

FLIGHT ENDURANCE

OVERVIEW

Participants analyze flight principles with rubber band powered model aircraft.

PURPOSE

The Flight Endurance event requires participants to build, fly, and adjust (trim) a model to make long endurance flights inside a contained airspace. Any model design is acceptable if the model complies with the event specifications. All models are to be built and test flown before the event date.

ELIGIBILITY

Entries are limited to two (2) individuals per chapter.

TIME LIMITS

Participants are provided a minimum of thirty (30) minutes for trim flights at the event site.

PROCEDURE

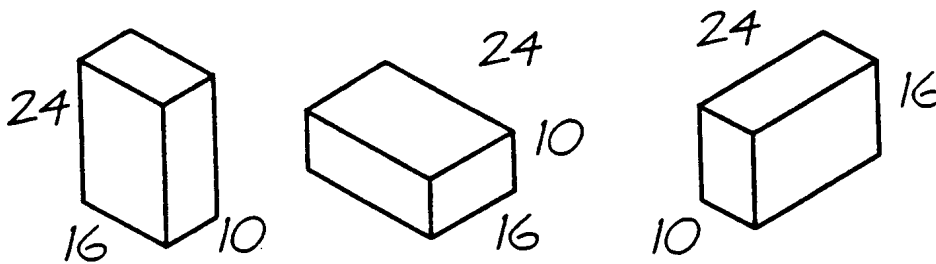
- A. Participants report to the event coordinator at the time and place stated in the conference program. Each participant is assigned a group number to coincide with an individual who serves as their timer for the official time trials.
- B. Participants then proceed to the flying site for trim flying. Models are evaluated for specification compliance during the trim session. Time allotted for the trim portion may be extended according to the number of participants and site scheduling. Trim flights may continue throughout the event but yield the floor to official flights.
- C. Participants have two (2) opportunities to fly their models for official times. The times posted during the time trials are used to determine the ten- (10) finalists.
- D. Participants attend a pilot's meeting headed by their group timer, who reviews the sequence for making the official flights.
- E. In an orderly fashion, participants wind their models and proceed to their group timer for permission to fly.
- F. Participants place their models on the floor and wait for the signal to release from the timer. Timing begins when the model rises off the ground.
- G. Flight time ends when models hit the floor/ground or when they come to rest on an obstruction.
- H. No repairs are allowed after time trials begin.
- I. Each participant has the times of two (2) official flights recorded by the timer.
- J. Following the second flight, the ten- (10) finalists' models are placed on their portfolios for the next step in evaluation.
- K. Portfolios of the ten- (10) finalists are reviewed for discrepancies or infractions.
- L. Ties are broken by determining the longest single flight time.

REGULATIONS

- A. All documentation must be computer-generated on 8 1/2 " x 11" paper and contained in a portfolio (a standard 1" three-ring binder). Each portfolio must include a flight log (see official sample below) with the previous ten (10) flights signed off by the participant's advisor and a written report organized to explain these specific points:
1. The technical attributes of the design and a description and identification of parts.
 2. The modifications and an explanation of why each was developed.
 3. A technical review of their flight log explaining the trim adjustments and modifications required to improve endurance. This information may be scrutinized for validity by experts from the Academy of Model Aeronautics (AMA) and the National Free Flight Society (NFFS).

Flight Log					
Member name:			Dates :		
Flight #	# of winds	Time aloft	Flight pattern	Trim adjustment	Advisor sign off
#1					
#2					
#3					
#4					
#5					
#6					
#7					
#8					
#9					
#10					

- B. The aircraft and its parts must be contained in a box that does not exceed 10" x 16" x 24".



C. Materials include the following:

1. Models are to be made of wood and tissue paper for fuselage and flying surfaces (wings, fin and stabilizer). No plastic foams, films, or condenser paper are allowed. Models use a commercially available plastic propeller or propeller assembly: minimum of 140 mm to a maximum of 170 mm in diameter. Trimming or thinning propellers is allowed to achieve balance and/or to reduce weight.
3. Fuselage dimension: minimum of 300 mm in length measured with prop assembly attached.
4. Wingspan: maximum of 50-cm horizontally projected, wing chord 12 cm projected.
5. Rubber motor: maximum weight of motor is one (1) gram. No length measurement is made. Spare motors are allowed during the official flights. Black rubber O-rings of 4 mm id (maximum dim) may be used on the rubber motor loop, one at the prop hook end and one at the motor hook end for easier handling of wound motors.
6. Model weight: minimum of 8 grams, maximum of 22 grams. Models are weighed with motors attached. Clay is permitted for trim ballast. (Model is weighed with clay ballast.)
7. Steel wire may be used only for propeller shaft, for motor hook, and with landing gear.
8. Wheels must be a minimum of 15 mm in diameter of plastic or wood and they must roll.

D. Acceptable flight support equipment includes the following: Mechanical rubber motor winders (Electricity may not be available at every site.) A winding stooze may be used to anchor the model while its motor is being wound.

E. The landing gear must support the airplane without sagging in its rested position.

EVALUATION

Evaluation is based on the duration of flight, written report, and flight log. A bonus of ten seconds is added to the flight time if the airplane successfully lands on its wheels and comes to a rest setting on its wheels.

NOTES

The Academy of Model Aeronautics (AMA) welcomes your inquires and may have suggestions and technical information that may further your knowledge and interest in model aircraft. The AMA is located in Muncie, Indiana and may be reached by phone at 765/288-4899 or by fax at 765/289-4248. The National Free Flight Society (NFFS) is another organization that offers help to individuals who seek information concerning model building and flight technology. The NFFS can be reached by email at dDrinten@mail.mother.com

FLIGHT ENDURANCE

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Evaluators, three (3)
- C. Assistants, three (3)
- D. Timekeepers, three (3)

MATERIALS

Coordinator's box, containing:

- A. Event guidelines, four (4) copies
- B. Official rating forms
- C. List of entries, with finalist report
- D. List of event evaluators/assistants
- E. Flight score sheets
- F. Marking pens (felt tip, fine)
- G. Stop watches, three (3)
- H. Electronic gram scale
- I. 610 mm metric rulers, two (2)
- J. Results envelope

PROCEDURE

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's box. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is being held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. One (1) hour before the event is scheduled to begin, meet with your evaluators/assistants to review time limits, procedures, regulations and all other details related to the event. If questions arise that cannot be answered, speak to the event manager before the event begins.
- D. For participants who violate the rules, the decision either to deduct twenty (20) points or disqualify the entry must be discussed and verified with the event evaluators, event coordinator and a CRC manager.
- E. Check-in participants and evaluate models for special compliance during the scheduled trim session (completed flight log inspected).
- F. Secure models in the holding area so models remain safe until the scheduled time for the official flights.
- G. Distribute list of entrants assigned to each designated evaluator/timer.

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2004-2005 OFFICIAL RATING FORM

JUNIOR or HIGH SCHOOL

ENTRANT'S ID #																				
EVALUATIVE CRITERIA																				
Flight duration Flight #1																				
Flight #2																				
Landing bonus(10 seconds)																				
FLIGHT TOTAL																				
Portfolio 1.01 for no flight log or 1.20 for best accurate report																				
SUBTOTAL (To calculate, multiply portfolio factor by flight total.)																				
Rules violation (if any)minus 20 pts.																				
TOTAL																				
RANK																				
Evaluator's comments/notes:																				
I certify these results to be true and accurate to the best of my knowledge. Evaluator's signature _____																				