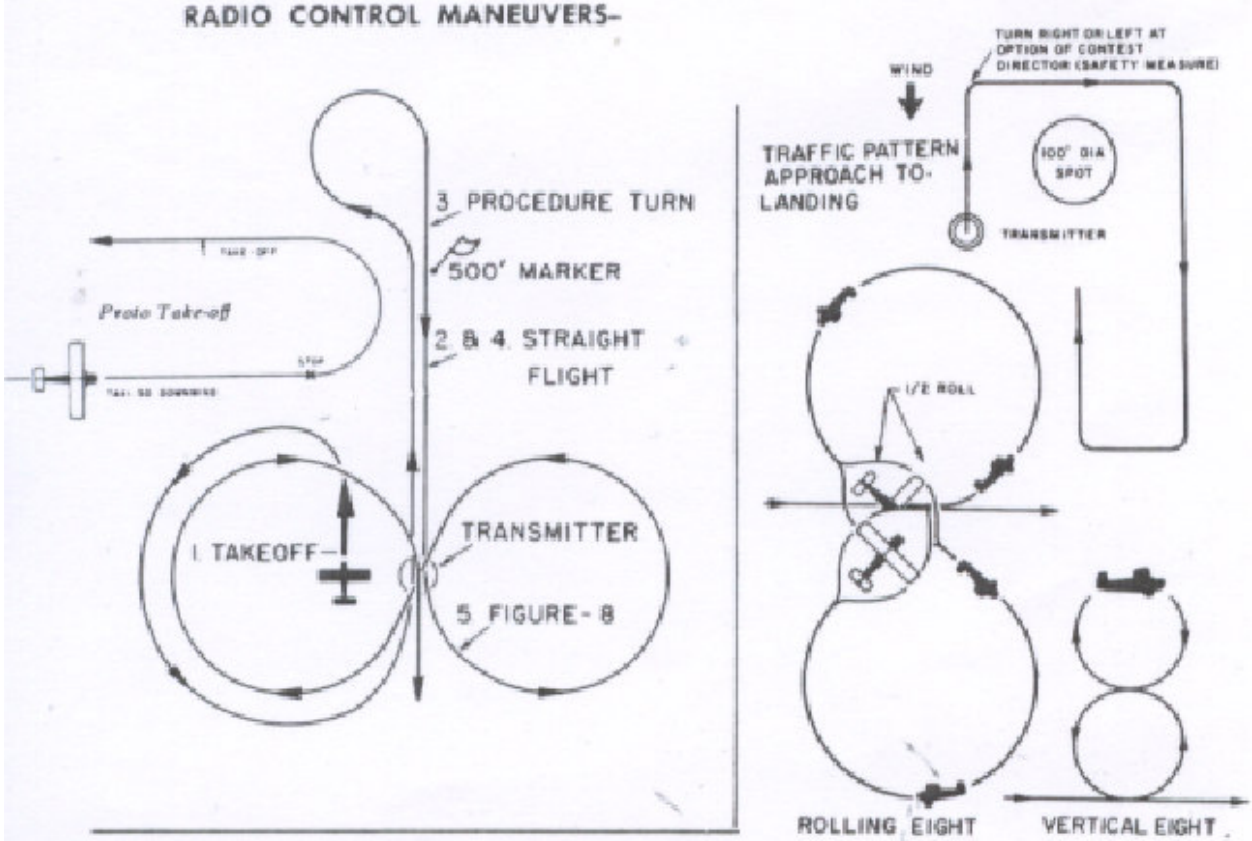
4. *Procedure Turn.* 90 degrees left, starting just beyond marker, followed by immediate 270 degree right turn.
5. *Straight Return Flight* from marker to directly over transmitter.
6. *Figure Eight.* Axis perpendicular to wind. Smooth equal circles, crossing over above the transmitter.
7. *Touch and Go.* While traveling in a straight line, plane must land and take off again. In the judges opinion the plane must be completely unairborne, but must not come to a stop on the ground.
8. *Wing Over.* 180 degree change in direction, with level recovery at same altitude as entry.

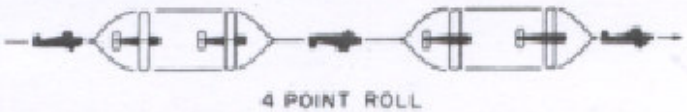
9a. *Three Continuous Horizontal Axial Rolls.* Straight level recovery on same heading as entry.

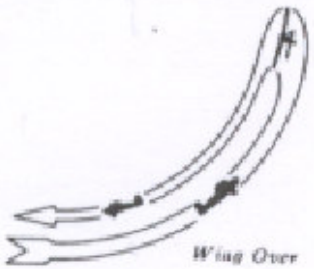
9b. Class I and Class II planes may substitute *three continuous barrel rolls* for the above.

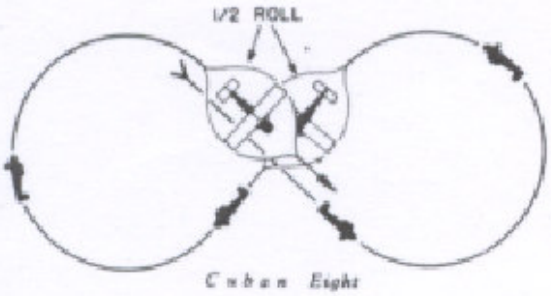
10. *Immelman Turn.* Half loop followed by half roll at top. Level recovery at higher altitude than entry.
11. *Three Continuous Inside Loops.* Smooth, round, equal sized, all at the same altitude. Straight and level recovery.
12. *Four Point Roll.* One complete axial roll with a pause in the roll and a short but obvious straight flight at each 90 degree

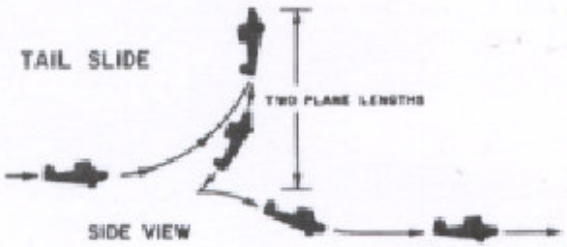
RADIO CONTROL MANEUVERS-

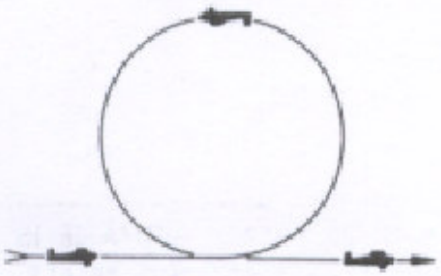


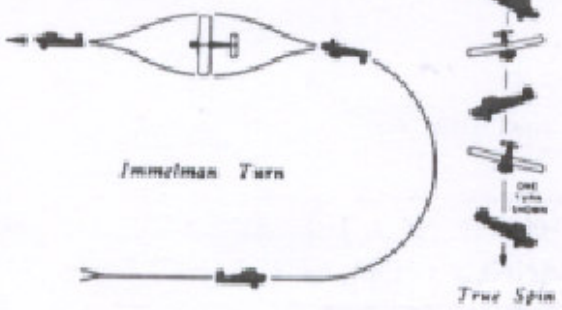












point of the roll.

13. *Three Continuous Outside Loops.* Smooth, round, equal sized, all at the same altitude. Straight and level recovery.
14. *Cuban Eight.* Horizontal eight performed by means of two delayed Immelman turns. See diagram.
15. *Three Turn True Spin* (not spiral dive). Model must enter spin from a stalled attitude. Three complete turns, recovery on same heading as entry.
16. *Inverted Figure Eight.* Smooth equal circles, cross over transmitter. No restriction as to how inverted flight starts, however entry and recovery must be inverted.
17. *Rolling Eight.* One inside loop followed by a half roll immediately followed by another inside loop followed by a half roll. Entry and recovery on the same level. Maneuver creates a vertical eight with one loop above and the other below the entry-recovery axis.
18. *Tail Slide.* Under moderate power the model is allowed to stall in a vertical attitude. After a controlled slide downward on the tail, the model recovers normal flight at the same level from which the initial stall was entered.
19. *Vertical Eight.* Level entry, one half inside loop, one complete outside loop, one half inside loop, and level recovery at the same altitude as the entry. The complete maneuver is an eight in the vertical plane with all parts of the figure above the entry-recovery altitude.
20. *Traffic Pattern Approach to Landing.* Fly upwind over transmitter, turn 90 degrees (right of left at the option of the Contest Director—safety considerations will determine which) fly straight 100', turn 90 degrees downwind and fly as far as the contestant feels is necessary to make a safe approach. All turns must be made at a safe altitude. Judges are required to give zero points for this maneuver if in their opinion turns are made at unsafe altitudes. Turn 90 degrees cross wind, finally turn up wind onto the final leg and start to descend. Maneuver is over when plane is within 6' of ground.
21. *Landing Perfection.* Smooth approach, smooth landing with no bounce—full points—graduated to minimum points for extremely rough approach, rough landing with bounce but without nose-over due to poor control. (Might be due to poor surface conditions.) Mandatory zero points for nose-over, intentional dive in, or landing not within clear view of Judges.
22. *Spot Landing.* The spot shall consist of a circle 100' in diameter. For landing within this circle with the main gear of the plane, the Judges will award points equal to those earned in the landing perfection.
23. *Proto Taxi to Hangar.* After touching down, model is taxied over and brought to a *stop* with the main landing gear within a 3' circle designated as the "hangar". Said "hangar" to be outlined close to the start line for the proto taxi.

.12 FIELD PROCEDURE. The procedures listed below are suggested, and may be altered by the Event Director to fit local conditions.

22.13 All R/C contestants shall be set up in "pits" at spot assigned by Event Director, so they will be under his immediate control.

22.14 There will be no testing of transmitters or receivers during the flying period. Transmitters may be impounded at discretion of Event Director. Any person causing interference will suffer immediate disqualification. The Event Director will provide a monitor receiver to check for interference.

22.15 The flight order shall be determined by position of contestants' signatures on a *single Flight List* held by Event Director or his representative. This list shall include all classes and frequencies. Contestant shall have his name on List only once at any one time; names may be moved to bottom of List on request, but trading of positions with other contestants is not allowed. When a contest is to be continued on a following day, the Flight List shall carry over from day to day.

22.16 Event Director shall carry out following procedure:

a. Numbers 1, 2, and 3 on Flight List shall be on flight line with their models, equipment, and one helper if desired. No 1 is contestant flying or ready to fly, No. 2 is next man to fly, etc.
b. The No. 1 man shall have 3 minutes from completion of preceding flight in which to release model for the start of his flight. False starts are permitted within the 3 minute limit. Failing to start flight within this limit, contestant must immediately remove his plane and equipment to the pits. It shall be responsibility of Event Director or his representative to notify contestant of start and end of 3-minute period.
c. Numbers 4, 5, and 6 on the Flight List shall have their planes and equipment in a ready box located near the flight line. As soon as a flight is completed, the No. 4 man becomes No. 3 and shall be requested to move his model and equipment onto the flight line. If he is not on hand to do so, he shall be dropped from the Flight List, and the List advanced to fill his place. The Event Director or his representatives shall be responsible for notifying contestants when they are to move to ready box or flight line.

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

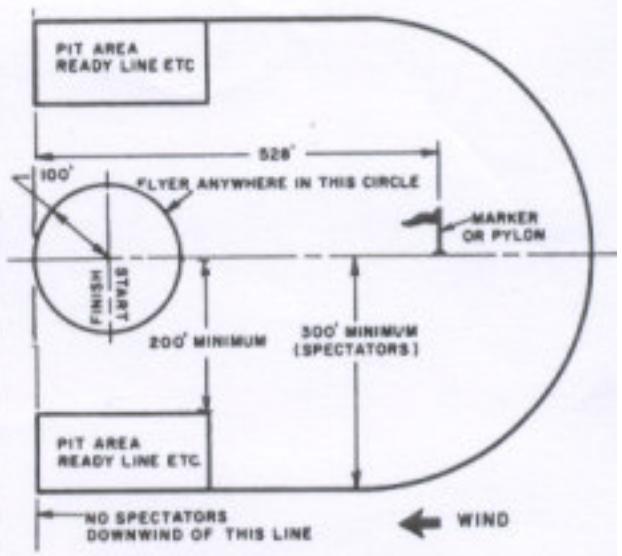
a. Separate take-off and landing areas sufficiently spaced cross wind from each other to minimize engine noise and flight path interference.
b. Contestants flying simultaneously shall carefully check receiver and transmitter operation before take-off, to be sure no interference between them is possible.
c. Contestants flying simultaneously must be no more than three positions apart on the Flight List. Event Director or representative shall, where possible, select contestants at top of Flight List so that contestants flying on compatible frequencies are on flight line together.
d. Should a contestant oppose flying simultaneously with someone else, he may cancel his turn and re-sign at the bottom of the Flight List.

THE USE OF A FUEL ADDITIVE KNOWN AS TETRA-NITRO METHANE IS BANNED FROM AMA SANCTIONED CONTESTS AND RECORD TRIALS.

22.18 OFFICIALS. An Event Director, a Dispatcher-Recorder and Judges are the essential officials for an R/C Event. If possible, the Dispatcher-Recorder should have at least two helpers.

22.19 Each flight should be judged by at least two Judges, with their scores averaged to give final score for the flight. It is suggested that each maneuver 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.

Fly Safely!



SUGGESTED LAYOUT