

2014 Egg-O-Naut

1. **DESCRIPTION:** Prior to the tournament, teams will construct rockets designed to stay aloft the greatest amount of time while carrying an Egg-O-Naut (a raw Grade A large chicken egg in a plastic bag) that survives (doesn't break) impact.

TEAM OF UP TO: 2 **IMPOUND:** No **EYE PROTECTION:** #5 **APPROX. TIME:** 10 minutes

2. EVENT PARAMETERS:

- a. Teams will design, build and bring up to two rockets to the tournament (**only 1 launch per rocket**). **Parts from one rocket must not be used on another rocket.**
- b. **Teams without proper eye protection must be immediately informed and given a chance to obtain eye protection in time allows, otherwise they will not be allowed to compete and scored as a no-show.**
- c. **Event supervisors will provide the launcher, water, and Grade A large chicken eggs in a plastic bag.** The supervisor will place an identifying mark (using a Sharpie or ink stamp) on the eggs to ensure that teams are using provided eggs.

3. CONSTRUCTION PARAMETERS:

- a. Each rocket's pressure vessel must be made out of a single **1.5-liter or smaller plastic carbonated beverage bottle** with a neck/nozzle opening approximately 2.2 cm internal diameter (1/2 inch Schedule 40 PVC pipe should just fit inside the nozzle opening). Labels may be removed from the bottle **but labels must be presented** at the safety inspection.
- b. The structural integrity of the pressure vessel (carbonated beverage bottle) cannot be altered. Examples of altering structural integrity include but are not limited to physical, thermal or chemical damage (e.g. cutting, sanding, using hot glues, or super glues). **Metal of any type and commercial model rocket parts are prohibited anywhere on the rocket.**
- c. **Only Tape must be used to attach fins and other components to the pressure vessel. No glues of any type may be used on the rocket assembly.**
- d. Damage to the structural integrity of the pressure vessel will result in disqualification and the rocket will not be allowed to launch. Damage will be assessed by looking into the bottle through the nozzle for discoloration, bubbles, or thinning of the walls of the bottle.
- e. The nose of the rocket must be rounded or blunt at the tip and designed such that when a standard 1 liter bottle cap (~3.1 cm diameter x 1.25 cm tall) is placed on top of the nose, no portion of the nose touches the inside top of the bottle cap (see figure 1). Teams must not use a nose that is sharp, pointed, or consisting of a ridged spike regardless of the material used.
- f. All rockets will be launched using the launcher provided by the supervisor. To ensure rockets will fit on the launcher, fins and other parts added to the bottle must be **5 cm or higher above the level of the bottle's opening. Nothing, including tethers, may break this plane (see Figure 2).**
- g. All energy imparted to the rocket at launch must originate from the water/air pressure combination (both provided by the event supervisor). No explosives, electric, elastic powered flight, throwing, remote controls, or pyrotechnics may be used.
- h. Any recovery system is allowed. **Potential or kinetic sources of energy may be used in the recovery system; however, objects (such as springs, rubber bands, etc.) must be in their lowest energy state at launch.**
- i. The rockets and each part that is intended to separate must be clearly marked by the teams in such a way that the judges can easily identify the team and each individual rocket (if 2 rockets launched).

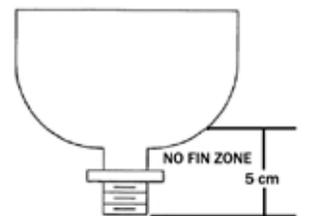
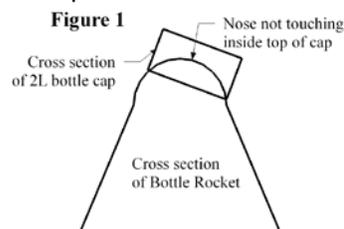


Figure 2

- j. The rocket(s) must be built so that the egg **provided by the event supervisor** is easily removed. Nothing (e.g., tape) may be adhered to the egg.
- k. The part of the rocket containing the Egg-O-Naut should be **differently** colored if it is to detach from the rocket.

4. **THE COMPETITION:**

- a. Egg-O-Naut is a walk-up event; teams should arrive at the competition site ready to launch. Following the safety inspection of each rocket, teams will receive 1 egg per rocket, add any amount of water and load their egg in each rocket. When called to launch, the teams will have a total of **10 minutes** to launch up to 2 rockets brought to the competition (only 1 launch per rocket). Any rocket launched before the time expires will be scored. The second rocket may be launched prior to retrieval of the Egg-O-Naut.
- b. All rockets will be launched at **65 psi**. Once the rocket is pressurized, no contestant may touch or approach the rocket.
- c. Time aloft will be recorded in hundredths of a second. Timing begins when the rocket separates from the launcher and stops when the Egg-O-Naut or portion of the rocket containing the egg touches the ground or comes to rest on a tree, building, or other obstruction or goes out of sight. Preferably three timers should be used and the middle recorded time will be used for scoring.
- d. The teams will retrieve their rockets and immediately show the rocket or capsule with the Egg-O-Naut to an event inspector. Any Egg-O-Naut capsule or wrapping **must be opened in the presence of an event official**.

5. **SCORING:**

- a. Any Egg-O-Naut (or portion of the rocket containing the egg) that **completely** detaches from the pressure vessel will receive a 3 second bonus. Any type of free-fall recovery system is allowed. Rockets whose parts (e.g. fins) do not remain linked while aloft will not be disqualified or penalized.
- b. Egg-O-Nauts that can be retrieved and survive will receive a 15 second bonus. Egg-O-Naut's survival is defined as not cracking the egg enough to leave a wet spot on a paper towel. An Egg-O-Naut that cannot be retrieved will not receive the 15 second bonus.
- c. The score for each rocket will be equal to its time aloft plus bonus seconds for Egg-O-Naut capsule separation plus bonus seconds for Egg-O-Naut survival. A team's final score for the event will be the score for their individual rocket with the highest score.
- d. Teams whose final score is for a rocket with construction violations will be scored as follows:
 - i. Rockets that violate a safety related construction rule will not be launched and will receive only participation points (this includes competitors not wearing proper eye protection).
 - ii. Teams having other construction violations will be ranked in a tier below other teams.
- e. **Ties will be broken by the better score of each tied team's other rocket.**

