2020 Argonia Cup

SUMMARY

The goal for the 2020 Argonia Cup competition is to launch a rocket powered vehicle containing a golf ball payload to an altitude in excess of 8,000' AGL and to recover the payload safely at a predetermined location on the rocket range.

VIDEO

Each team will be required to produce a video four to eight minutes long, hosted on YouTube, that provides a detailed overview of the project including flight simulations. This video must be submitted on or before March 7, 2020. Not submitting a video will result in disqualification.

RULES

1. There must be at least one (1) TRA certified Level 2 member per team. This team member must be present at the competition and will be considered the flyer of record of the rocket. All team members must currently be enrolled at the competing university or college. Multiple teams from the same university or college are permitted.
2. The maximum installed impulse for this competition will be one commercially available 5,120 Newton Second motor (L Motor). Motor clusters, air starts, and multi-stage motor configurations are prohibited. Spark emitting motors (Skidmark type motors) are prohibited.
3. Any deployable payload shall limit the descent velocity to less than 30 FPS below 300' AGL.
4. Any propulsion/steering system designed to recover the payload cannot be used to boost the payload to the target apogee.
5. A commercially available, altitude recording altimeter with onboard data storage shall be used for altitude determination and may be used for payload deployment and/or rocket recovery. If two or more altimeters are used, the averaged apogee height of each altimeter will be used for determination of rocket apogee.
6. Launch vehicles shall be launched at an elevation angle between 83 and 85 degrees (5 to 7 degrees off vertical). All flights will be angled away from the flight line regardless of wind direction.
7. All flights must have a minimum of a 5:1 thrust to weight ratio at liftoff.
8. Launch configuration light stability shall be achieved by maintaining a minimum CP/CG static margin of no less than 1 body caliber during flight.
9. Apogee must occur at or above 8000' AGL (field elevation is approximately 1249' MSL). Any flight not reaching this altitude will be disqualified. Each team may make

up to three flight attempts with the closest qualified landing score being their official flight.

10. All launch vehicle components must be recovered in a “re-flyable condition” after flight.

LAUNCH OPERATIONS

1. TRA Research Safety Code will be followed for all launch activities.
2. The launch organizers will provide all launch pads, launch rails, and the launch control system. Both 1.5” x 1.5” (commonly known as 1515) and 1” x 1” (commonly known as 1010) rails will be available in 8’ or 12’ lengths. A minimum of two (2) rail guides must be used.
3. All rockets will be subjected to a rocket safety inspection before the teams will be cleared to fly their projects. Any safety of flight issues noted in this inspection will be resolved before flight. These safety inspectors have the final say regarding any projects suitability for flight.

SCORING

Prior to the start of any launch activities, the location of the landing target will be clearly marked and will be available for inspection by the competing teams. The landing target will be established by the launch organizers and will be within line-of-site and not more than 300’ from any launch pad location. At the completion of each flight, the distance from the center of the payload to the center of the target will be measured by the launch organizers before the teams are allowed to remove their payloads. The point of initial touchdown will be used if it can be determined in the event of the payload skipping across the surface. Closest distance to the target landing spot will determine the winner. In the event of a tie based upon distance, the team with the highest recorded apogee will be the winner.