

**Wisconsin  
Pyrotechnic  
Arts Guild Club  
Officers**

# The Fusee

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## We Did It Again!

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We did it again. We won the club trophy at the PGI convention. Wow, two years in a row, that will be a hard one to beat. Just a very few years ago our club did not have very many pyro builders. Now not only do we have lots of pyro builders but also we have very talented pyro builders as well as great support from the non-builders. This is a winning combination and it will take us far.

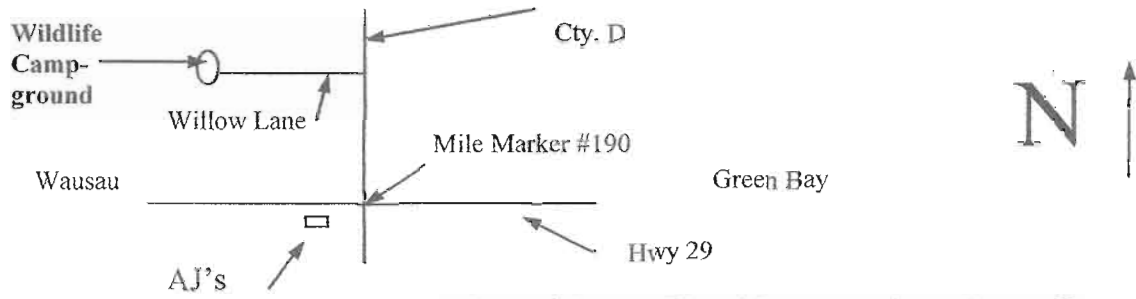
Our club is quickly becoming recognized as a quality pyro club and we have opened many people's eyes to that fact. I had people come up to me at the convention and say they would like to join our club, so they could compete under our club name and stand up there with us when we received the club trophy.

All I can say is **GREAT JOB** to all of our club members and let's see if we can kick butt again next year. How about a **THREE-PEAT**

Watch the next PGI Bulletin for pictures and names of our WPAG competitors.

Prez





When driving on Hwy 29-turn north on County D  
 County D is at mile marker post 190  
 This is the County D EAST of Wausau

## How to Cut Stars Seminar 2pm

Master builder Jim Freeman will be giving a seminar on how to cut stars at our August 28<sup>th</sup> club meeting. Jim plans on making a 6 1/4 pound batch of either red or chartreuse cut stars.

This is a must see seminar. We plan on starting the seminar at 2 p.m. So if you want to learn from the pros you'd better planning on being in attendance for this seminar.

### 2004 Calendar

Aug 28 Seminar/Meeting/Shoot  
 Sept 18 Seminar/Meeting/Shoot  
 Oct 16 Seminar/Meeting/Shoot

**Noon Setup Time for 1.3g and  
 1.4g shoot areas.**

**Meeting at 4pm**

#### WPAG Members

Buy \$100 get \$10 free fireworks.

Buy \$1,000 get \$100 free fireworks.

Buy \$10,000 get \$1000 free fireworks



Your WPAG member badge is worth an additional 10% at Decker's Uncle Sam  
 Fireworks in Green Bay **before June 30**

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Hwy 41, exit 173. Open 9 to 9 Daily

Phone 920-662-1103

See coupons and map at:

<http://www.unclesamfireworks.com>.

## From the Prez

By now I'm sure most of you know my wife Barbara, lost her battle with cancer and passed away on July 18<sup>th</sup>. Needless to say, it's been a very sad time for my family and myself. Many of you have expressed your condolences and it helps to know that I have such good friends in the pyro community. You truly are my friends and my family and I thank you for that. I'd also like to thank you all for the generous gift of money you collected at our last meeting. The money will be used to set up a scholarship fund in Barbara's name. The fund will be used to financially help students pursuing a career in teaching. We plan to give out \$500 a year for the next 10 years to a qualifying graduate of Neillsville Public School.

I attended the PGI convention in Fargo, ND last week. As always, it was a wonderful time with lots of good friends and fireworks. Even though the weather was not all the great, it did not dampen the spirits of us pyros. For the first part of the week we dodged rain drops and froze our butts off, but we were out there in the bleachers watching those wonderful fireworks shows. Fortunately the last half of the week brought better weather and by Friday night the weather was perfect. The public show on Friday night was one of the best fireworks shows I've ever seen. If you didn't get a chance to see it, you might want to consider buying a taped copy.

For the first time in the 35 years of the PGI convention, we had an accident. Two people were seriously injured and one person had minor injuries when a "ground salute" went off next to them. Details are sketchy, but it looks like they were making "ground salutes" from the back of a pickup truck. Reports say that they had made a large "ground salute" (against PGI safety guidelines) and had it sitting on the ground next to them. Then apparently some loose flash powder was spilled on the ground and one of the persons tried kicking and rubbing it into the dirt with his foot to disperse it. This action apparently set the flash off which in turn set off the near by "ground salute". The resulting explosion ripped apart the pickup truck and damaged another nearby car. Amazingly they were not killed out right. Last reports I heard were they "would make it". It's a hard lesson to learn, but as I always preach, know what you're working with and how to handle it safely and ALWAYS be aware of your surroundings. Always ask the question "What if this would happen" and adjust accordingly.

Nuff said.

See you at our August 28<sup>th</sup> meeting.

Prez

Setup 12 Noon    Cut Star Seminar 2 pm    Meeting 4 pm

## FLAME PROJECTORS

by Ned Gorski

Fairly recently I had a new member of the BPG ask me how to make 'flame projectors'. Since I had only used a couple of them in the past, in our convention shows, and these had been donated commercial items, I had to say that I didn't know, but that I'd do some research. I posted the question to the Pyrotechnic Mailing List on the internet, and got some informative responses, including one from one of our members who has played with close proximity, indoor items quite a bit. Since then I've experimented quite a bit with making these items, have learned a lot, and have succeeded in making some very nice flame projectors in various colors. Here's a full report.

So, what's a flame projector? This is an item, quite often used in close proximity, indoor, and theatrical settings. It projects a flame out of a short mortar for a few seconds. Quite often the flame is accompanied by a 'roaring' sound. The flame can be colored with various additives, and sparks can be added to the flame with the inclusion of metals.

The main ingredient in a flame projector is smokeless shotgun shell reloading gunpowder. Perhaps you've heard of Hercules Green Dot powder? The Alliant powder corporation now makes Green Dot powder, along with Red Dot and Blue Dot powders and other reloading powders. The 'dot' powders are smokeless powders, hence suitable for indoor applications, and they burn fairly slowly when unconfined, so they work well in the flame projectors. (One note though, the addition of coloring additives can produce smoke when the projector is burned, and may or may not be suitable for indoor use.)

A typical flame projector is fired from a mortar of standard construction....paper, HDPE, steel....although the inside length of the gun is only 2-3 times as long as the inside diameter. Typically a 3" mortar x 6-9" long, or a 4" gun x 8-12" long is used. Some folks have reported success with smaller tubes, 1.75" ID, with 1/2 cup powder charges. Since mortars tend to accumulate 'crud' in them after they're used, and the crud tends to attract moisture, it's useful to construct the flame projector either in a brand new mortar or in a paper 'can' or some other container which is slightly smaller in diameter than the mortar, and which can be loaded in the mortar for firing.

In many of my experiments, I used a 6" long x 3.5" OD kraft paper tube with an end disc taped on the end with masking tape. I loaded the powder into this 'can', lowered the can into the gun, and fused the projector on

top of the powder with quickmatch. This can either be lit manually with a piece of visco fuse or fired electrically with an ematch in the quickmatch.

So, which powder to use? Locally, here in Cincinnati, we have an Outdoor World, which sells reloading powders. They carry the 'Dot' powders. According to the Alliant web site, the difference between the various 'Dot' powders is burn rate, with Red Dot burning at 94.1% the speed of a powder called Bullseye, which is used as the 100% standard. Green Dot burns at a rate of 77.9%, and Blue Dot burns at a rate of 37.8%. I wanted to try all three of these powders to see if the duration of the projector burn could be increased/ decreased, and also to determine if the burn rate of the powder affected the size/height of the flame projected.

For a nominal 4" flame projector, loads of between 1/2 cup (2oz) up to 2 and 1/2 cups of powder were recommended. For my powder comparison trials, I used 2 cup charges in the 3.5" paper cans.

2 cups of Red Dot 6-7' high flame	3 second burn nice roar
2 cups of Green Dot 7-8' high flame	2.78 second burn nice roar
2 cups of Blue Dot 6-7' high flame	4.85 second burn nice roar
1/2 cup of Blue Dot 6-7' high flame	2.4 second burn nice roar

All of the powders cost about the same, so for me, I think I'll settle on the Blue Dot powder and vary the burn time with various amounts in the charge. There is quite a bit of difference between a 2 second burn and a 5 second burn, visually/experientially, with each duration having its place in a 'show'. (One of the folks who responded to my query reported using a 30" long, 5" steel gun charged with 2 pounds of Green Dot....with the resulting roar sounding like a jet plane warming up.....attempt at your own risk. I recently made a projector up like this, except using a fiberglass gun, and it made a very large flame, and was pretty loud as well.)

I tried varying the flames by coloring them and adding sparks to them. A few pinches of spherical Titanium added on top of each 1/2 cup of charge produced very nice bright white sparks rising a few feet above the top of the flame. A teaspoon of magnalium or magnesium added on top of each 1/2 cup charge produced a significant white brightening to the flame with some bright white sparks popping out of the flame envelope.

## NFA Expo Nears

Mark your calendars for the upcoming National Fireworks Association Expo that is coming to Fond du Lac September 9th, 10th, and 11th.

The expo features seminars that includes representatives from the Consumer Product Safety Commission (CPSC) on Thursday morning. Other seminars include presenters such as WPAG's own Susan Gigrasso for fireworks choreography and Brian Crist speaking about "How to do a class C show".

If you can't make the Expo seminars, you can come down for the evening demo's presented on all three evenings. While the shoot site is restricted to Expo registrants, you can get good viewing across the river at Lakeside Park. Lakeside Park is our main city park. The demos will be shot at Lakeside Park West. The two parks are separated by the Fond du Lac river which is approximately 300' wide.

It is shaping up to be a very good Expo and I hope to see you there.

*Dan Promen NFA Expo Co-Chair*

This *Flame Projector Article* is reprinted with the permission of Ned Gorski and our friends of the Blue Grass Pyros. Thank you all.

One tablespoon of very fine barium chlorate added on top of each 1/2 cup powder charge produced a very nice green flame. Strontium nitrate, added the same way, produced a very bright red flame, while barium nitrate made the flame much whiter and brighter, with perhaps a greenish/yellowish tint. I've been told that sodium nitrate will color the flame a deeper yellow. (The powder, burnt alone, produces a nice yellow flame.) Strontium nitrate and sodium nitrate are very hygroscopic, attracting humidity/moisture like crazy. I'd want to dry each of these chemicals if I used them, under a heat lamp or in a 200 degree oven for a day, especially if the projectors were going to be made up much in advance. I want to keep that powder dry.

It has been reported to me that someone tried to make a long thin flame projector, 1" bore x 18" long, and the projector blew up. 'Short and Fat' tubes seem to be the ticket. After the projector is made and loaded in the mortar, aluminum foil can be used to cover the mouth of the gun to keep falling flaming 'stuff' out of the gun, preventing premature ignition. Flame projectors don't develop the kind of force that a shell or mine does, so it might be a good idea to avoid taping the foil on the gun.

Of course, all the usual safety precautions apply to the construction and use of these flame projectors. Keep your powder jug closed except when actually dosing it out. Don't make these in your 'kitchen'. Go outdoors. When experimenting with them, light fuse and 'retire quickly', giving them room in case the unexpected happens. Then, kick back and have fun.

I hope this has provided anything you'd like to know about flame projectors, and probably more.....Thanks to my fellow club members for motivating me to embark on this exploration, and for providing helpful info along the way. Thanks also to the folks on the discussion lists who continue to be willing to share their experiences and wisdom.

Stay green.....and Blue.....and have fun with these smokeless, fairly quiet, and quite impressive flame projectors.

Take care, Ned

## Statement of Non-Liability

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IN ADVANCE OF JULY CLUB SHOOT

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Multi-color Pearl	.50 (pk of 12)
Whistling Moon Tr. w/Rpt	4.00 pk (12 dz)
Ex-large Moon Travel	4.00 pk (6 dz)

#### ROCKETS

Bunker Pack, BC	3.50 (pk of 6)
Exploding Comet, BC	4.00 (pk of 24)
Fasthawk, BC	2.50 (pk of 8)
Firefox Double Pop	2.00 (pk of 12)
Jumbo Black Cat Rkts.	3.50 (pk of 4)
Jumbo Jet /Display Shell	5.00 (pk of 4)
Lucky Space Rocket	7.50 (pk of 4)
Screaming Cracklers	2.00 (pk of 12)
Screaming Rattlers	2.50 (pk of 12)
Sniper Rocket	2.00 (pk of 12)
Super Rocket	6.00 (pk of 4)
1-oz. Rockets	2.00 (pk of 12)
8-oz. Rockets	4.50 (pk of 12)
Small Rkt. Asst.	9.00 each
Jumbo Rkt. Asst.	18.00 each
Magnum Rkt. Asst.	24.00 each

#### FIRECRACKERS

Thunderbomb / Blast 24B	2.50 bndl (40/16's)
Black Cat Brand 32B	2.50bndl (40/12's)
Black Cat Brand 24B	3.00 bndl (40/16's)
Black Cat Brand 12B	6.00 bndl (80/16's)
Black Cat Brand 8B	12.00 bndl (40/50's)
Black Cat Brand 8B	12.00 bndl (20/100)
Black Cat Brand 12R	5.00 (roll/1000)
M-88, M-1000, S/S	3.50 (box/36)
Water Dynamite (bx/100)	1.00 (bx of 100)
The Bomb (barrage)	1.50 each

#### ROMAN CANDLES

BC Gatlin Pack RC 8/9	8.00 (pk of 9)
BC Handful RC 36/5	3.00 (pk of 5)
BC Kaleidoscope RC	7.50 dozen
Crackling Candle(10) RC	6.00 dozen
Hot Shot / Python(10) RC	7.50 dozen
Lighting Bolt w/ Spike RC	6.00 dozen
Popcorn Candle RC	12.00 dozen
Red,White,Blue RC	6.00 dozen
Mega Magnum	5.00 4/pk
Maverick Barrage NEW	4.00 each

#### RELOADABLE SHELLS RELOADS ONLY

Airhawk Canister Reloads	9.00 dozen asst.
Double Break (Peanut)	12.00 dozen asst
Quad Break Shells	17.00 dozen asst

These open-stock will soon be unavailable due to new laws on  
importation - stock up while you can

#### RELOADABLE KITS

American Rising Quads	20.00 (kit of 8)
Black Cat Mag or RWB Kit	12.00 (kit of 12)
Black Cat Artillery Kit	5.00 (kit of 6)
Black Cat Quad Kit	20.00 (kit of 6)
Total Exposure	10.00 (kit of 12)

#### MULTI-SHOT ITEMS (Number of Shots)

Air Defense(100)	6.00 each
Angle Asst.(24A)	6.00 each
BC The Beast (12)	10.00 each
Call from OuterSpace(102)	6.00 each
BC Color Pearls(48)	4 for 5.00
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Garden in Spring(7)	3.00 each
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Happy (36)	3.00 each
Helter Skelter (25)	7.50 each
Independence Day (25)	7.50 each
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Star Bright (13)	10.00 each
Super-Size 19-shot Asst.	10.00 each
Whistling Parachute (19)	10.00 each
Single Shot Parachute	7.20 dozen
100 Yellow Ribbons(100A)	8.00 each
500-g Super Cakes	20.00 each

FAST VISCO 6 inches per second 7.00 roll  
This will be gone soon

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**Rolling Stars Fireworks -- Chemicals & Supplies**  
**Contact: Steve Hubing at 715-238-7712 or shubing@tznet.com**

**For free delivery to any WPAG event, order at least 1 week prior to the event.**

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<b>Chemical</b>	<b>Price/pound</b>
Aluminum Flake, Flitter, -20 mesh	7.85 (equiv. to USB 812)
Aluminum Flake, 100-325 mesh	650 (equiv. to USB 808)
Aluminum Flake, -325 mesh	9.65 (equiv. to American Dark, USB 809)
Aluminum Flake, 3 micron, German Super H	15.00 (equiv. to German Blackhead)
Ammonium Perchlorate 200 micron	7.50
Antimony Trisulfide, 200 mesh, Chinese Needles	10.10
Antimony Trisulfide, 325 mesh, Dark Pyro	10.10
Barium Carbonate	2.80
Barium Chlorate	9.10
Barium Nitrate	3.05
Boric Acid	2.95
Charcoal (airfloat, 36 mesh, or 80 mesh)	2.25 (5lb minimum on airfloat charcoal)
Copper Carbonate	6.50
Copper Oxide, Black	5.10
Copper Oxychloride	7.75
Cryolite	4.15
Dextrin	3.00
<b>* Hexamine</b>	<b>5.00</b>
Lactose powder	4.00
Lampblack	5.00
Magnalium (50/50) -100 mesh	13.00
Magnalium (50/50) -200mesh	13.00
<b>* Magnesium 100-325 mesh atomized</b>	<b>7.00</b>
Parlon (chlorinated rubber)	7.50
Polyvinyl Chloride (PVC)	4.60
Potassium Chlorate	3.40
<b>* Potassium Dichromate</b>	<b>5.40</b>
Potassium Nitrate (powder with anticake)	2.50 (5lb minimum on potassium nitrate)
Potassium Perchlorate (HP140)	3.95
<b>* Potassium Sulfate</b>	<b>4.00</b>
Red Gum powder	6.25
Saran	5.00
Sodium Benzoate (XF Powder)	7.70
Sodium Oxylate	7.50
Sodium Salicylate (air milled)	11.25
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Strontium Sulfate	4.75
Sulfur	2.00
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3 inch plastic ---- 0.35/set  
 4 inch plastic ---- 1.00/set  
 5 inch plastic ---- 1.00/set  
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Quick Match --- 9.50/bundle  
 Visco Fuse (American 3/32 in) --- \$12.00/100ft roll  
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 Methylene Chloride -- \$6.50/qt  
 6 ply hemp string 240ft roll -- \$15.00

*WPAE Keeps  
Bragging Rights  
For Another  
Year!*

January 1, 2005

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