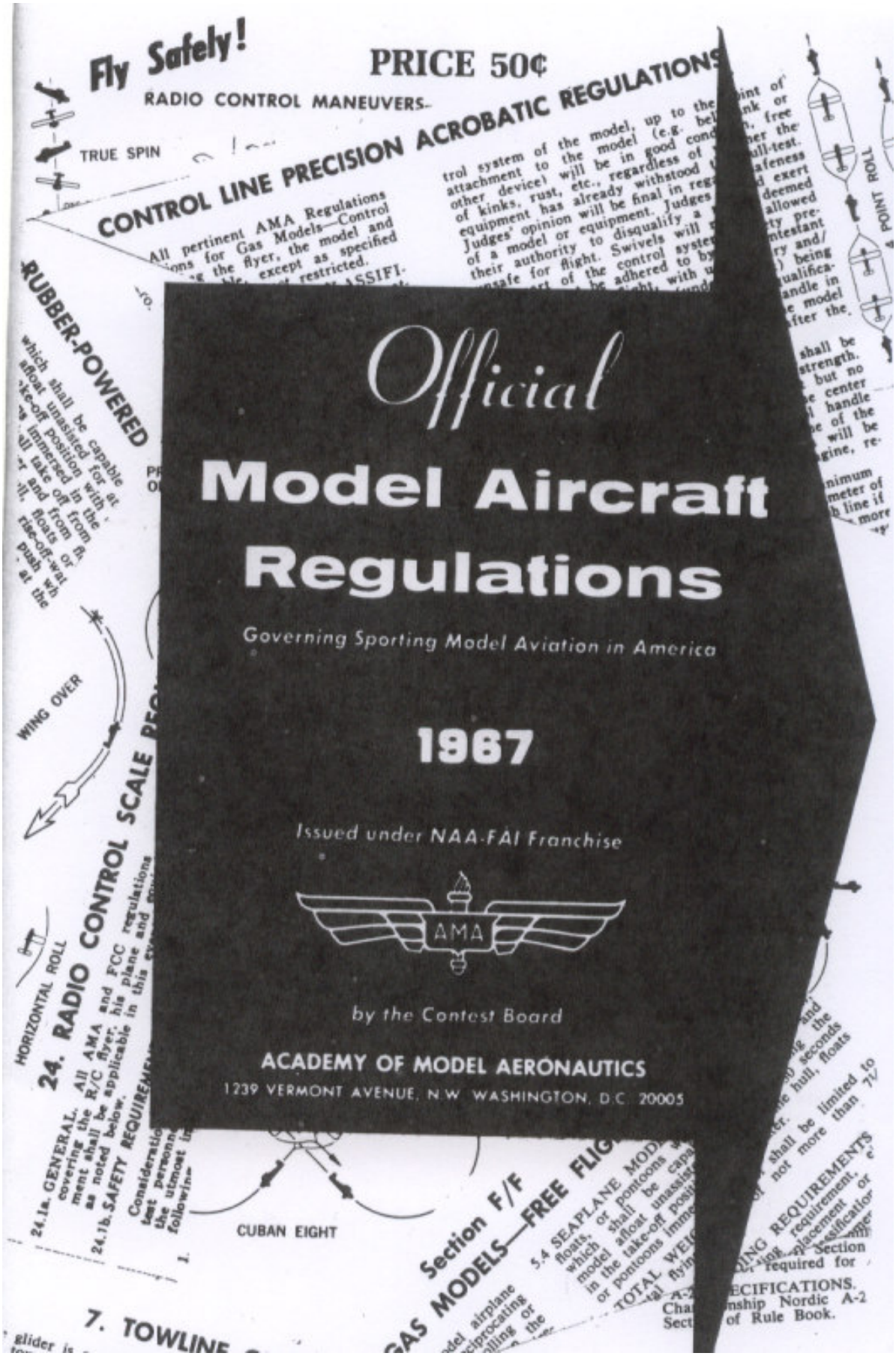

Fly Safely!
PRICE 50¢
RADIO CONTROL MANEUVERS
TRUE SPIN
CONTROL LINE PRECISION ACROBATIC REGULATIONS
RUBBER-POWERED
WING OVER
HORIZONTAL ROLL
24. RADIO CONTROL SCALE
CUBAN EIGHT
Section F/F
GAS MODELS—FREE FLIG
7. TOWLINE
Official
Model Aircraft Regulations
Governing Sporting Model Aviation in America
1967
Issued under NAA-FAI Franchise
AMA
by the Contest Board
ACADEMY OF MODEL AERONAUTICS
1239 VERMONT AVENUE, N.W. WASHINGTON, D.C. 20005

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. Engine displacement limit is .61 cubic inches, total.

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 GENERAL: The Radio Control Pattern Event shall be divided into three classes, based on three primary aerodynamic axes of control: Yaw, Pitch and Roll. Note: Primary controls—Rudder, Elevators, Ailerons; Auxiliary controls—any non-Primary controls.

a. No radio equipment limitations or requirements in any class.

b. Engine control is permissible in all classes, by any means—trimmable, proportional, selective positioning, etc.—operable simultaneously with, or independently of, other controls.

1. *Class I*—Planes controlled about the Yaw axis, by Rudder Control only. No auxiliary aerodynamic controls are permitted (flaps, spoilers, etc.); no auxiliary non-flight controls are permitted (brakes, steerable wheels, etc.) Trim of the Rudder Control is permissible only if obtainable with the basic actuator used for Rudder control—no additional servos, actuators or devices are permitted. Rudder control permissible by any means—selective positioning, proportional, etc.
2. *Class II*—Planes controlled about the Yaw and Pitch axes, by Rudder and Elevator control only. Rudder and elevator control permissible by any means, simultaneously independently or otherwise. Auxiliary non-flight controls (brakes, steerable wheels, etc.) are permitted without limitation or restriction. Auxiliary aerodynamic controls (flaps, spoilers, etc.) are not permitted.
3. *Class III*—Planes controlled about the Yaw and Pitch and Roll axes; by Rudder, Elevator and Aileron controls, with no limitations or restrictions on primary aerodynamic controls, auxiliary aerodynamics controls or auxiliary non-flight controls.

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 in only one of the three categories listed in Para. 4 (22.4 GEN.). A plane is considered "entered" when it has completed an Official Flight.

22.5a. Two (2) airplanes allowed, to be labeled "one" and "two." The contestant may choose to enter either plane at the beginning of the meet and shall continue to use such plane unless, and until, said plane shall be damaged to the extent that it cannot be readily repaired. Contestant then may, upon notification to the Contest Director, substitute plane number two for the balance of the meet with no penalty.

Under no circumstances will contestant be allowed to re-submit plane number one after it is taken out of competition. No substitution of parts between one plane and the other will be permitted other than engines and radios. That is to say, the wing off of one airplane may not be used on the other airplane in the event number one should sustain only wing damage.

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 minutes time limit, and is so informed by the judge, he must immediately clear the area for the next contestant.

No engine restarts are permitted after the first maneuver—engine restarting is permitted only within the first three minutes of allotted time and only prior to scoring of the second maneuver.

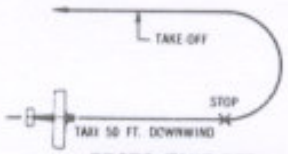
22.9 The highest score for the total of two best flights shall be the winner. Maneuver points from repeat flights may not be added to earlier flights. Each flight is complete in itself. In case of ties, the third best flight scores of the contestants concerned shall be used to determine the winner (if only two flights have been scored during the normal contest time, the highest single flight score of the contestants concerned shall determine the winner). There is no minimum number of flights which must be scored.

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

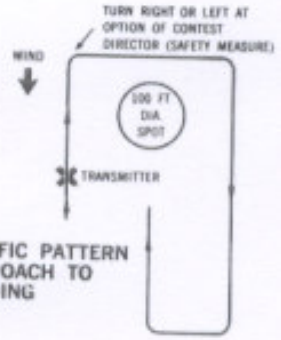
22.11 FLIGHT PATTERN: The contestant must fly his entire flight according to the established Flight Pattern and in the order listed.

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

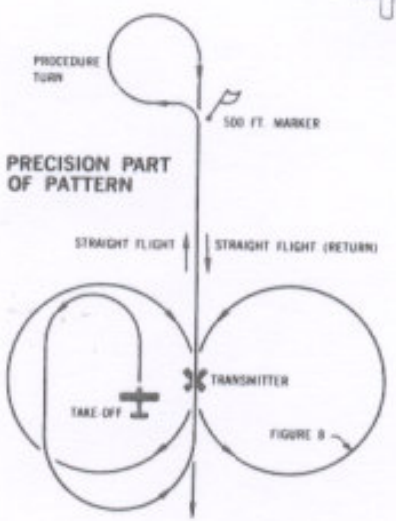
RADIO CONTROL MANEUVERS-



PROTO TAKE-OFF



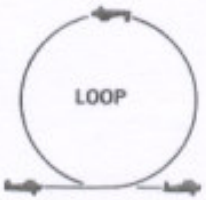
TRAFFIC PATTERN APPROACH TO LANDING



PRECISION PART OF PATTERN

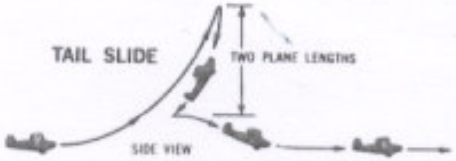
4 POINT ROLL

HORIZONTAL ROLL



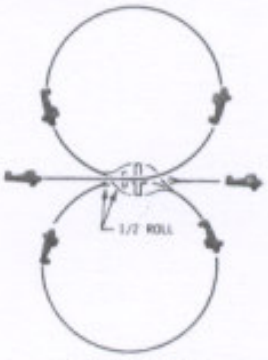
LOOP

WING OVER



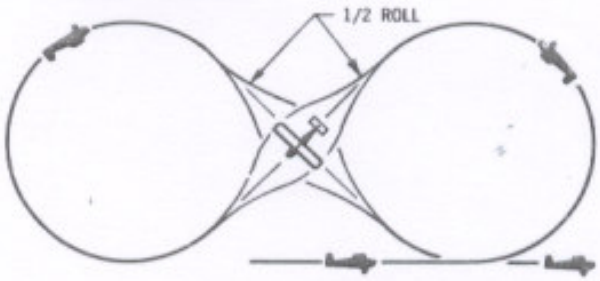
TAIL SLIDE

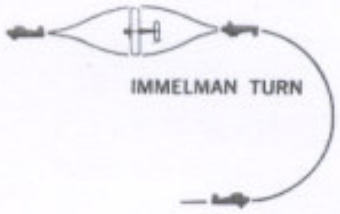
TRUE SPIN



ROLLING EIGHT

CUBAN EIGHT





IMMELMAN TURN

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

MANEUVERS:

1. *Proto Take-off:* Model will be taxied realistically downwind at least 50 feet from point of engine start, stopped, then turned at least 120 degrees into the wind and takeoff made on this heading.
2. Deleted. Continue with No. 3.
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 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 complete inside loop, followed immediately by one complete outside loop, directly below, with level recovery at the same altitude as the entry. The complete maneuver is an eight in the vertical plane.
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, start to descend and fly as far as the contestant feels is necessary to make as 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. Maneuver is over when plane is within 6' of ground.
21. *Landing Perfection.* Smooth and realistic approach, smooth and realistic 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 brought to a complete stop, then taxied over realistically 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 takeoff.

22.12 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. Tranamitters 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.

.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.

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.