

## Boeing Flight Competition Logistics

The Boeing Flight Competition will be held at the National Society of Black Engineers 49th Annual Convention in Kansas City, MO. The competition will take place on Friday March 24 & Saturday, March 25, 2023. All participants must do the following:

- **Form a team.** All teams must have at least 2 students but no more than 4 students. A person cannot be a member of more than one team.
- **Register online.** Deadline is Friday February 17, 2023. You will receive registration confirmation and the time and location of your presentation via email. No walk-up teams will be allowed to participate. You must be registered by the deadline in order to compete.
- **Construct a glider prior to the day of the competition.** There will not be any materials provided at the conference for glider construction. Gliders must meet the glider construction guidelines outlined below.

In addition, each member on a team must participate in at least one of the following activities: design, manufacturing, testing, documentation or launching of the glider during the competition.

The competition consist of two parts: the **Team Presentation** (held on Friday, March 24<sup>th</sup>) and the **Distance Competition** (held on Saturday, March 25<sup>th</sup>). Teams are allowed to participate in either one individually, but only teams who participate in both will be eligible for the Overall Award (see Prizes and Awards section for details).

## Glider Construction

### List of Materials

The following is a list of materials that can be used for the glider:

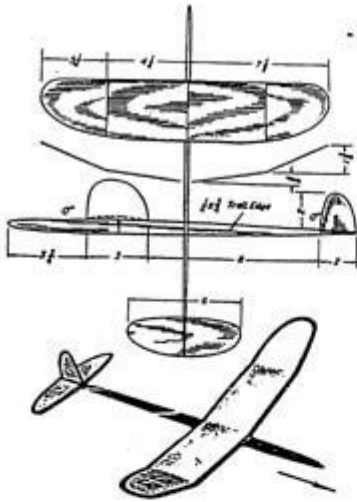
- Glue
- One sheet of Balsa wood (3 inches by 36 inches). There is no minimum or maximum thickness required. (The thickness of previous competition participants ranged between 1/8 to 1/4 inches.)
- Rubber band(s)
- Two U. S. quarters
- Paint or decals for decoration
- Tape
- Launch pin

Note: Balsa wood can be purchased at art supply stores, hobby shops and some book store locations

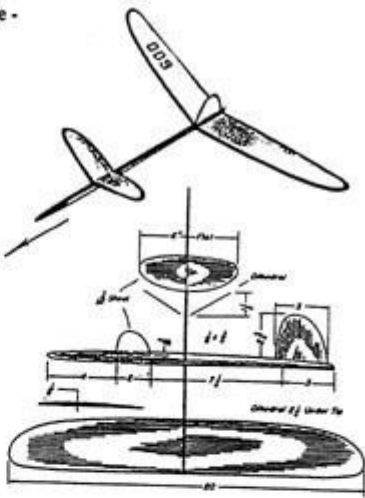
### Payload and Other Requirements

- The glider must carry a payload of two (2) U.S. metal quarters (25 cent pieces).
- No part(s) of the glider may be removed or added once the competition has begun, however minor repairs can be done. **No backup gliders will be allowed.**

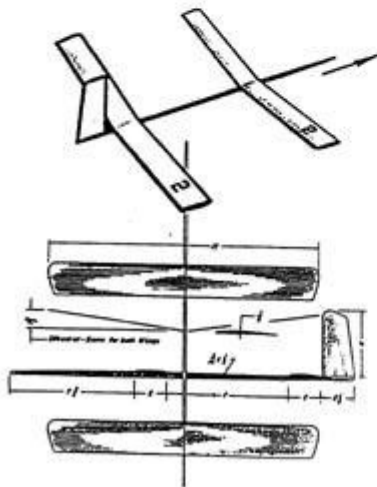
Examples of Glider Configuration



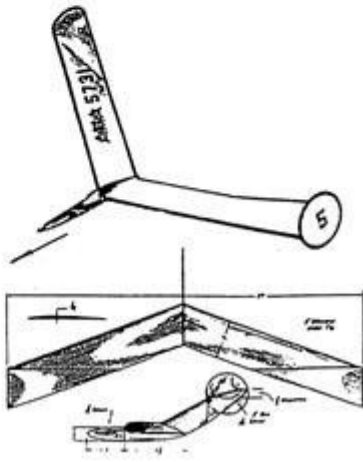
CONVENTIONAL (Tail Aft)



CANARD (Tail Forward)



TANDEM WING



FLYING WING (Tailless)

- No Scale -

- No Scale -

## Team Presentation

The Team Presentation is a 10-minute oral/multimedia presentation illustrating the team's efforts and considerations while designing, building, and testing its glider. The multi-media presentation should include information about the team's activities as they address the various aspects of design and considerations for both building and constructing. The presentation should also include the data and results from any testing. Team Presentations are limited to 10 minutes. A computer will be available, but we cannot guarantee internet access, so please bring any materials that you want to present on a thumb drive.

## Distance Competition

The Distance Competition is the chance for teams to demonstrate the air worthiness of their gliders in a series of flights. The team whose glider flies the farthest wins!

To assure uniformity of results and fairness, each glider shall be launched by means of a simple rubber band catapult, which you are to select and provide. (You can also use a chain of rubber bands linked together.) Bring your own calibrated rubber band and spares.

This year, teams will get the opportunity to test flight their gliders before the final Distance Competition. During the test flight, students can perform practice runs of their aircraft and consult onsite Boeing volunteers to aid in the analysis and evaluation of their glider's flight characteristics. However, **NO MAJOR CHANGES TO THE GLIDER DESIGN ARE PERMITTED AFTER FLIGHT TEST.** Teams may adjust the location of their payload and/or angle of attack of their flight surfaces. Teams CANNOT change the length, location, or sweep of their flight surfaces or fuselage.

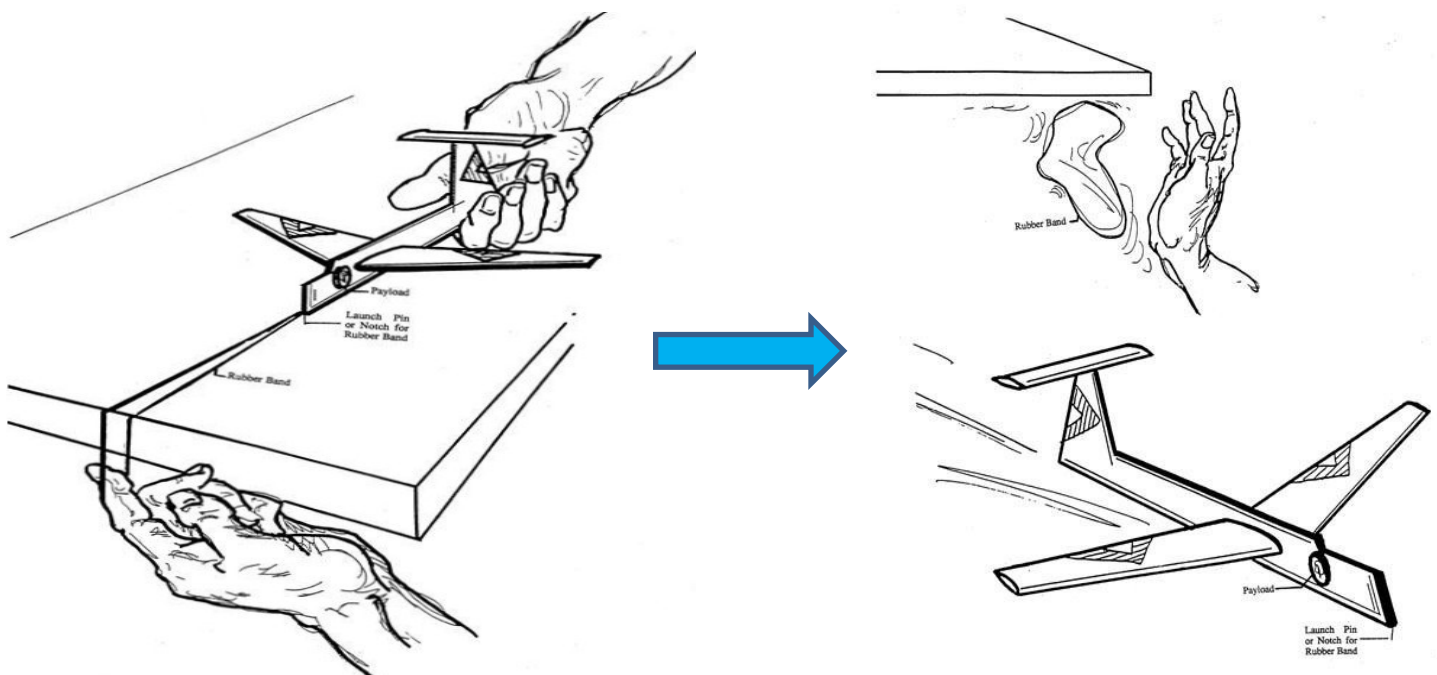
## Launch Requirements

The glider will be launched horizontally from the top of a typical table, approximately 30 inches above the floor to allow it to glide as it departs the edge of the launch platform. **You will not be allowed to stand on the launch table.** Launch platforms or devices that stand 3 inches above the table top cannot be used. It is strongly recommended that no launching device be used. None of our previous distance winners have used anything more than rubber bands.

The rubber band can be attached as follows but not limited to:

1. a notch cut into the balsa wood for the rubber band to grip, or
2. a launch pin (such as a thumb tack or small nail) pushed into the balsa wood for the rubber band to grip.

## Examples of a Typical Launch



## Judging Criteria

### Team Presentation

Teams will present in front of a panel of judges and will be judged on:

- Good team verbal skills
- Creativity using charts, pictures, photos, videos, web page, etc.
- Aesthetic appeal of glider. Examples include school logo, school colors, clean look, smooth edges, etc. The design should be practical and durable. The glider should be simple to build, simple to fly and easy to repair.

### Distance Competition

- The glider should fly as far forward as possible in a straight line.
- In the event of a tie, a fly-off will be conducted to determine the winner.

**Fun Fact:** The longest distance of record of, 189' 10", was achieved by team Firefly of the University of Wisconsin in 2008. Can you beat that record this year?

### Disqualification

Any glider that incorporates a hanger, fiberglass, wire or additional materials not mentioned above will be disqualified. Additionally, no bullets or projectiles will be allowed to participate.

**All decisions of the judges are final!**

## Prizes and Awards

There are three categories of awards that teams can compete for:

### Presentation and Design Awards

Awarded to the team that gives the best Team Presentation

**1<sup>st</sup> Place: \$800**

**2<sup>nd</sup> Place: \$600**

**3<sup>rd</sup> Place: \$400**

### Distance Awards

Awarded to the 3 teams with the farthest flying gliders as measured from the launch pad to landing

**1<sup>st</sup> Place: \$800**

**2<sup>nd</sup> Place: \$600**

**3<sup>rd</sup> Place: \$400**

### Overall Award

Awarded to the team that participates in both aspects of the competition (Team Presentation & Design and Flight Competition) and judged as the best overall.

**One Team: \$1,400**

## Contact

If you have questions or need help, please contact:

The Boeing Company

E-mail: [GRP Boeing NSBE](mailto:GRP_Boeing_NSBE)

Subject: Boeing/NSBE Flight Competition 2023