

***Universal***  
***Rocketry Association***

# **Rocketry Handbook**

Version: 20090205

# **Universal Rocketry Association**

## **Rocketry Handbook**

Version: 20090205

### **Table of Contents**

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**Safety Guidelines**

**Launch Checklist**

**Flight Card**

**FAR 101: Amateur Rocketry Regulations**

**FAA Notification Contacts**

**Example of FAR 101.29 Information Requirements**

# Universal Rocketry Association

## Safety Guidelines

Version: 20090210

### **Guidelines Mission Statement**

The purpose of these guidelines are to be the authoritative source in guiding people participating in the wonderful activity of Rocketry in a Safe and Enjoyable Way throughout the Universe! They are living guidelines and will continuously be updated and revised, so always check the URA website to make sure you have the latest version. The edition on the website is the official version in all instances.

### **Voluntary Regulation**

These guidelines derive their authority directly from law, and as such a Rocketeer will voluntarily comply with these guidelines and all applicable international, federal, state, and local laws, rules, regulations, statutes, and ordinances.

### **Rocketeer Certification Program**

In order to participate in the activity of rocketry a Rocketeer must register, follow the Rocketeer Certification Program (RCP), and these guidelines in order to operate, launch, and fly rockets or possess rocket motors. A Rocketeer will only operate, launch, and fly rockets or possess rocket motors/engines that are within the scope of their user registration and certification.

## **Rocket Guidelines**

0.1 A Rocketeer will use only necessary lightweight materials such as paper, wood, rubber, plastic, fiberglass, composites, or when necessary ductile metal, for the construction of a rocket.

0.2 A rocket shall be constructed to withstand the operating stresses and retain structural integrity under conditions expected or known to be encountered in flight.

0.3 A rocket will not weigh more than 1,500 grams (53 oz.) at liftoff and will not contain more than 125 grams (4.4 oz.) of propellant or 320 N-sec. (71.9 lb.-sec.) of total impulse. If a rocket weighs more than 1,500 grams (3.3 lb.) at liftoff or has more than 125 grams (4.4 oz.) of propellant, a Rocketeer will check and comply with Federal Aviation Administration (FAA) regulations before operating, launching, or flying a rocket.

0.4 A Rocketeer will not install a rocket motor/engine or combination of rocket motors/engines that will produce more than 889,600 Newtonseconds (200,000 poundseconds) of total impulse.

0.5 At liftoff a rocket will not weigh more than 1/3 of the certified average thrust of the rocket motor/engine(s) intended to be ignited at launch.

0.6 A Rocketeer will ensure that a rocket weighs less than the rocket motor/engine manufacturer's recommended maximum liftoff weight for the rocket motor/engine(s) used for the flight. During pre-launch/flight inspection, the Launch Safety Official (LSO) may request documentary proof of compliance.

## **Motor/Engine Guidelines**

1.1 A Rocketeer will use only certified rocket motors/engines, and will not dismantle, reload, or alter a disposable or expendable rocket motor/engine, nor alter the components of a reloadable rocket motor/engine or use the contents of a reloadable rocket motor/engine reloading kit for a purpose other than that recommended or specified by the manufacture of the rocket motor/engine.

1.2 A Rocketeer will remotely ignite a rocket motor/engine(s) with an electrical motor/engine igniter(s) that is installed in the motor/engine(s) in a designated prepping area or only after the rocket is at the launch pad.

1.3 A Rocketeer will not allow smoking, open flames, or heat sources within 152.40 meters (500 ft.) of a rocket motor/engine.

1.4 A Rocketeer will not use any motor/engine that contains sparky or titanium sponge in the propellant.

## **Recovery System Guidelines**

2.1 A Rocketeer will use a recovery system such as a streamer, parachute, or glide recovery in a rocket so that all parts return safely and undamaged and can be flown again.

2.2 A Rocketeer will use only flame-resistant or fireproof recovery wadding in the recovery system of a rocket if required by the design of a rocket.

## **Launcher Guidelines**

3.1 A Rocketeer will launch a rocket from a stable device that provides rigid guidance until the rocket has attained a speed that ensures a stable flight, and that is pointed to within 20 degrees of vertical. If the wind speed exceeds 3.1 kilometers (5 mi.) per hour a Rocketeer will use a launcher length that permits the rocket to attain a speed that ensures a stable flight before separation from the launcher.

3.2 A Rocketeer will use an exhaust deflector to prevent the motor/engine's exhaust from hitting the ground.

3.3 A Rocketeer will ensure that the ground is cleared around each launcher in accordance with the accompanying Launch Site Minimum Safe Distance of brown grass, dry weeds, or other easy-to-burn materials that could be ignited during launch by the exhaust of a rocket motor/engine(s).

3.4 A Rocketeer will place a launcher so that the end of the launch rod is above eye level or will cap the end of the rod when it is not in use, to prevent accidental eye injury.

## **MINIMUM LAUNCHER**



## **Electrical Ignition System Guidelines**

4.1 A Rocketeer will launch a rocket with an electrical ignition system.

4.2 The electrical ignition system will be remotely controlled and have a minimum of a safety interlock that is in series with a launch switch. The safety interlock will not be installed until my rocket is ready for launch. The launch switch will return to the "off" position automatically when released.

4.3 If a rocket has onboard electrical ignition systems for motors/engines or recovery devices, these will have safety interlocks that interrupt the current path until the rocket is at the launch pad and will be activated at the last practical time before launch.

4.4 The electrical ignition system and igniter(s) combination shall be designed, installed, and operated so the liftoff of the rocket shall occur within 5 seconds of actuation of the electrical ignition system.

4.5 If the rocket is propelled by a cluster of rocket motors/engines designed to be ignited simultaneously, install an ignition scheme that has either been previously tested or has a demonstrated capability of igniting all rocket motors/engines intended for launch ignition within 3 seconds following electrical ignition system activation.

## **MINIMUM ELECTRICAL IGNITION SYSTEM**





## **Launch Safety Guidelines**

5.1 A Rocketeer will check the stability of a rocket before flight and will not fly it if it cannot be determined to be stable.

5.2 A Rocketeer will provide documentation of the location of the center of pressure, center of gravity, and stability of a rocket if the LSO requests it.

5.3 A Rocketeer shall fly a rocket only if it has been inspected and approved for flight by a LSO for compliance with the applicable provisions of these guidelines.

5.4 A Rocketeer will only launch a rocket with the immediate knowledge, permission, and attention of the Launch Control Official (LCO).

5.5 All persons in the launching, spectator, and parking areas during a countdown and launch shall be standing and facing the launcher if requested to do so by the Spectator Safety Official (SSO).

5.6 A Rocketeer will use a minimum 5 second countdown before launch that is audible throughout the launching, spectator, and parking areas, and will ensure that everyone is paying attention. This countdown shall be given by the Rocketeer launching the rocket or the LCO.

5.7 A Rocketeer will ensure that no person is closer to the launch of a rocket than the Rocketeer actually launching the rocket and those authorized by the LCO. And, no person shall be closer to the launch of a rocket than the applicable distance in the Launch Site Minimum Safe Distance, and that a means is ready to warn participants and spectators in the event of a problem.

5.8 If a rocket does not launch when the Rocketeer presses the launch switch of the electrical launch system the rocketeer will remove the safety interlock or disconnect its battery, will wait 60 seconds after the last launch attempt before allowing anyone to approach the rocket, or until the LCO has given permission for only a single person to approach the misignited rocket to inspect it.

## **Flight Safety Guidelines**

6.1 A Rocketeer will not launch a rocket near aircraft, into clouds, obscuring phenomena, at any targets, or on trajectories that take it directly over the heads of spectators or beyond the boundaries of the launch site.

6.2 A Rocketeer will not launch a rocket if wind speeds exceed 32.18 kilometers (20 mi.) per hour.

6.3 A Rocketeer will comply with all FAA airspace regulations when launching and flying rockets and will ensure that the rocket will not exceed any applicable altitude limit in effect at that launch site.

6.4 A Rocketeer will NEVER install or incorporate in a rocket any payload that is intended to be flammable, explosive, or cause harm in any manner.

6.5 A Rocketeer will not fly a vertebrate animal in a rocket.

6.6 All spectators will remain within an area designated to be the spectator area by the SSO.

## **Recovery Safety Guidelines**

- 7.1 A Rocketeer will not attempt to retrieve a rocket from power lines, tall trees, or any other dangerous places.
- 7.2 A Rocketeer will not launch a rocket under conditions where it is likely to recover in the spectator area or outside the launch site.
- 7.3 A Rocketeer will not attempt to catch a rocket as it approaches the ground.

## Launch Site Guidelines

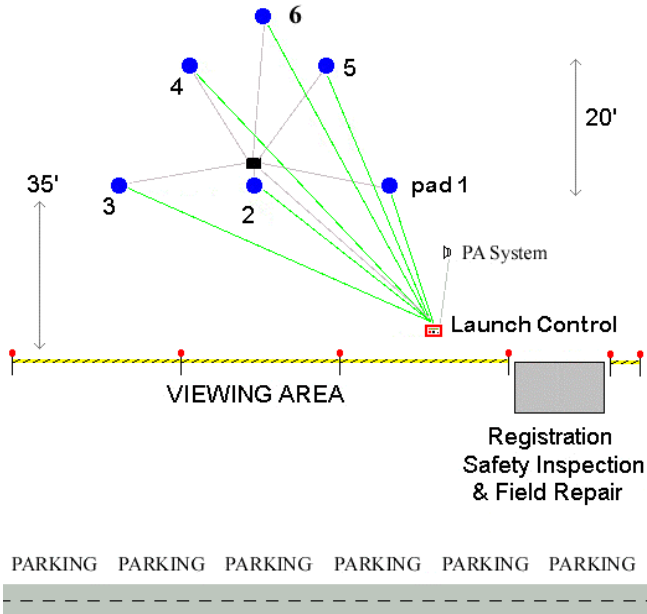
8.1 A Rocketeer will launch rockets from an appropriate launch site outdoors, in an open area at least as large as shown in the Launch Site Dimensions, and in safe weather conditions where trees, power lines, buildings, and persons not involved in the launch do not present a hazard.

8.2 A launch site shall not be less than 1/2 the maximum altitude expected, calculated, or simulated, or as granted by an FAA waiver or the authority having jurisdiction.

8.3 A launcher will be placed at least 1/2 the Launch Site Dimension, or 457.2 meters (1,500 ft.) (whichever is greater) from any non involved inhabited building, or from any public highway on which traffic flow exceeds 10 vehicles per hour, not including traffic flow related to the launch. It will also be no closer than the appropriate Minimum Safe Distance from the Launch Site Minimum Safe Distance from any boundary of the launch site.

8.4 A Rocketeer will not locate a launcher closer to the edge of the launch site than 1/2 the radius of the Launch Sites Dimension.

## LAUNCH SITE LAYOUT



### **LAUNCH SITE DIMENSIONS**

Total Impulse (N-Sec.)	Motor Type	Minimum Launch Site Dimension (ft.)
0 -- 1.25	1/4A, 1/2A	50
1.26 -- 2.50	A	100
2.51 -- 5.00	B	200
5.01 -- 10.00	C	400
10.01 -- 20.00	D	500
20.01 -- 40.00	E	1,000
40.01 -- 80.00	F	1,000
80.01 -- 160.00	G	1,000
160.01 -- 320.00	Two Gs	1,500
160.01 -- 320.00	H	1,500
320.01 -- 640.00	I	2,500
640.01 -- 1,280.00	J	5,280
1,280.01 -- 2,560.00	K	5,280
2,560.01 -- 5,120.00	L	10,560
5,120.01 -- 10,240.00	M	15,480
10,240.01 -- 20,480.00	N	21,120
20,480.01 -- 40,960.00	O	26,400
40,960.00 -- 889,600.00	P - T	52,800

**LAUNCH SITE MINIMUM SAFE DISTANCE**

Total Impulse (N-Sec.)	Motor Type	Minimum Diameter of Cleared Area (ft.)	Minimum Personnel Distance (ft.)
0 -- 320.00	H or smaller	20	50
320.01 -- 640.00	I	30	100
640.01 -- 1,280.00	J	30	100
1,280.01 -- 2,560.00	K	30	200
2,560.01 -- 5,120.00	L	50	300
5,120.01 -- 10,240.00	M	100	500
10,240.01 -- 20,480.00	N	100	1,000
20,480.01 -- 40,960.00	O	100	1,500
40,960.00 -- 889,600.00	P - T	200	2,000

# Universal Rocketry Association

## Launch Checklist

Version: 20090205

### Pre-Launch Checklist

This is the pre-launch checklist as required as part of the URA Launch Checklist. This checklist is to be used on launch day while preparing a rocket for flight.

#### Motor Preparation

- Prepare motor per packaged instructions for launch.
- Verify that ejection charge was installed in the motor. If motor is already secured, take it out and visually verify.
- Select correct size igniter for engine. Inspect for continuity, resistance, and check pyrogen for cracks or flaws.
- Secure motor and igniter for later installation into the rocket.
- DO NOT** install igniter until rocket is secure on the pad.

#### Recovery System Preparation

##### **Drogue Chute: (If dual deployment. If not, skip this part.)**

- Check shock cords for cuts, burns, and tangles.
- Check all shroud lines -- no tangles.
- Check drogue chute for tears and burns.
- Check deployment bag for tears.
- *Check all connections. Insure all devices are in good condition and properly secured:*
- Avionics bay shock cord to drogue.
- Booster shock cord to drogue.
- *Pack drogue chute in deployment bag, keep lines even and straight.*
- Fold drogue chute per manufacturer's instructions.
- Insure shroud lines are free from tangles.
- Insure all quick links are secure.
- Insert drogue bag/chute into aft recovery compartment.
- Insert ejection charge protection.

##### **Main Chute:**

- Check shock cords for cuts, burns, and tangles.
- Check all shroud lines -- no tangles.
- Check main chute for tears and burns.
- Check deployment bag for tears.
- *Check all connections. Insure all devices are in good condition and properly secured:*
- Nose Cone shock cord to drogue
- Avionics bay shock cord to drogue
- *Pack main chute in deployment bag, keep lines even and straight.*
- Fold main chute per manufacturer's instructions.
- Insure shroud lines are free from tangles.
- Insure all quick links are secure.
- Insert ejection charge protection.
- Insert main bag/chute into forward recovery compartment

## Electronics (If applicable)

### Prepare avionics #1

- Be sure all arming switches are off.
- Ohmmeter test of **NEW** battery under load
- Install battery in altimeter.
- Secure battery in place with built in positive battery retention system.
- Altimeter properly programmed and verified.
- Ready avionics bay for altimeter.
- Install altimeter in rocket.
- Insure all pyrotechnics are in disarmed mode during electronics final installation.

### Prepare avionics #2

- Be sure all arming switches are off.
- Ohmmeter test of **NEW** battery under load
- Install battery in altimeter.
- Secure battery in place with wire tie.
- Altimeter properly programmed and verified.
- Ready avionics bay for altimeter.
- Install altimeter in rocket.
- Insure all pyrotechnics are in disarmed mode during electronics final installation.

**Note:** All pyrotechnic devices must remain in an unarmed mode until rocket is on pad ready to launch.

### Pyrotechnics, drogue

- Prepare aft deployment pyrotechnic device and ready for installation into rocket.
- Load aft charge into the rocket insuring that at all times the devices are safed until final launch readiness.
- Connect aft pyrotechnic leads to electronic deployment devices drogue chute connections.
- Utilizing external disarming mechanisms to insure all electronically discharged pyrotechnics are disabled until final launch readiness.

### Pyrotechnics, main

- Prepare forward deployment pyrotechnic device and ready for installation into rocket.
- Load forward charge into the rocket insuring that at all times the devices are safed until final launch readiness.
- Connect forward pyrotechnic leads to electronic deployment devices main chute connections.
- Utilizing external disarming mechanisms to insure all electronically discharged pyrotechnics are disabled until final launch readiness.

## Motor Installation

- Tape motor casing for snug fit in motor tube.
- Install motor.
- Install motor retaining devices.
- Insure all electronic deployment devices are in the non-dischargeable safed mode.



## Launch Checklist

This is the launch checklist as required as part of the URA Launch Checklist. This checklist includes steps required to ensure the rocket is launched in a safe manner.

### **Load Rocket on Pad**

- Prepare launch pad.
- Load rocket on launch rod.

### **Prepare Igniter**

- Insert igniter. Be sure it is completely forward and touching fuel grain.
- Secure igniter in position
- Assure that launcher is not hot. Disconnect battery from relay box. Assure that key IS NOT in the remote device and that arming switch is off.
- Attach leads to ignition device.
- Be sure all connectors are clean.
- Be sure they don't touch each other or that circuit is not grounded by contact with metal parts.
- Check tower's position and be sure it is locked into place and ready for launch.
- Assure that key IS NOT in the remote device and that arming switch is off.
- Connect battery to relay box.

### **Final Launch Sequence**

- Arm all devices for launch.
- Insure Flight Witnesses are in place and ready for launch.
- Signal LCO & RSO that the rocket is ready for launch.
- After given clearance to launch by the LCO & RSO, launch the rocket.

### **Misfire Procedures**

- Safe all pyrotechnic to pre-launch mode.
- Remove failed igniter.
- Resume checklist at "Final Launch Preparations/Prepare Igniters."

## **Recovery Checklist**

This is the recovery checklist as required as part of the URA Launch Checklist. This checklist includes steps required to ensure the rocket is in a safe condition after completion of a flight.

### **Normal Post Flight Recovery**

- Safe all ignition, ejection, and electronic circuits.
- Check for non-discharged pyrotechnics.
- Disarm all non-fired pyrotechnic devices.
- Remove any non-discharged pyrotechnics.
- Jump up and down shouting, "Holy Shit it Worked!"

### **Flight Failure Checklist**

- Safe all ignition, ejection, and electronic circuits.
- Check for non-discharged pyrotechnics.
- Disarm all non-fired pyrotechnic devices.
- Remove all non-discharged pyrotechnics.
- Fall on ass and cry. Pick up the pieces and go build a bigger better rocket that will work right next time!

# Universal Rocketry Association Flight Card

Version: 20090110

Date: \_\_\_/\_\_\_/\_\_\_ Field: \_\_\_\_\_ Flight #: \_\_\_\_\_

Vehicle's Name: \_\_\_\_\_

Flown By: (Name/Level) \_\_\_\_\_

## Vehicle:

Type: \_\_\_\_\_

Dry Weight: \_\_\_\_\_ Wet Weight: \_\_\_\_\_

CP: \_\_\_\_\_ CG: \_\_\_\_\_ Calibers: \_\_\_\_\_

Predicted Altitude: \_\_\_\_\_'

## Propulsion:

Solid: \_\_\_\_\_ Hybrid: \_\_\_\_\_ Liquid: \_\_\_\_\_ Other: \_\_\_\_\_

Propellant: \_\_\_\_\_ Weight: \_\_\_\_\_ Total Impulse: \_\_\_\_\_ Burn Time: \_\_\_\_\_

## Recovery:

Parachute: \_\_\_\_\_ Streamer: \_\_\_\_\_ Glide: \_\_\_\_\_ Other: \_\_\_\_\_

Single: \_\_\_\_\_ Dual: \_\_\_\_\_

Time Delay: \_\_\_\_\_ sec. Apogee: \_\_\_\_\_' Main: \_\_\_\_\_'

## Other:

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# Universal Rocketry Association

## FAR 101: Amateur Rocketry Regulations

Version: 20090205

14 CFR (excerpted)

### PART 1 -- DEFINITIONS AND ABBREVIATIONS

#### § 1.1 General definitions.

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Amateur rocket means an unmanned rocket that:

- (1) Is propelled by a motor or motors having a combined total impulse of 889,600 Newtonseconds (200,000 poundseconds) or less; and
- (2) Cannot reach an altitude greater than 150 kilometers (93.2 statute miles) above the earth's surface.

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### PART 101 -- MOORED BALLOONS, KITES, UNMANNED ROCKETS AND UNMANNED FREE BALLOONS

#### § 101.1 Applicability.

(a) This part prescribes rules governing the operation in the United States, of the following:

- (1) Any unmanned rocket except aerial firework displays.

#### § 101.21 Applicability.

- (a) This subpart applies to operating unmanned rockets. However, a person operating an unmanned rocket within a restricted area must comply with § 101.25(b)(7)(ii) and with any additional limitations imposed by the using or controlling agency.
- (b) A person operating an unmanned rocket other than an amateur rocket as defined in § 1.1 of this chapter must comply with 14 CFR Chapter III.

#### § 101.22 Definitions.

The following definitions apply to this subpart:

- (a) Class 1 -- Model Rocket means an amateur rocket that:
  - (1) Uses no more than 125 grams (4.4 ounces) of propellant;
  - (2) Uses a slowburning propellant;
  - (3) Is made of paper, wood, or breakable plastic;
  - (4) Contains no substantial metal parts; and
  - (5) Weighs no more than 1,500 grams (53 ounces), including the propellant.
- (b) Class 2 -- HighPower Rocket means an amateur rocket other than a model rocket that is propelled by a motor or motors having a combined total impulse of 40,960 Newtonseconds (9,208 poundseconds) or less.
- (c) Class 3 -- Advanced HighPower Rocket means an amateur rocket other than a model rocket or highpower rocket.

#### § 101.23 General Operating Limitations.

- (a) You must operate an amateur rocket in such a manner that it:
  - (1) Is launched on a suborbital trajectory;
  - (2) When launched, must not cross into the territory of a foreign country unless an agreement is in place between the United States and the country of concern;
  - (3) Is unmanned; and
  - (4) Does not create a hazard to persons, property, or other aircraft.

- (b) The FAA may specify additional operating limitations necessary to ensure that air traffic is not adversely affected, and public safety is not jeopardized.

**§ 101.25 Operating Limitations for Class 2 -- HighPower Rockets.**

- (a) You must comply with the General Operating Limitations of § 101.23.
- (b) In addition, you must not operate a Class 2 -- HighPower Rocket:
  - (1) At any altitude where clouds or obscuring phenomena of more than five-tenths coverage prevails;
  - (2) At any altitude where the horizontal visibility is less than five miles;
  - (3) Into any cloud;
  - (4) Between sunset and sunrise without prior authorization from the FAA;
  - (5) Within 8 kilometers (5 statute miles) of any airport boundary without prior authorization from the FAA;
  - (6) In controlled airspace without prior authorization from the FAA;
  - (7) Unless you observe the greater of the following separation distances from any person or property that is not associated with the operations applies:
    - (i) Not less than one quarter the maximum expected altitude;
    - (j) 457 meters (1,500 ft.);
  - (8) Unless a person at least eighteen years old is present, is charged with ensuring the safety of the operation, and has final approval authority for initiating highpower rocket flight; and
  - (9) Unless reasonable precautions are provided to report and control a fire caused by rocket activities.

**§ 101.26 Operating Limitations for Class 3 -- Advanced HighPower Rockets.**

You must comply with:

- (a) The General Operating Limitations of § 101.23;
- (b) The Operating Limitations contained in § 101.25;
- (c) Any other Operating Limitations for Class 3 -- Advanced HighPower Rockets prescribed by the FAA that are necessary to ensure that air traffic is not adversely affected, and public safety is not jeopardized.

**§ 101.27 ATC Notification for all launches.**

No person may operate an unmanned rocket other than a Class 1 -- Model Rocket unless that person gives the following information to the FAA ATC facility nearest to the place of intended operation no less than 24 hours before and no more than three days before beginning the operation:

- (a) The name and address of the operator; except when there are multiple participants at a single event, the name and address of the person so designated as the event launch coordinator, whose duties include coordination of the required launch data estimates and coordinating the launch event;
- (b) Date and time the activity will begin;
- (c) Radius of the affected area on the ground in statute miles;
- (d) Location of the center of the affected area in latitude and longitude coordinates;
- (e) Highest affected altitude;
- (f) Duration of the activity;
- (g) Any other pertinent information requested by the ATC facility.

**§ 101.29 Information Requirements.**

- (a) Class 2 -- HighPower Rockets. When a Class 2 -- HighPower Rocket requires a certificate of waiver or authorization, the person planning the operation must provide the information below on each type of rocket to the FAA at least 45 days before the proposed operation. The FAA may request additional information if necessary to

ensure the proposed operations can be safely conducted. The information shall include for each type of Class 2 rocket expected to be flown:

- (1) Estimated number of rockets,
- (2) Type of propulsion (liquid or solid), fuel(s) and oxidizer(s),
- (3) Description of the launcher(s) planned to be used, including any airborne platform(s),
- (4) Description of recovery system,
- (5) Highest altitude, above ground level, expected to be reached,
- (6) Launch site latitude, longitude, and elevation, and
- (7) Any additional safety procedures that will be followed.

- (b) Class 3 -- Advanced HighPower Rockets. When a Class 3 -- Advanced HighPower Rocket requires a certificate of waiver or authorization the person planning the operation must provide the information below for each type of rocket to the FAA at least 45 days before the proposed operation. The FAA may request additional information if necessary to ensure the proposed operations can be safely conducted.

The information shall include for each type of Class 3 rocket expected to be flown:

- (1) The information requirements of paragraph (a) of this section,
- (2) Maximum possible range,
- (3) The dynamic stability characteristics for the entire flight profile,
- (4) A description of all major rocket systems, including structural, pneumatic, propellant, propulsion, ignition, electrical, avionics, recovery, windweighting, flight control, and tracking,
- (5) A description of other support equipment necessary for a safe operation,
- (6) The planned flight profile and sequence of events,
- (7) All nominal impact areas, including those for any spent motors and other discarded hardware, within three standard deviations of the mean impact point,
- (8) Launch commit criteria,
- (9) Countdown procedures, and
- (10) Mishap procedures.

## **PART 400 -- BASIS AND SCOPE**

### **§ 400.2 Scope.**

These regulations set forth the procedures and requirements applicable to the authorization and supervision under 49 U.S.C. Subtitle IX, chapter 701, of commercial space transportation activities conducted in the United States or by a U.S. citizen. The regulations in this chapter do not apply to amateur rockets activities, as defined in 14 CFR 1.1, or to space activities carried out by the United States Government on behalf of the United States Government.

## **PART 420 -- LICENSE TO OPERATE A LAUNCH SITE**

### **§ 420.3 Applicability.**

This part applies to any person seeking a license to operate a launch site or to a person licensed under this part. A person operating a site that only supports amateur rocket activities as defined in 14 CFR 1.1, does not need a license under this part to operate the site.

# Universal Rocketry Association

## FAA Notification Contacts

Version: 20090202

Here is a list of the FAA contacts by the states they cover.

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### **If you live in:**

Alabama, Connecticut, Delaware, Florida, Georgia, Kentucky, Maine, Maryland, Massachusetts, Mississippi, New Hampshire, New Jersey, North Carolina, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, Washington DC, West Virginia, Vermont.

### **Your FAA contacts are:**

Primary: Charles Foster, phone: 229-242-0203

Backup: Eastern System Support Secretary, phone: 404-305-5595, fax: 404-305-5572

### **Mail your waivers to:**

Eastern Service Center  
System Support Group, AJO2-E2  
P.O. Box 20636  
Atlanta, GA 30320

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### **If you live in:**

Arkansas, Illinois, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Missouri, Nebraska, New Mexico, North Dakota, Ohio, Oklahoma, South Dakota, Texas, Wisconsin.

### **Your FAA contacts are:**

Primary: P.J. Pilgrim, phone: 817-222-5546, fax: 817-222-5547

Backup: Angel Cases, phone: 817-222-5508, fax: 817-222-5547

### **Mail your waivers to:**

Central Service Center  
System Support Group, AJO2-C2  
2601 Meacham Blvd.  
Fort Worth, TX 76193

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### **If you live in:**

Alaska, Arizona, California, Colorado, Guam, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming.

### **Your FAA contacts are:**

Primary: Cheryl K. Brown, phone: 425-917-6734, fax: 425-917-6746

Backup: Mark Payne, phone: 425-917-6724, fax: 425-917-6746

### **Mail your waivers to:**

Western Service Center  
System Support Group, AJO2-W2  
1601 Lind Ave. SW  
Renton, WA 98057

# Universal Rocketry Association

## Example of FAR 101.29 Information Requirements

Version: 20090205

The following is an example of the FAR 101.29 Information Requirements that you need to provide on your application for a FAA Waiver:

### 101.29 Information Requirements.

(a)-----

- (1) The "put your club name here" will be launching approximately seventy (70) rockets each day of our weekend launch(s).
- (2) The rockets will be powered with certified solid rocket motors utilizing Ammonium Perchlorate Composite Propellant (APCP), Potassium Nitrate Composite Propellant (PNCP), and hybrid rocket motors/engines utilizing Nitrous Oxide (NOX) as the oxidizer and a plastic or paper solid fuel grain.
- (3) The rockets will be ground launched from solid launchers that will maintain a vertical trajectory for the rocket as it leaves the launcher as per URA Safety Guidelines.
- (4) The rockets will contain a parachute, streamer, aero-breaking or gliding recovery system that will return them safely to the ground as per URA Safety Guidelines.
- (5) The rockets will be operated below: "put your altitude request here" AGL.
- (6) The Operations Launch Site is located at: "put your GPS coordinates here".
- (7) The flight operations will be conducted per all details of FAR 101.23, FAR 101.25, as well as following the URA Safety Guidelines.