

# **TRIPOLI MID-OHIO #31**

## **CLUB RULES AND REGULATIONS**

Welcome to Tripoli Mid-Ohio (TMO), Prefecture #31. We are glad that you are here and desire to fly with us.

We hold all of our launches under the Tripoli Rocketry Association Research Safety Code - 2017. A copy of this is available in the Documents section of our website.

There are some items that you need to be aware of before you head out to the pads. Please read the below VERY carefully and contact any of the TMO Board Members for questions or clarification on any issues that you may have. Also note that these rules and regulations are specific to Tripoli Mid-Ohio and are in addition to the Safe Practices and Launch Guidelines set forth by the Tripoli Rocketry Association.

### **GENERAL**

1. You must be either NAR or TRA certified to fly HPR: any motor "H Class" or larger. You must fly within your certification level, unless you are attempting a certification flight.
2. If you are going to fly HPR, you must present a current NAR or TRA membership card to the registrar when paying daily launch fees:
  - A. Launch fees are \$15/day or \$25/week end for HPR; and \$10/day \$15/week end for LPR. There are **NO** refunds for any launches cancelled for any reason.
  - B. You must sign & date the TRA "Launch Liability Waiver Form" in order to fly with us.
  - C. Children under the age of 18 do not pay launch fees, as long as they are not flying HPR.
  - D. Children under the age of 18 that are certified as "Tripoli Junior Members" must pay the daily launch fees if they are going to fly HPR.
3. If you are a member of a local school, college, or university, TMO will make special arrangements for membership so that all of the team members can access the pads. Please contact the TMO BoD **BEFORE** you show up at the launch. We get enough surprises on a launch week end with trying to coordinate a group effort.
4. The speed limit on the access road is 5 miles per hour. **NO EXCEPTIONS.** If you are observed speeding or otherwise behaving badly on your drive to the field, you will be asked to leave and not return.
5. **DO NOT** drive or park in any of the crop fields. **PERIOD.** The landowner has been gracious enough to allow us to fly on his property and he is seriously concerned about soil compaction. If you are observed in violation of this rule, you will be asked to leave and not return.
6. Do not litter and take your trash with you. If you need a trash bag, check with the OAMC BoD members.
7. Respect the other flyers, their personal property, and our land owner's property.
8. No dogs or other pets are permitted at the launch site, with the exception of certified service animals. Service animals must be on a leash at all times and

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are not permitted across the bridge. Animal owners are responsible for cleaning up all solid 'droppings'.

### **MOTORS**

Tripoli Mid-Ohio supports the following rocket motors:

1. Currently certified commercial Black Powder (BP) motors
2. Currently certified commercial Ammonium Perchlorate Composite Propellant (APCP) motors
3. All Hybrid motors. We do not have Ground Support Equipment (GSE), so please bring your own.
4. Research APCP motors, within the flier's TRA certification level.
5. Research sugar motors, within the flier's TRA certification level.
6. With the exception of nitrous-oxide hybrid rocket motors, liquid rocket motors are prohibited at TMO Launches.
7. The following propellants are also excluded from TMO launches: So-called double-based, triple-based, and micro-grain propellants (including zinc/sulfur propellants).
8. You must be TRA Level 2 or 3 to fly **ANY** Research motor. **NO EXCEPTIONS.**

### **LAUNCH PREP AND LAUNCHING**

1. Do not install igniters in any rocket motors until you are at the pad. **NO EXCEPTIONS!**
2. If it is necessary to install an igniter in a motor, such as for a two-stage project, please discuss this with the RSO and LCO before the installation.
3. Do not arm any altimeters or timers until your rocket is on the pad and pointed in the flight direction. It is highly suggested that you arm any electronics **BEFORE** installing igniters.
4. Check all motor leads for a safe condition before connecting them to your igniter. To do this, lightly touch the micro clips together and watch for a spark. If there is no spark, you are safe to connect them. If you observe a spark, contact the pad manager and LCO immediately. **DO NOT CONNECT THE LEADS TO THE MOTOR!**
5. Do not break or exceed the waiver.
6. Do not break or exceed any call-in altitude windows.
7. If you are flying any "Sparky" motor, you must alert the LCO ahead of time and have a fire crew ready to assist in the event of a field fire.
8. In the event of extremely dry conditions or high winds, the LCO reserves the right to ban all "Sparky" motors.

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### **MULTI-STAGE ROCKET RULES**

There is an old adage that refers to staging of rockets that goes something like this: "The mathematics of staged rocket flight is  $1+1=5!$ "

When everything works as designed, a multi-stage high power flight is spectacular. However, when something goes wrong, things can get ugly really quickly. There is no doubt that a multi-staged rocket flight anomaly presents a higher risk of injury or property damage than a conventional single stage rocket.

There are several failure modes present in multi -stage rockets not present in single stage flights including sustainer motors firing when they are not supposed to (on the ground or in flight) as well as sustainers firing after the booster has failed for one reason or another. These failure modes directly impact safety of both the flyers and spectators as the result can be the flight of a rocket under thrust in a non-vertical trajectory.

In an effort to minimize risk, effective November 1, 2017, Tripoli Mid-Ohio #31 has implemented new safety rules regarding high power multi-stage flights at our field:

- An altimeter capable of inhibiting the ignition of the sustainer unless a specific time/altitude threshold is met, or an altimeter that checks for vertical trajectory of flight prior to sustainer ignition.
- Use of timers for second stage ignition is not permitted.
- All staged flights must be approved prior to showing up at the launch. We would prefer at least a week's advance notice.
- There will not be any drag races of multi-stage rockets regardless of impulse installed. When you consider the complexity of each flight with the number of events that must occur for a successful and safe flight, Tripoli Mid-Ohio #31 is not willing to subject our spectators and guests to that level of risk.
- The flier must provide a simulation for the RSO, in order to verify velocity/altitude threshold for allowing sustainer ignition. The rule of thumb is at least 80% of the expected altitude when the sustainer ignition sequence is activated, and at least 200 feet per second velocity when the sustainer comes up to pressure.

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- A thrust to weight ratio of 5:1 on the booster + sustainer stack and 3:1 on the sustainer alone is a reasonable minimum.

### **IMPORTANT DOCUMENTS**



Range Safety  
Guidelines v1.0.pdf

**LAUNCH LIABILITY WAIVER**  
EADM



Research Safety Code  
e - 2017.pdf