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WESTERN PYROTECHNIC ASSOCIATION

Newsletter and official publication of the Western Pyrotechnic Association.

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Remember, Firefox will be at Winterblast.

Please order early for free delivery.



WIN THIS BEAUTY! Here's how –

The wonderful people at **Firefox Enterprises** knew of our money crunch from the Insurance Debacle so they graciously donated this Star Roller for the benefit of the WPA members. If you or someone you know would love to have this item it is up for raffle during Winterblast 15. You may be able to purchase the tickets at the **Firefox** vendor table, at the trade show, or (if you cannot attend Winterblast) you may send a check in the amount of $5 (per ticket) to the WPA Secretary. All tickets purchased by mail must be postmarked no later than Jan 22nd, 2004. This will give us time to post the checks, clear them before the raffle, and send you your ticket stub. The winner will be announced at the General Meeting slated for Sunday the 15th of February. If winner is not present they will have to pay shipping for it to be delivered to them.

There is also a challenge from **Firefox** for any other vendors to step up to the place and donate items for raffle/auction. The Members of the Board would like to take this opportunity to thank **Firefox** for their kind and generous donation.

Important Notice:

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If you need to call one of our officers, please be considerate.

Do Not call after 9:00 P.M.(PST) Keep in mind there may be a time difference.

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From the President

Kief Adler

Whew! Our best Do It yet, and now we are all knee deep in Winterblast anticipation! Ya gotta love this club!

Do It was HOTTER than ever this year, both in temperature and the amount of product in the air. I even thought I saw somebody try to launch a Suburban, but I must have been mistaken. Flying Phoenix did an incredible job of vending from their fully packed semi and Firefox made their usual trip to keep the hobbyist's happy. Our thanks go out to both for their dedication to the membership in making the run to Laughlin. Another big hats-off to Kevin Bollinger for his first time as chair of an event. I hope you will be back next year too, Kevin!

Winterblast is shaping up to be another jam packed event with all of the usual events, PLUS - an auction this year! At the time of this writing I have received gift certificates for chemicals and fireworks, clothing, photos, all kinds of chemicals, books, even some computer stuff and a whole lot more. This is sure to be a great fund raiser for the club so be sure to attend and bid 'til your wallet's empty!

Bill Page of Silverado Fireworks is making the trip out from Missouri to set up our public display and we are all anxious to see what Bill has prepared for us. There will be several demos at Sara Park again, as well as a closing show. You don't want to miss this one, especially since this one will be my last as your president. Yes, my term ends in February and I am looking forward to handing the reins off to another. My wife has threatened to attend this year to be sure that this happens!

As I look back on four years as your president, I am proud of the direction that the club is moving towards and I am looking forward to a year of leisure (yeah, right) as a regular club member once again. I am thankful to have worked with such great people on our Board over the years: Dimitri and Beckie Timohovich, Jill Salverson, Kathy Baird, Keath Nupuf, Mike Workman, Greg Boyd and your present officers Gary Berg, Rita Oesterle, Russ Laurie and Don Oesterle. I want to especially thank Don and Russ for their incredible dedication to the club in holding Board positions AND finding the time to run four Winterblasts now. I am honored to have worked with all of you.

Look me up at the Afterglows and let's toast to what we all love best: fireworks!

From the WPA Board:

The WPA Board of Directors would like to express its sincere condolences to those who were adversely affected by this year's wildfires. The products used in our displays only show the beauty that can be brought on through the harnessing of the element of fire when combined with the right chemicals and processes. When unchecked this same element, as it was during these intense weeks of the Southern California wildfires, clearly showed the awesome destructive power it can hold over humanity and property. Our thoughts are with you as you rebuild your homes and your lives.

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We Get Mail

Letters to the WPA

To my fellow WPA members:

When I get my WPA renewal, I will CHEERFULLY send in whatever dues the officers deem necessary.

Running a fireworks club isn't getting any easier or cheaper! Let's show our support of the Board, the WPA, and our truly wonderful fireworks club. Get your dues renewal in quickly and sign up a pyro friend, too. This will at least take some of the financial worries off the Board members. We're going to have to pay to play.

Meanwhile, the PGI and Fireworks Foundation have put $5000.00 each in escrow with the new NFA insurance captive. We may put in another $10,000.00 total as well if requested.

While I and the PGI Board work to solve the insurance problems, let's make running the WPA as non-stressful as possible for our officers. If you can send in a club donation as well, this would help. I pledge to send in my renewal dues PLUS $25.00 and ask all my fellow WPA members to join me in doing so.

Thanks Kief, Board members, and volunteers for superb service to the club.

John Steinberg
WPA Member & PGI President

The Big 16 inch –
(Recollections from Do It '03)

My thoughts were conservative on the potential of the 16" shell (I do so intentionally in order to be surprised if things turn out better than I expect) and I assumed that it would travel so high that it might appear no better than a low breaking 8" shell from my vantage point (which was immediately beneath since I was helping run the wires).

a.. Was I wrong? Absolutely!
b.. Was I amazed? Positively!
c.. Was it stupendous? Definitely!

Surrounded by countless trails of stars falling, falling, falling (repeat as a mantra for an unquantifiable time) stars...Every inch of my view, all 360° around where I stood, the entire sphere of vision - north, south, east, west, horizon-to-horizon, filled with falling stars for an indefinable period of time made me wonder what Walt Disney, Albert Einstein and Timothy Leary could have accomplished had they had a chance to work together.

The real reason we don't drink during pyro is it would only dull the senses to these experiences.

Todd Hall

Subject: Do-It

Date: Wed, 29 Oct
From: "G Dandurand" (WPA digest)

I just received my Do-It cleanup refund check today. Thanks for the fast turn around. See everyone at WWB.

Greg

We Get Mail

Letters to the Members

Letters to the WPA (cont'd)

From: Ken Barton
Magazine Officer
The Texas FireAnts

Having returned to Dallas from having a wonderful time with all of you in Laughlin, like John Steinberg, I also am willing to pay the additional dues amount needed to keep WPA paying its insurance and moving onward as it must. I feel it's VERY important to support clubs and ideally more clubs than one when possible.

Peggy and I also support the Florida Guild as well as the PGI. As you can imagine- the most difficult decision we have each year is whose club can we afford to be members of as the dues rise? Then, can we afford to attend Winterblast, Do It, the PGI convention, or maybe The Florida Fall Fireworks Festival.....Or our OWN club events in Texas if there is a conflict on dates.

I groan when Kief mentions the high cost of insurance and how clubs must increase their dues. That has already happened in Texas, and I'm afraid you'll see more of this, but unless we get some form of insurance relief It's something we must deal with.

I urge all of you to continue your support of WPA and possibly the PGI even if you cannot attend a PGI of all the laws one must deal with in CA, higher dues in the WPA is the least of your worries to support a fantastic club that allows you to continue to enjoy pyrotechnics in an otherwise hostile environment.convention. It would seem to me that hearing your fireworks horror stories of all the laws one must deal with in CA, higher dues in the WPA is the least of your worries to support a fantastic club that allows you to continue to enjoy pyrotechnics in an otherwise hostile environment.

Fellow members,

It is no secret that insurance rates keep rising, and the WPA's insurance is no exception to this rule. Our current expenditure for insurance surpasses $46,000 per year! Although this rate has held steady for two years now, it still equals about $60 per member. Add normal operating expenses to this, such as our newsletters, Board meeting conference calls, tax preparation, etc. and you can see why we need to raise our membership fees.

The club suffered greatly two years ago when our general liability policy was canceled mid year due to the problems in Texas following the illegal antics of a wholesale insurance broker that wrote numerous fireworks policies. One $8000 policy for excess liability coverage was never paid at all, and the other policy still owes us about $4000 that we may never recover. We were not only forced to buy insurance twice that year, but at double the previous rates. This is what has put us in the financial crisis that we are in today. We urge you to renew your membership and to do so as soon as possible, even if it is before sending in your Winterblast fees, so that the club can maintain its cash flow obligations. We are also open to any way of helping us achieve our fundraising suggestions that you might have. For those members with pyrotechnic companies, we urge you to consider our new Corporate Membership as a financial goal. We will also be offering an auction at Winterblast and are seeking product donations for this event. Contact Kief at 818-383-7755 or kief@pyro.org to discuss any donations that you may have for the auction.

We thank you for your support of the WPA and for helping us continue to provide you with a place to gather together as followers of the colored flames.

Your Board of Directors

Presidency Sought

To all my fellow members of the WPA. I, Russ Laurie, am announcing my intention of running for the position of President of the WPA. I have been shooting fireworks shows since July of 1996 and have been on crew for over a hundred shows. I have been an active member of the club since 1996 and have volunteered at all of the events. I have been the Co-Chairman of Winter Blast in 2001, Chairman in 2002, Chairman in 2003, and I am the Co-Chairman again this year in 2004. I was on the safety staff at Do-It in 2000 and the Chair of Do-It in 2001 and 2002. Over the years that I have been involved, I have made several improvements to Winter Blast and have always strived to make each year's event better than the one before. I am currently serving as the WPA Treasurer and have held this position since 2002. I have been keeping the books straight, making sure we have money in the bank, having our taxes done, attending BOD meetings, and doing what's best for the club. I am willing to put forth the time and effort and do what it takes to be the president, and lead the WPA in to future.

Letters to the Members

From the VP:

Well friends, here we are, wrapping up another year of club activities.

Just as we finished putting Do-It away for the year, we jumped right into planning for Winterblast. Although it started out with a little controversy, we have listened to our membership and brought about a change in which we feel every member will support. With all of the turmoil still happening overseas, the grocery store employee dispute, change in California's governor, the wildfires in October, the MTA bus strike, we (in California) just wanted to lighten the mood a little with a fun event theme to go with the most fun time of the year, Winterblast!

We are all working very diligently to bring the membership the best Winterblast yet. We started the membership and registration process 1 month early to help us meet our financial obligations with insurance and general operating expenses. The membership responded to the club's needs and has started sending in the forms and payments. We all thank you for this effort.

Recently I was reviewing the membership database and found a small discrepancy. A long-time member of the WPA, and Lifetime Member, paid for his membership renewal. This floored me. This person realized the financial situation the club was in, and paid the dues. It is this spirit of support and helpfulness that keeps the club going strong. A big THANK YOU! To Paul Salverson, WPA lifetime member, for his generosity and thoughtfulness.

Take care, be safe, and see you at Winterblast!

Don Oesterle

WPA Vice President
Winterblast 15 Chairman

Treasurer position sought:

My name is Sheri Laurie and I wish to run as the Treasurer of the WPA. You probably do not know me, but are most likely familiar with my husband, Russ Laurie, your current Treasurer.

For the past two years I have assisted Russ in all of the Treasury duties and would now like to hold the position myself. I am a professional bookkeeper with years of experience in all aspects of accounting. I have an established working relationship with the other board members and I am looking forward to working with them on a permanent basis.

I have enjoyed fireworks all my life and I look forward to helping the club move forward into the future.

Thank you for your consideration.

Sheri L. Laurie

From the WPA Secretary:

Anyone who missed DO IT 2003, you missed a hot time-both weather wise (104 degrees) and it was a very good event. Thank you Kevin and staff for working long hours and still being in good moods.

Now moving onward to the next event.

Thanks to all of you who have already sent in your 2004 WPA dues and registration for Winterblast 2004. For those who have not, remember the early bird date and please take note that it is not the postmark date, but the date I pick it up at the post office. I go daily so there will be no excuses. (Well, maybe a few excuses will get past like a shredded envelope, etc)

If you know or even think your handwriting is not the best, believe me when I say it is really hard to read all of them. I have the most trouble reading email addresses. Some of them I tried 4 times to send you a receipt of form and $ via email and then I gave up.

Helpful Hints to help the data entry go faster for me.

For the address part, please consider using a return address label.

On the telephone part, please list if it is a business or cell phone #.

If the address or email address is new, put an * beside it and note that it is a change. It makes it easier for me to check those fields.

Even though it is not necessary to put the member # on the forms, you have the member # on the envelope in which you received the form. I do have to look up each of your member numbers to put the data into the database.

Thanks again for your help. See most of you at Winterblast in Feb.

Happy Holiday Season,

Rita Oesterle

Secretary/Winterblast 2004 registration chairperson

Letters to the Members

Treasurer position sought:

My name is Alicia Ledbetter and I am running for the position of Treasurer for the WPA BOD. I have been a member of the WPA for only one year, but have been active in pyrotechnics for close to 15 years. I have a BA in Business Admin with a concentration in Accounting. I have also served on a total of 5 different BOD positions in the last 10 years. One of those was a 3 year stint. These positions have included being on the finance committees and awarding scholarship money to qualified students. I have attended weekend courses learning the fiduciary responsibilities of a BOD member and have been part of the team that developed the budget for each of the BOD that I've been on. The biggest annual budget was just over $1.5 million dollars. I am currently serving as the president of another BOD so understand and am willing to donate my time as needed.

Sincerely,

Alicia Ledbetter

Winterblast Seminars Sought

As Seminar Chairman once again for the Winter Blast it is my job, nay my duty and conviction, to put together an interesting and wide ranging program of seminars and workshops for our upcoming convention. I feel that this is particularly important because we get so few technically stimulating articles for our newsletter anymore. Attending a good seminar is one of the best ways to learn an essential new skill or technique with regard to fireworks.

So this is where I seek your help in putting together a well rounded program. I need help with a couple things:

1) I need topics that you are interested in learning more about.

2) I need qualified presenters to cover those topics.

3) I need intense peer pressure, big bucks, sexual favors and even veiled threats from the membership to persuade experts in their field to actually commit to doing a seminar!

It is relatively easy for me to come up with seminars at the beginner level, and no doubt we will have plenty of such seminars for our newcomers. We, in the WPA, are blessed with many outstanding experts in the firework industry as well as the hobbyist realm. The trick is to get a commitment from those who have the most expertise and knowledge on a subject. I believe this is difficult because the experts are often professionally pre-committed (Tom Mattrocce) or might feel that they may not quite have enough time to present a topic worthy of a Nobel Prize (Clive Jennings-White). Nonetheless I will continue to seek these caliber guys out and solicit your help in reeling them in as well.

If any of the above is something that you can help me with or have comment on, please contact me ASAP either by sending me an e-mail to **pyrobert@saber.net** or by phone 707 485-5122.

Thank you in advance for your help and I will see you at the Blast!

Steve W. Wilson
WWB 15 Seminar Pimp Emeritus

HOT TIP COLUMN

Here's a hot tip, great for Winterblast, as well as any WPA event -- ***bring a hardhat and safety glasses!!!*** Although we have some for "rent" on the B lines, we do not have enough for all and the ones that we do have seem to disappear for good -- seriously. Help all of us out by **bringing your own!!!!!**

Remember: even as a spectator on the B lines, hard hats are required.

Your own torch is another nice pyro gift for yourself also.

WPA Auction at Winterblast '04!

(See also - inside cover)

This year's Winterblast will include an auction of donated items from our generous members, with all proceeds benefiting the club. At the time of this writing we already know of clothing, chemicals, gift certificates, a star rolling machine, etc. that will be available to the highest bidder. This should be great fun for all, and a great fundraiser for the club as well. Interested donors should contact Kief at 818-383-7755 or kief@pyro.org. Remember when bidding that ALL proceeds benefit the club so please be generous!!! Yes, we need your money!

Do-it? Done-it!

Greg Dandurand

Having been a member of WPA for only a couple of years, I have enjoyed WWB and the fact that it was a much smaller and closer knit group than the "other" group with the summer convention. Some WPA members told me if I wanted to get more up close and personal, I should go to Do-It. It was a blast, pun intended.

The site is perfect, across the river from the Avi Casino, which unfortunately competed for the money I was going to spend on pyro. However, I wasn't alone as I left the tables in the early hours of the morning throughout the weekend. The others shall remain nameless, as I wish to retain their friendship.

I arrived late Wednesday night, and with the strains of Elvis (or a reasonable facsimile) in the background, located a couple of the club officers in the lounge. A brief conversation yielded the time and place for the setup on Thursday morning. I left the hotel in the morning, ready for a day of fun. Forty-five minutes later, I arrived at the site, with a mental note to myself to clarify directions next time. Set up was a breeze, with many folks able to help. The one nice thing about being at the same site over a period of time is that everything always goes in the same place.

When completed, we were ready to rock! OK, there was the welcome speech followed by the safety briefing to obtain the requisite wristbands. The relaxed feeling was evident all weekend, as there was no pressure to keep the sky filled. The only exception to that was on Saturday night, when everyone realized they had five minutes left to shoot two forty foot containers of product. Well, maybe it was ten minutes, and one container.

I liked the fact that we were able to buy "B" product under the club's license and shoot at will. The feeling of walking away from the truck with a case of six-inch salutes and mixed shells (thanks Kevin) was one of frothing-at-the-mouth glee. I worked "B" line safety several nights. This let me drop a salute at a moment's whim to set off all the car alarms in the parking lot across the river. Once they had reset themselves, another touch of the torch brought forth the serenade.

Armageddon was spectacular. Greg Adler does a lot of work to acquire all the ingredients. The fellow alchemists who concocted the spellbinding display also deserve big thanks, as it is impossible to set up a display alone.

The food on site was a welcome respite to assuage hunger pains. Our two dedicated cooks ensured no one went without. The club was also helping itself, as some of the money went back to us. The afterglows were perfect, with spirited discussions continuing well after we returned to the hotel and the sports bar.

The new clean-up policy brought forth many people on Sunday. It made load out much faster, as many hands make light work. I don't think I am alone in thinking that the container is easier to empty than it is to fill!

Everyone deserves a big pat on the back for helping out, it would be impossible to have this event without people who act as liaisons with the Avi, setting up the site, running registration, giving up time to act as safeties on the various lines, and in general just making this event run smoothly. I'd like to thank all the club members for working with all the volunteers who were working safety at all the shoot lines, and event staff. They are members of WPA who work long before the first fuse is lit, and whose work continues well after the last willow fades.

See everyone in Lake Havasu City at WWB 14!!

A Tragic Passing

Earlier this year, Forrest Rhoads, a Charter and Lifetime member of the WPA lost his wife to a long battle with Alzheimer's disease.

Audrey Jean Rhoads was loved and adored by all and will be greatly missed.

In response to this loss, the WPA made a $50 charitable donation to the Alzheimer's Foundation on her behalf.

For those of you that knew her and would like to give something in her memory this Holiday Season we encourage you to support the work of the Alzheimer Foundation and give what you can.

Thank You.

Mind If I Smoke?

©By Steve Majdali

It was in the mid-eighties when I encountered a pyrotechnist who introduced me to an item he called "smoke cookies". These were about 4" in diameter and about ½" thick, medium brown in color, and when ignited (whole or part) would slowly produce a voluminous thick white smoke, leaving a dry porous black residue that resembled volcanic rock when it was done. The most amazing part to me, aside from that great smoke and the light pine scent it gave off, was it blackened but didn't ignite the paper it was sitting on.

Wow, this I've got to have. He gave me a sample of some of these that were commercially made (did I mention that he made the one he showed me?) and I was left with a puzzle.

I went to work trying to duplicate the effect he showed me and almost immediately found success. I reasoned that to be low temperature burning it had to utilize potassium chlorate as an oxidizer and a cool fuel like sugar. To prevent flaring which would burn the dye (and ruin the effect) some sodium bicarbonate (baking soda) would be there. The pine scent would surely be pine rosin (also known as vinsol resin or colophony). The dye or white smoke producer turned out to be ammonium chloride (sal ammoniac, a flux used for tinning old-style soldering irons).

One usually learns more from failure than success and this is true for me. As a result of the almost immediate success I had, I have done very little additional experimenting with this composition.

White Smoke	1	2
Potassium chlorate	40	40
Ammonium chloride	27	30
Sodium bicarbonate	13	13
Sucrose	13	13
Pine rosin	7	4

Sieve the components through a 20 mesh stainless steel screen at least three times and either form into smoke pellets immediately or store in a moisture resistant container. I specify a stainless screen because brass or aluminum screen does poorly in contact with ammonium salts.

To bind, add (anhydrous) alcohol or acetone and form into comets or cakes and let dry. This composition is an exception to the advice against mixing chlorates and ammonium compounds. Do not add water to this mixture as unwanted reactions may occur. The pine rosin can be left out and the material used as a loose pile. This effect is great for stage or outdoor effects and is relatively non-toxic.

Pyro Heaven in Mexico

or How I Spent My Summer Vacation....

Kief Adler

South of the border, WAY south of the border, lies a magic little hotel of which I am fortunate enough to be one of the owners. It is a small place consisting of 18 rooms in a suburb of Guadalajara, the second largest city in Mexico. For the past 3 years I have been leading groups of adventurous souls to study Mexican pyrotechnics, eat fabulous authentic Mexican food, drink to their hearts content, and generally have a wonderful time.

The groups have been getting larger each year and this year's entourage was by far the largest. Thirty four fellow pyros ventured south looking for fun and fireworks on the third weekend in September. We began with a welcome dinner at the hotel that consisted of eight different entrées including fresh homemade tortillas and a copious bounty from the bar. To spark things up a little we all received instruction in hand-lighting rockets out on the patio of the hotel. There is nothing better than having a supply of 500 stick rockets to brighten up a party. And what could be better than sitting at your hotel and firing them?!?!?!

The following day we all boarded a bus and headed out of the city for the lush green hills, corn fields, and the fireworks factory of Francisco Guzman. Sr. Guzman, or Pacho to his friends, is a two time winner at the annual Tultapec festival for his Castillo's. A Castillo, or castle, is a tower of bamboo and lance work with a Girandola for its crown. Pacho graciously opens up his work shop to us each year, not only to teach us his skills, but to learn from ours as well.

Everything in Mexico is made entirely by hand including but not limited to: match; tubes; motors; lance; etc. — and

Pacho showed us how to do it all. While some of us pounded out rocket motors on an old tree stump, some tried their hand at rolling quick match pipe, some learned to tie lance to set pieces using tar string, and some guests just opted to relax and watch with curiosity.

Not only did we get to light rockets and wheels - we even fired off a Girandola! We ate lunch with the group of Mexican craftsmen, swapped T-Shirts with them, and marveled at the simplicity of their intricate work. Devon Dickenson, one of the participants, brought along some shell halves and was invited to show an enthusiastic Pacho how he makes 8" ball shells. He was glued to Devon and wanted to see every aspect of the shell's construction. We stayed with the Guzman's until early that afternoon and then left them to complete their work for the next evening's festivities. That same evening some of us took taxis into the city and dined at The Distillery, a great place for food that boasts over 100 different tequilas at the bar. The crowd remaining at the hotel used their rockets wisely and put on a nice show for the gang.

Saturday morning most of the group left for the train station to board the legendary "Tequila Express". This is a train ride to the town of Tequila - complete with live mariachis, food, and drink.



Photo showing the pyrotechnics factory, the guest members who visited it, and a camera shy Bill M

After a fun-filled train ride the participants arrive at the station where they then board a bus for another short trip to the Herradura Estate and a tour of the distillery. Following the tour, lunch is served on the beautiful grounds - complete with more tequila and live entertainment. The group returned about 8pm and it was obvious that the open bar was liberally plied by more than a few. We escorted, and carried, our brethren to the town square an hour later to meet Guzman once again and join the crowd there for the Independence Day celebrations that evening.

What a scene this was! Thousands of people were in the streets with music blasting and everyone drinking and having a good time. We helped erect the Castillo while some of us joined the shooters on a nearby rooftop where would be shooting 6's, 8's, and more than a few rockets from above. At the appointed time the fireworks began and it was wonderful to see the locals racing each other through the sparks from the wheels of the Castillo. The show was utterly spectacular and we finished by cheering the Guzman's and, of course, more tequila!

Sunday was a day for hangovers, lounging about, and general relaxation. Some of the more fastidious prior evening's celebrants went into town to see the folkloric dancing at the theater while others visited the neighboring town of Tonala for market day. Tonala is home to the largest outdoor market in Latin America.

Was it worth it? Well, one third of the group alone was return participants from the previous year. This year's entire group already wants to return and, at this writing, I already have firm commitments from six of these celebrants! It is a wonderful getaway with fantastic food, wonderful people, and of course – great fireworks! You will see, and do, things that you probably have not done before and you will definitely learn something also.

If you would like more information, or to get on the list for 2004, send me an email at: aldez@pacbell.net or call me at 800-220-8689.

See you in Mexico.....

.....Hasta año próximo.

In Pursuit of the Perfect Black Powder Rocket Tail

By Chris Miller

Introduction

I have a strong aesthetic bias when it comes to black powder rockets. Specifically, the primary reason for making a black powder rocket is for the spark tail – the longer and fuller, the better! Just ask anyone who has seen one of Bruce Stedying's amazing rockets with their long and glorious tails.

Making a black powder rocket that produces little or no tail to lift a pyrotechnic effect is a waste of time in my opinion*. If you're just trying to lift a pyrotechnic payload and don't care about the tail, you might as well make a shell since they can carry more pyrotechnic material with less fallout and they tend to have a more consistently predictable trajectory. Or if you really want to use a rocket anyway, use one of the more powerful rocket systems – whistle rockets and the more recent whistle-black powder hybrids – and save black powder rockets for lifting moderate (but effective) headings with a long beautiful tail.

With that bit of opinionating, qualification and indemnification out of the way, this article is to report on some recent testing of two approaches for enhancing the tail of 1 lb and 3-lb black powder rockets.

**Lest I offend any follow rocket builders, my comments are about traditional black powder rockets and not whistle, strobe, colored-tail, composite or hybrid rocket systems whose primary aesthetic intent is to produce sound, color or sheer power.*

Background

Like a lot of people who make black powder rockets, I use a basic 6/3/1 ratio of potassium nitrate/mixed-mesh charcoals/sulfur. Depending on the size of the rocket I'm making and/or the amount of power I want, I will change the ratio of fine mesh charcoal to coarse mesh charcoals. The more fine charcoal (and less coarse charcoal), the more powerful the rocket, but there is a tradeoff in that the tail will be somewhat diminished. Reverse the ratio and you get a longer, fuller tail with somewhat less power. The formula below is what I have been using lately for 1- and 3-lb black powder rockets:

Potassium nitrate	60%
Charcoal (air float)	10
Charcoal (80-mesh)	15
Charcoal (36-mesh)	5
Sulfur	10

Nitrate from Firefox part number C170 (available from Service Chemical w/anticake). Commercial charcoals of unknown wood origin – reputedly made from mixed hardwoods.
Sulfur fine powder (-100 mesh)

As you can see, the charcoal is 2/3 coarse and 1/3 fine and rockets made with it have a pretty good tail with plenty of power to lift an effective sized heading. For reference, my upper limit for heading weight on a 1-lb rocket made with this formula is 180-200 grams, or 6-7 ounces.

Spark Tail Experiment #1: More Coarse Charcoal, More Sulfur, and More Historical Interest

The first of my experiments was to continue pursuing my standard approach of pushing the ratio of charcoals further towards the coarse charcoals and away from the fine air float. But rather than just systematically start moving the ratio a few percent at a time and making up a number of rockets covering the range charcoal ratios to test their effectiveness, I took a somewhat less scientific approach.

As anyone who knows me can tell you (or anyone who's had to sit through my version of the black powder rocket seminar at a Winter Blast or Do-It), I collect old fireworks literature and how-to references and like to try out techniques and formulae used in the past. (Unfortunately for most seminar attendees, I also like to prattle on about said historical techniques and formulae in my seminars…)

The following composition was taken from the Ralph Degn's Westech literature (circa 1970) and was designated as being for 1lb black powder rockets. It intrigued me not only because it has a greater ratio of coarse to fine charcoal, but it also uses a very coarse mesh charcoal I'd never used in a rocket formula before: 20-mesh. Normally, I would assume that this formula would burn slower than my standard 1-lb mix due the greater amount of coarse charcoal, but there is actually less of it by 3% with a

corresponding increase in sulfur. Based on some preliminary experiments I did a number of years ago, a few additional percent of sulfur in the 6/3/1 ratio has the effect of speeding up the burn rate**.

This formula had everything I was looking to test: much more coarse charcoal for a longer tail, increased sulfur to possibly compensate for the coarse charcoal slowing the burn rate, and it was a somewhat historical formula to boot (I know this last one is a cheap thrill, but hey - us pyro-antiquarians take it where we can get it…).

Westech 1-lb formula converted from the original parts into percentages:

Potassium Nitrate (Service Chemical)	60%
Charcoal (air float)	7
Charcoal (80-mesh)	7
Charcoal (36-mesh)	7
Charcoal (20-mesh)	6
Sulfur	13

The same chemical specifications as above.

***These tests were done after reading excerpts from a private 19th century fireworks notebook published in Pyrotechnica XII where the author (a Brit called William Hanbury) stated with regard to the effect of sulfur on a rocket's tail, "…it produces a bright golden coloured tail…and above all, it greatly increases the duration, and prolongs the effect…" The representative formula in Mr. Hanbury's notes contained just under 15% sulfur and when I tried adding additional percentages of sulfur to my standard 6/3/1 formula in a couple of 1-lb rockets around 1989, they exploded! Admittedly, those were hardly conclusive tests since other variables were not isolated and eliminated, but at the time I decided to pursue other pyrotechnic experiments and conveniently decided it was probably the excess sulfur in my otherwise trusted standard formula that was responsible for causing those rockets to explode…*

The comp was mixed by first passing the sulfur and then nitrate through a 40-mesh screen on to the air float and 80-mesh charcoals. All four of these were then passed four more times through the 40-mesh screen. The 36- and 20-mesh charcoals were then added and blended well by hand.

Several test rockets were pressed in a sleeve using a hydraulic press.

The rockets performed well, taking off quickly, with a better tail than the standard formula listed above. Although the rockets were tested without a heading, it appears as if there was plenty of power for lifting a decent payload to an acceptable height. Overall, I think this is a formula that is worth pursuing further, i.e., start testing with headings to determine the upper payload weight limit. I also plan on trying it in 3- and 4-lb rockets.

Spark Tail Experiment #2: New and Improved Rocket Comps – *Now with "Spark Granules"!*

This approached was inspired by a posting to the PML a few years ago about adding 3% of a granulated star formula to a rocket comp to get a glittering tail.

The star formula given was:

Potassium Nitrate	47%
Air Float Charcoal	33
Antimony Trisulfide	6
Aluminum (12 micron atomized)	4
Sulfur	5
Dextrin	5

The original PML post referred to this formula as "firefly #2" but it is not formulated like the firefly formulas with which most of us are familiar, i.e., Jerry Taylor's "Charcoal-Aluminum Streamer" and related versions studied by Takeo Shimizu in Pyrotechnic XII. The above formula more closely resembles a high charcoal glitter formula ala Winokur's #39 (Pyrotechnica II, 1978). In deference to the person who labeled this formula, it looks as if the visual effect in a star would be a charcoal tail with sparse white glitter flashes mixed in – an effect probably reminiscent of the Taylor/Shimizu-type firefly effect, albeit achieved through a different chemical mechanism.

Be all that as it may, the instructions were to mix the ingredients, dampen and granulate through a 20-mesh screen, and then add 3% of the granulated mix to a black powder rocket comp. This rocket comp with 3% additional spark granules was to be pressed in the rocket to just above the spindle, and then 100% of 'firefly' comp was to be pressed above the spindle. The author described the effect of the resultant rocket as follows: "You will end up with a beautiful long trailing tail of firefly." A promised effect too good to pass up!

I followed the directions above except that I granulated with a 12-mesh screen instead of a 20-mesh screen. The idea was to see if a larger spark granule produced a larger spark effect. I added the 12-mesh granules to the 60/10/15/5/10 rocket mix above and pressed the rocket as usual. My notes state:

"The firefly effect was not noticed in the tail during the core portion of the burn (although the tail may have been fuller than standard rocket comp), but there was a definite firefly-like effect during the coast/end burning portion of the flight***. Overall it was a nice effect and produced a much more effective and pretty tail during the coast phase than when regular rocket comp is rammed above the spindle."

***That portion above the spindle that was 100% 'firefly' composition.

Again, the effect was worth pursuing, although I may opt for adding 6-10% glitter granules, and/or use a brighter glitter formula to see how much more of a glitter effect can be produced in the tail.

On a side note, the technique of adding granulated glitter (or other) spark producing compositions to a black powder type base mix (like one might add coarse titanium to meal powder to make a fountain) is not new. It has been used for years in fountains, and at Do-It I tried adding granulated glitter to a charcoal tourbillion formula and got a glittering tourbillion. The infamous formula book of CB Allen contains a number of formulae for colored granules which are to be added to waterfall comp for producing a waterfall with colored speckles among the usual gold or silver sparks. I also know of one pyro who added granulated glitter comp to a perchlorate based color star composition and got a colored star with a glitter tail. I didn't see the test so I can't vouch for how much the color may have gotten washed out or how effective the tail was, but it further proves the potential of this approach of using granulated spark compositions to enhance spark tails and spark shower effects.

But I digress…

Getting back to the two tail-enhancing tests described above, while they weren't extensive, both appear to me to be effective and worth pursuing further. So, in support of my aesthetic bias - I will!

Stay tuned…

Bomb Day

"The Firing of the Rings"

Gary Berg

KABOOM! It is late in the afternoon of Feb 22, 2004 and for most Americans it will not be much different than any other week except that it is the weekend immediately following Presidents Weekend. To the WPA and it's minions, it is a rest, a recuperation, and a chance for a rejuvenation of their hearing from a fantastic five day exuberance into pyro fulfilling bliss. But to the Chinese it is the Year 4701, the Year of the Monkey, and for a select few Chinese it will be the second day of the second month of the Chinese New Year and the beginning of the 124th Bok Eye Festival in Marysville, Ca.

Marysville is a town of approximately 10,000 people that lies in the crotch of the Yuba and Feather Rivers in Northern California. It is a city rich in history that harkens to the glorious days of the California Gold Rush of 1849. It was to be the final destination of the ill-fated Donner Party of 1846 where, of the original 100, forty eight of its members perished in a snowstorm between present day Reno and Marysville. It was one of the forty two survivors, Mary Murphy, which the city of Marysville was named after.

A second BOOM! fills the ears and muffles the din of the ensuing crowd while all eyes rocket skyward to follow a small concentric red ring as it is lofted approximately 80 feet into the air. A mad scramble ensues as gravity finally puts a stranglehold on the small satellite causing it to plummet towards the earth from whence it came. Hands and fingers outstretched, scraping at the sky, like a good old Southern Baptist Revival meeting; the throng of participants hope to catch the prized object before it can touch the ground. Just as a lucky receiver initiates their grasp on the coveted ring, a tumultuous racket supercedes the already obstreperous crowd as liberal amounts of firecrackers are tossed into the middle of the participants to keep the throng from tussling over the ring and repudiate any acts of aggression or hostile takeover toward its new owner.

Marysville had a fairly large Chinese population between 1850 and 1900 in comparison to other towns in the Northern Sacramento Valley. In business, it was ranked among the busiest and

largest in the Northern Sacramento Valley and, at times, ranked second only to San Francisco. Marysville's Chinatown, which is one of the oldest in the United States still in existence, was ideally located and able to offer merchandising services to mining camps to the north and east. It was regularly supplied with goods and materials by river boats via the Sacramento and Feather Rivers and stage coaches. It was a place for rest and entertainment to thousands of Chinese miners and laborers and was a bustling and lively community on weekends and during holidays, drawing between 500 and 2,000 Chinese at times.

In addition to serving as a shopping center for those Chinese coming from the mines and other outlying labor camps, it provided varied entertainment and a place for worship, the Bok Kai Temple. Marysville's Chinatown also included the Suey Sing and Hop Sing Lodges, (social clubs similar to Kiwanis or Lions), which are still in existence; a Masonic Lodge, Gee Kong Tong (a Chinese school), and two opera houses.

When the Chinese came to Marysville during the Gold Rush Days, they brought their myths, idols, customs and religion with them. By 1854, about five years after the first contingent of Chinese arrived in California from the Orient to work the mines, they erected here a Temple, the Bok Kai Mui, where they could house their Gods and go to worship. It was appropriately named the Bok Kai Mui, which means Temple (Mui) of the North (Bok) side of the stream (Kai). It is the place, as it has been for over a century, of worship for Chinese in North and Central America who pay tribute to Bok Eye, their water God or God of the Dark North.

The Bok Kai temple is located at the end of lower D Street and Front Street on the northern bank of the Yuba River. The original Bok Kai temple was built nearly two blocks upstream on the Yuba River from the present structure. When the original temple was destroyed, the present one was built on a property which was once the site of a bathhouse near the river and was dedicated in March 1880. It is the only known temple, honoring Bok Eye, in the United States, and it has drawn countless numbers of worshipers and tourists from around the world. Bok Eye, the water God who is also capable of banishing evil, is prominently spotlighted in the altar. His position in the temple of Many Saints is appropriate due to the fact that Bok Eye is the Water God and the building is situated alongside a river which periodically brings threats of flood during the rainy seasons. Yuba City resident Katie Lim, born in 1923, recounts that it has only rained twice on the annual Bok Kai celebration.

Today's Bok Kai Festival is a conglomerate of cracking and popping firecrackers while the Temple Gong signals the start of the annual parade, which is one of California's oldest. The parade is led by "Lung Huang", a 153-foot long golden dragon who's predecessor, "Moo Lung" was once regarded as the largest and finest parade dragon in the United States - requiring 100 men to carry him. This was the first dragon, a silken, jointed, and jeweled reptile, to be brought over from China and was exhibited at the Worlds Fair in New York. Moo Lung has been in retirement, unable to come out and play or scare off evil spirits, since 1937. Age has taken its toll of the material which made up the elongated body of this once proud and colorful mythical serpent where today he lies crated and preserved in the Temple.

Marysville's Chinatown is one of the oldest in America and numbers among the first half dozen still in existence to this day. The Chinese here observed Bomb Day jointly with the City of Marysville for the first time in 1930. Prior to that time, the Chinese Community commemorated Bomb Day by itself. Except for Chinese New Year's celebrations, it is believed Marysville's Bomb Day is one of the oldest, if not the oldest, Chinese festivities in America.

Bomb Day, or in Chinese, Yee Yeut Yee, takes its name from the colorful firing of the bombs highlighting the celebration, which is in tribute to Bok Eye, marking his birthday. The Chinese community and the Marysville-Yuba County Chamber of Commerce join in putting on the Bomb Day celebration. When the day falls on a weekday, the festivities usually are held for two days during the weekend. The annual two-day event draws roughly 20,000 people from Marysville, the surrounding communities, and from all parts of the United States, Canada, and Mexico. Some even come from as far as China and Taiwan.

The bombs are fired in a roped arena where participants scramble for the "good fortune"

rings. The rings, which are shot into the air from the bursting bombs, traditionally bring good fortune to the holder throughout the year. The rings may be kept by those who retrieve them in the scramble, but often they are sold to people who want to keep the lucky charms for a year. Those who purchase them, in turn, pay a fee at the temple to hold the rings. The number 4 ring is the luckiest, and therefore the most sought after ring of all, and brings on the liveliest scramble when the bombs are fired.



"Lucky Ring" seminar instructor John Young shows participants the ancient art.

Last year, 2003, 110 bombs were made while 90 of them were auctioned off before the ceremony. This is in addition to the lucky red envelopes passed out during the parade where onlookers are asked to put money in and are collected by three Chinese lions manned by Yuba City High School students. These funds are being used to restore the temple. The bombs, resembling giant firecrackers, are handmade in Marysville specifically for Bomb Day since 1957. Importation of them was halted following the Communist take-over of China. These are built by John Young.

The WPA was very fortunate to enlist the teachings of John Young, who lives in Marysville, California, for a Do It 2003 seminar in the making of these traditional Chinese devices used in Bomb Day. John, who moved to Marysville with his parents from China in 1969, constructs all of the bombs used in the Marysville Bok Kai festivities. He was taught the craft in 1974 and has been making them ever since. A special permit and license are issued each year by the State Fire Marshall to the Marysville Chinese Community for this annual production of the approximately 100 bombs.

"It takes 15 to 20 minutes to complete a bomb" according to John. He uses discarded magazine paper rolled tightly around a stalk of bamboo that sports a 4 inch piece of visco leading to 2 teaspoons of BP and is tied tightly around the outside diameter with twine. The ends are sealed with paper that is hammered in and then coated with a melted rosin to be air tight. The bomb is then wrapped in red tissue paper for good luck and sometimes adorned with gold leaf. The ring, attached by fine wire or string to another smaller ring that sits atop the bamboo and visco fuse, is a piece of rope made in a circle wrapped in the lucky red paper also. On this larger outer ring a ribbon is wrapped around it containing Chinese writing and a number. The number four is the luckiest number.

After the fuse is lit, the bomb goes off in approximately 10-15 seconds and sends the ring as high as three to four stories. "The catcher of the ring has to catch it before it hits the ground to bring luck for the remainder of the year", John told the spellbound students. "One year a person paid $1,000.00 for such a ring during the Bomb Day festivities."

The students that participated in the seminar, and built the 20 bombs, were treated to an even greater treat. The vendors, staff, and the Avi donated prizes to be given to certain numbered rings which included a gallon of VO (ol' red eye), a case of 3" shells, and a 3-day, 2-night stay at the Avi hotel. The bombs were lit in the class C cake area with only the seminar students being able to participate. One student, Kelly Rhodes, even had the forethought to pull two baseball gloves out of her trunk. "I'm a traveling sporting goods store", she quipped with an infectious smile. The author of this article was lucky enough to acquire one of the said gloves and catch 4 of the rings even while trying to take pictures with my camera in the other hand. I did not win

any prizes but I sure had a wonderful time watching the students looking skyward, back and forth at each other, then skyward again as if waiting for the next free throw from the foul line at a NBA playoff game.

Boom! Another 1500 year old tradition goes off and the crowds eyes lurch skyward while the participating throng suddenly turns into a mosh pit of squealing children as if dancing around the maypole, smashing a piñata, or in this case - catching the lucky ring.

I would like to take this opportunity to personally thank John Young for taking the time and making the voyage to Do It and teaching us the ways of this ancient Chinese traditional firework and its heritage. At my urging he has agreed to put on another seminar at the 2004 Winterblast, that is if he can find time away from his duties during Bok Kai. Look for this exciting and informative event on the Winterblast schedule of events and make a point to participate, I can personally guarantee that you won't be disappointed.

For those of us who participated in the seminar we not only marveled at a firework that is interactive with its builder, we are also just a little bit richer in the culture that instituted our hobby we hold so dear.

VIRGIN ROCK AND ROLL SULFUR

By Chris Spurrell

Sometimes sulfur is confusing. Is it "Sulfur" or "Sulphur"? Is it "Flowers of Sulfur" or "Sulfur Flour"? So to resolve the confusion and enter the realm of pathetic chemical nerdiness we offer the following (actual) definitions.

Name	Characteristic
Amorphous Sulfur	Rapidly cooled sulfur not soluble in CS2
Bright Sulfur	Crude sulfur without discoloring impurities
Brimstone	Crude sulfur
Broken Rock Sulfur	Refined sulfur mixture of lumps and dust
Colloidal Sulfur	Sulfur that has been chemically precipitated in water
Crude Sulfur	Bright or dark sulfur, free of Se, Te and As
Dark Sulfur	Crude sulfur with hydrocarbon contamination
Dusting Sulfur	Crude or refined powdered sulfur
Elemental Sulfur	Native sulfur at least 99.5% pure
Flour Sulfur	Crude sulfur 200 – 300 mesh
Flowable Sulfur	Colloidal or agricultural sulfur
Flowers of Sulfur	Sulfur purified by distillation (actually sublimation)
Frasch Sulfur	Native sulfur from superheated water injection
Insoluble Sulfur	Flowers of sulfur treated with carbon disufide
Lac Sulfur	Precipitated from polysulfide solutions, up to 45% CaSO4
Native Sulfur	Naturally occurring elemental form – often large crystals
Precipitated Sulfur	Precipitated from polysulfide, washed with HCl
Prilled Sulfur	Crude sulfur in small round pellets
Recovered Sulfur	Elemental sulfur from any combined sources
Refined Sulfur	Distilled sulfur more than 99.8% pure
Rubbermaker's Sulfur	Ground sulfur with low acid, ash and moisture content
Run-of-Mine Sulfur	Frasch sulfur with lumps and fines
Slated Sulfur	Crude sulfur that solidified on a moving belt
Virgin Rock and Roll Sulfur	Refined sulfur at least 99.8% pure, cast or in lumps
Wettable Sulfur	Powdered and treated for easy water dispersion

Check with your supplier to make sure what variety you are receiving.

Sources: Kirk – Othmer "Encyclopedia of Chemical Technology", New York, John Wiley and Sons. 1983

Snell and Snell "Chemicals of Commerce" New York, D. Van Nostrand, Inc. 1939

Rich Wolter

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