

Ping Pong Parachute – NC Only 2018 (revision 2/5/2018)

1. **DESCRIPTION:** Prior to the tournament, teams will design, build, and bring up to two bottle rockets to the tournament to launch a ping pong ball to stay aloft for the greatest amount of time.

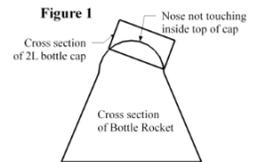
A TEAM OF UP TO: 2 **IMPOUND:** No **EYE PROTECTION:** 2d **APPROX. TIME:** 10 min.

2. **EVENT PARAMETERS:**

- Teams will have a total of **two launches using the same rocket on both launches or use two different rockets.**
- All rockets must be launched using the launcher provided by the supervisor.
- Event supervisors must provide the launcher, air pump, and timing devices. If event is run inside, extreme care should be taken to protect the floor.
- If the event is held inside, tournament directors must provide the ceiling height to the teams at least 1 month in advance. **Maximum pressure is 40 psi if event is run inside.** Pressure for outside event is 60 psi.
- For inside events only: No part of the rocket, ping-pong ball, or recovery system should hit the ceiling.
- Ping pong balls must be unaltered **and separate from the rocket** and may deploy a recovery system.

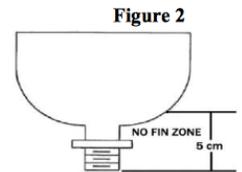
3. **CONSTRUCTION PARAMETERS:**

- Rocket pressure vessels must be made from a **single 1-liter or less plastic carbonated beverage bottle** with a nozzle opening internal diameter of approximately 2.2 cm (a 1/2-inch Schedule 40 PVC pipe must fit tightly inside the nozzle opening) and a standard neck height from flange to bottle's opening of under 1.6 cm. **The bottle label must be presented.**
- 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 pressure vessel. Metal of any type are prohibited anywhere on the rocket.
- The structural integrity of the pressure vessel must not be altered. This includes, but is not limited to: physical, thermal or chemical damage (e.g., cutting, sanding, using hot or super glues, spray painting).
- The nose of the rocket must be rounded or blunt at the tip and designed such that when a standard 2-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).
- All energy imparted to the rocket must originate from air pressure (no water!) provided by the judge. Explosives, gases other than air, water, chemical reactions, pyrotechnics, electrical devices, elastic powered flight assists, throwing devices, remote controls, and tethers are prohibited at any time.
- Fins and other parts added to the bottle must be 5 cm or higher above the level of the bottle's opening, to ensure rockets fit on the launcher (see Figure 2).



4. **THE COMPETITION:**

- Teams must arrive at the competition site ready to launch with proper eye protection **on.**
- Rockets will be safety inspected. Please allow teams to get eye protection if forgotten.
- Teams must present a flight data log for the rocket(s) that includes **at least 10 test launches** and the following variables: Pressure (psi), Altitude (feet), and time aloft (seconds).
- For inside events only:** The pressure of the first launch will be determined by teams (**max psi is 40 psi**). Teams must use their flight data log to justify their pressure choice. Rockets without a flight data log or an incomplete flight data log will be launched at a pressure as determined by the event supervisor which **ensures that the rocket will not hit the ceiling.** Teams may adjust the pressure for the next launch.
- When called to launch, teams will load their rocket onto the launcher. Once the rocket is loaded, but NOT pressurized, teams will place the ping pong ball and its recovery system on or in the rocket, after which it cannot be manipulated. After launching the team will prepare for their next launch.
- Time aloft is recorded in hundredths of a second. Timing begins when the rocket separates from the launcher and stops when the ping-pong ball touches the ground.
- All times for each launch MUST be recorded for breaking ties. The middle value is the officially recorded time.



5. **SCORING:**

- Teams with violations of rules 3a-d and 4a, will NOT be launched due to safety and receive participation points.
- Teams with violations of rules 2e, 2f, 3f and/or 4c (missing or incomplete flight logs) will receive a **3 second time penalty for each violation. Negative times are possible.**