

FAR 1030 June 6, 2020

\$25 Registration Fee \$10 FAR fee per attendee per day

Rocketry competition open to college, university and amateur rocket enthusiasts.

- **30K Open class:** Build and launch a rocket to 30,000 feet using any motor, commercial or experimental
- **10K Open class:** Build and launch a rocket to 10,000 feet using any motor, commercial or experimental



Competition Scoring:

- Combination of closest to target altitude, mission success, motor type
- Must be recovered in reusable condition

Competition requirements:

- Minimum 2.2 lb (1.0 kg) payload. Must be removable as a separate unit from the airframe. May include avionics, video cam, telemetry, and payload option. Minimum 3" (75 mm) airframe
- Redundancy required in the following systems:
 - Dual igniters, dual ejection system per stage, dual altimeters/flight computers; at least one altimeter must be COTS (commercial off the shelf) to be used for altitude verification.
- Dual deployment. Main deploys 500' – 1500' AGL. No component should exceed 100 ft / sec during recovery.
- Tracking system required. Either GPS telemetry, Radio Beacon or other approved in advance location method.
- 40,960 N-sec total impulse maximum limit 'O' impulse motor
- Choice of payload 'mission' options required (see below) with point award for successful completion.
- Open Rocket file (<http://openrocket.info/>) of launch vehicle to be **emailed no later than May 29, 2020**.

Bring to the event:

- FAR fees/waivers <https://friendsofamateurocketry.org/wp-content/uploads/2018/01/FAR-Liability-Waiver.pdf>
- One page rocket specification sheet with payload option indicated (See Sample provided).
- Pre-flight Checklist, Launch Checklist: Everything needs to be turned on before igniter installed for launch.

Competition consists of the following 3 phases:

1. Check In and inspection: **Friday June 5: 5 PM – 7 PM**, and **Saturday June 6: 7 AM – 9 AM**.
 - a. Your rocket will be inspected to insure that it meets safety standards.
 - b. Review of your specification sheet, pre-flight and launch checklists.
 - c. All rockets **must pass inspection prior to 9 AM Saturday** morning.
 - d. After inspection and review your team will receive a flight card.
2. Flight and Recovery: **Saturday 9 AM – 5 PM** (WARNING: Wind typically picks up in the afternoon, launch early)
 - a. Present your flight card to the RSO.
 - b. You are limited to 1/2 hour pad time for solid motor, 1 hour for hybrids and bi-prop motors.
 - c. Please be ready to fly by Saturday 9:00 am. Bring own launcher if more time needed.
3. Post flight inspection: **Saturday 10 AM – 6 PM**
 - a. Bring your recovered rocket for post flight inspection and to determine reusable (flyable) condition.
 - b. Inspectors will record measured altitude from the COTS altimeter and note it on your judging sheet.

Launch rails provided: 10 foot 1010 rails, 20 foot 1515 rails, towers available per FAR website or BYO.
Please bring at least 2 igniters to the event for your rocket motor. Black Powder available on request.
Free camping available on site Fri-Sun. Motels available in California City & Mojave 40 minutes away.

*****Registration limited to the first 15 registrations received*****

For 1030 information and registration: rocketrycontest@gmail.com

***Please note, the FAR-1030 and the FAR/Mars Society Launch Competition are two different competitions/dates**

Scoring

- Highest score 'wins'. 1-point awarded for every foot altitude to the target altitude of 10,000' or 30,000'.
- 1-point will be deducted for each foot over the target 10,000' or 30,000' altitude class entry.

Scoring Bonuses:

- 2,000 points for experimental solid (non COTS) motor...use of student built motor encouraged.
- 3,000 points for use of experimental hybrid motor.
- 4,000 points added if motor is a bi-propellant liquid.
- 1,000 points for using a 2-stage rocket (available only for 30K open class)
- 500 points for designing and constructing a nose cone that successfully carries a minimum 500 ml of water and safely releases the water at or after apogee to be dispersed in the air.

Payload Requirement: In order to qualify, teams **must** attempt one or more of the following payload options:

- 1000 points: Remotely Radio Controlled Rover. Rocket must deploy a rover that leaves the rocket and travels a minimum of 10 feet from the rocket after touchdown with live video on the ground from rocket landing till at least ten feet of distance has been traversed after leaving the rocket.
- 3000 points: Autonomous rover: A rover that returns autonomously to designated launch pad with live video.
- 1000 points: Remote Sensing. Upon landing, a remote video camera will record the landing surroundings in a 360 degree horizontal panorama for transmission to launch control. Note: 360 degree video cams do not qualify. The video must be autonomously rotated in air or upon touchdown to image the landing surroundings.
- 500 points: Remote Sensing. Rocket must transmit live video from liftoff to touch down. Live video must be seen by judges or recorded by the ground launch area receiving station for viewing by the judges.
- 1000 points: Reconnaissance. Glider deployment below 400' on rocket descent with live video transmission.
- 2000 points: Reconnaissance Return. Release of drone below 400' altitude or after landing with live video during drone return to a designated location near the launch pad by autonomous or remote control.
- 500 additional points: A secondary on board video source recorded to a memory card during the flight.

Live video must be witnessed by a judge to be valid or recorded at the ground launch area receiving station. Points awarded for successful payload mission completion.

If an alternative experimental payload is desired, contact the organizers at rocketrycontest@gmail.com for approval.

Rocket specification sheet:

Your specification sheet must include your school name, name of team lead and competition class (10K or 30K).

- Motor type (commercial or experimental) solid, liquid, or hybrid.
- Motor class and total impulse (must be less than or equal to 40,960 Nsec).
- Total weight and length of rocket.
- Type of launch rail required...we have 1010 and 1515 rails and adjustable towers for rockets without guides.
- Type of altimeter/flight computer used...competition scoring to be made with the mandatory COTS one.
- Payload description, weight and weight of water used for ballast.
- Tracking type (GPS, RF beacon and frequency, other).
- Video transmission frequency.
- Contact information (name, phone number, and email address). Also install contact information on/in the rocket.