

# Southern Pennsylvania Area Association of Rocketry

## Membership Application

\_\_\_\_\_ I want to join **SPAAR!** Here are my dues. \_\_\_\_\_ Please contact me with more information.

Name \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Phone: ( ) \_\_\_\_\_ Age \_\_\_\_\_ Date of birth: \_\_\_\_\_

\_\_\_\_\_ New Member \_\_\_\_\_ Renewal Member # \_\_\_\_\_

I am a member of: NAR # \_\_\_\_\_ TRIPOLI # \_\_\_\_\_ HP certification level \_\_\_\_\_

**I have read and understand the NAR Model Rocket and High Power Safety Code and will conduct all of my sport rocketry activities in compliance with it.**

\_\_\_\_\_ Email Address: \_\_\_\_\_

*Signature required for application*

Return this form to:

**SPAAR, c/o Larry Gerlach, 25 Brusen Dr., Lititz PA 17543**

Rev. 10/17/10

*Detach and return*

The **Southern Pennsylvania Area Association of Rocketry, SPAAR**, is a chartered section of the National Association of Rocketry. We are based in Lancaster County, PA, but we have active members in South-Central Pennsylvania and Northeastern Maryland. SPAAR holds section sport launches and meetings on a monthly basis as well as contests, workshops and much more!!! We invite all those with an interest in rocketry, beginners to advanced to join us!!! Return the form below...don't delay, come join the fun !!!!!

Dues: 14 years of age and younger, \$10.00

15, 16 or 17 years of age, \$15.00

18 years of age or older, \$20.00

Family plan: oldest member joins at the full rate then all additional members join for \$2.50.

Dues are paid every 12 months.

Rev. 4/24/07

## NAR Model Rocket Safety Code

- Materials.** My model rocket will be made of lightweight materials such as paper, wood, rubber, and plastic suitable for the power used and the performance of my model rocket. I will not use any metal for the nose cone, body, or fins of a model rocket.
- Motors.** I will use only commercially-made, NAR-certified model rocket motors in the manner recommended by the manufacturer. I will not alter the model rocket motor, its parts, or its ingredients in any way.
- Recovery.** I will always use a recovery system in my model rocket that will return it safely to the ground so it may be flown again. I will use only flame-resistant recovery wadding if wadding is required by the design of my model rocket.
- Weight and Power Limits.** My model rocket will weigh no more than 1,500 grams (53 ounces) at lift-off and its rocket motors will produce no more than 320 Newton-seconds (71.9 pound-seconds) of total impulse. My model rocket will weigh no more than the motor manufacturer's recommended maximum lift-off weight for the motors used, or I will use motors recommended by the manufacturer for my model rocket.
- Stability.** I will check the stability of my model rocket before its first flight, except when launching a model rocket of already proven stability.
- Payloads.** My model rocket will never carry live animals (except insects) or a payload that is intended to be flammable, explosive, or harmful.
- Launch Site.** I will launch my model rocket outdoors in a cleared area, free of tall trees, power lines, buildings, and dry brush and grass. My launch area will be at least as large as that recommended in the accompanying table.
- Launcher.** I will launch my model rocket from a stable launch device that provides rigid guidance until the model rocket has reached a speed adequate to ensure a safe flight path. To prevent accidental eye injury, I will always place the launcher so the end of the rod is above eye level or I will cap the end of the rod when approaching it. I will cap or disassemble my launch rod when not in use and I will never store it in an upright position. My launcher will have a jet deflector device to prevent the motor exhaust from hitting the ground directly. I will always clear the area around my launch device of brown grass, dry weeds, or other easy-to-burn materials.
- Ignition System.** The system I use to launch my model rocket will be remotely controlled and electrically operated. It will contain a launching switch that will return to "off" when released. The system will contain a removable safety interlock in series with the launch switch. All persons will remain at least 15 feet from the model rocket when I am igniting model rocket motors totaling 30 Newton-seconds or less of total impulse and at least 20 feet from the model rocket when I am igniting model rocket motors totaling more than 30 Newton-seconds of total impulse. I will use only electrical ignitors recommended by the motor manufacturer that will ignite model rocket motors within one second of actuation of the launching switch.
- Launch Safety.** I will ensure that people in the launch area are aware of the pending model rocket launch and can see the model rocket's lift-off before I begin my audible five-second countdown. I will not launch my model rocket so its flight path will carry it against a target. If my model rocket suffers a misfire, I will not allow anyone to approach it or the launcher until I have made certain that the safety interlock has been removed or that the battery has been disconnected from the ignition system. I will wait one minute after a misfire before allowing anyone to approach the launcher.
- Flying Conditions.** I will launch my model rocket only when the wind is less than 20 miles per hour. I will not launch my model rocket so it flies into clouds, near aircraft in flight, or in a manner that is hazardous to people or property.
- Pre-Launch Test.** When conducting research activities with unproven model rocket designs or methods I will, when possible, determine the reliability of my model rocket by pre-launch tests. I will conduct the launching of an unproven design in complete isolation from persons not participating in the actual launching.
- Launch Angle.** My launch device will be pointed within 30 degrees of vertical. I will never use model rocket motors to propel any device horizontally.
- Recovery Hazards.** If a model rocket becomes entangled in a power line or other dangerous place, I will not attempt to retrieve it.

LAUNCH SITE DIMENSIONS	Installed Total Impulse (N-sec)	Equivalent Motor Type	Minimum Site Dimensions (ft.)
	0.00--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

# NAR High Power Safety Code

1. Certification. I will fly high power rockets only when certified to do so by the National Association of Rocketry.
2. Operating Clearances. I will fly high power rockets only in compliance with Federal Aviation Regulations Part 101 (Section 307, 72 Statute 749, 49 United States Code 1348, "Airspace Control and Facilities," Federal Aviation Act of 1958) and all other federal, state, and local laws, rules, regulations, statutes, and ordinances.
3. Materials. My high power rocket will be made of lightweight materials such as paper, wood, rubber, and plastic, or the minimum amount of ductile metal suitable for the power used and the performance of my rocket.
4. Motors. I will use only commercially-made, NAR-certified rocket motors in the manner recommended by the manufacturer. I will not alter the rocket motor, its parts, or its ingredients in any way.
5. Recovery. I will always use a recovery system in my high power rocket that will return it safely to the ground so it may be flown again. I will use only flame-resistant recovery wadding if wadding is required by the design of my rocket.
6. Weight and Power Limits. My rocket will weigh no more than the motor manufacturer's recommended maximum liftoff weight for the motors used, or I will use motors recommended by the manufacturer of the rocket kit. My high power rocket will be propelled by rocket motors that produce no more than 40,960 Newton-seconds (9,204 pound-seconds) of total impulse.
7. Stability. I will check the stability of my high power rocket before its first flight, except when launching a rocket of already proven stability.
8. Payloads. My high power rocket will never carry live animals (except insects) or a payload that is intended to be flammable, explosive, or harmful.
9. Launch Site. I will launch my high power rocket outdoors in a cleared area, free of tall trees, power lines, buildings, and dry brush and grass. My launcher will be located at least 1,500 feet from any occupied building. My launch site will have minimum dimensions at least as great as those in the Launch Site Dimension Table. As an alternative, the site's minimum dimension will be one-half the maximum altitude of any rocket being flown, or 1,500 feet, whichever is greater. My launcher will be no closer to the edge of the launch site than one-half of the minimum required launch site dimension.
10. Launcher. I will launch my high power rocket from a stable launch device that provides rigid guidance until the rocket has reached a speed adequate to ensure a safe flight path. To prevent accidental eye injury, I will always place the launcher so the end of the rod is above eye level or I will cap the end of the rod when approaching it. I will cap or disassemble my launch rod when not in use and I will never store it in an upright position. My launcher will have a jet deflector device to prevent the motor exhaust from hitting the ground directly. I will always clear the area for a radius of ten feet around my launch device of brown grass, dry weeds, or other easy-to-burn materials.
11. Ignition System. The system I use to launch my high power rocket will be remotely controlled and electrically operated. It will contain a launching switch that will return to "off" when released. The system will contain a removable safety interlock in series with the launch switch. All persons will remain at a distance from the high power rocket and launcher as determined by the total impulse of the installed rocket motor(s) according to the accompanying Safe Distance Table.
12. Launch Safety. I will ensure that people in the launch area are aware of the pending high power rocket launch and can see the rocket's liftoff before I begin my audible five-second countdown. I will use only electrical igniters recommended by the motor manufacturer that will ignite rocket motors within one second of actuation of the launching switch. If my high power rocket suffers a misfire, I will not allow anyone to approach it or the launcher until I have made certain that the safety interlock has been removed or that the battery has been disconnected from the ignition system. I will wait one minute after a misfire before allowing anyone to approach the launcher.
13. Flying Conditions. I will launch my high power rocket only when the wind is no more than 20 miles per hour and under conditions where the rocket will not fly into clouds or when a flight might be hazardous to people, property, or flying aircraft. Prior to launch, I will verify that no aircraft appear to have flight paths over the launch site.
14. Pre-Launch Test. When conducting research activities with unproven designs or methods I will, when possible, determine the reliability of my high power rocket by pre-launch tests. I will conduct the launching of an unproven design in complete isolation from persons not participating in the actual launching.
15. Launch Angle. I will not launch my high power rocket so its flight path will carry it against a target. My launch device will be pointed within 20 degrees of vertical. I will never use rocket motors to propel any device horizontally.
16. Recovery Hazards. If a high power rocket becomes entangled in a power line or other dangerous place, I will not attempt to retrieve it. I will not attempt to catch my high-power rocket as it approaches the ground.

LAUNCH SITE DIMENSION TABLE

Total Impulse All Engines (Newton-Seconds)	Equivalent Motor Type	Minimum Site Dimensions (ft.)	Equivalent Dimensions
160.01 -- 320.00	H	1,500	
320.01 -- 640.00	I	2,500	Half mile
640.01 -- 1,280.00	J	5,280	One mile
1,280.01 -- 2,560.00	K	5,280	One mile
2,560.01 -- 5,120.00	L	10,560	Two miles
5,120.01 -- 10,240.00	M	15,840	Three miles
10,240.01 -- 20,480.00	N	21,120	Four miles
20,480.01 -- 40,960.00	O	26,400	Five miles

SAFE DISTANCE TABLE

Total Impulse All Engines (Newton-Seconds)	Equivalent Motor Type	Minimum Distance From Rocket With Single Motor (ft.)	Minimum Distance From Rocket With Multiple Motors (ft.)
160.01 -- 320.00	H	50	100
320.01 -- 640.00	I	150	200
640.01 -- 1,280.00	J	150	200
1,280.01 -- 2,560.00	K	200	300
2,560.01 -- 5,120.00	L	300	500
5,120.01 -- 10,240.00	M	300	500
10,240.01 -- 20,480.00	N	500	1,000
20,480.01 -- 40,960.00	O	500	1,000

Revision of July, 1995