

# Western Pyrotechnic Association



Newsletter Volume 29  
Winter 2018

# Western Pyrotechnic Association

## Newsletter - Winter Edition, 2018

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Mike Garrett enjoying another glorious day at Do It.

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## **Notes from the Board**

### **Updates on the Strategic Planning goals**

As noted in the previous newsletter, the BoD decided to choose three long term goals to focus on, in addition to regular duties.

The first three goals were fixing the financial issues, setting up a permanent manufacturing site and running the club more like a small business.

### **Financial update**

As many of you know, the club's books were not up to date. We were using a cash based accounting system, when we should have been using an accrual based system. Click this if you're having trouble sleeping - [https://en.wikipedia.org/wiki/Basis\\_of\\_accounting](https://en.wikipedia.org/wiki/Basis_of_accounting).

In order to be in compliance with the IRS, the accounting had to be submitted in the correct manner. At this point, the '15, '16 and '17 tax forms have been sent to the CPA and should be ready for submission to the IRS in late November or early December.

This one is about wrapped up, and the BoD will be choosing a new strategic goal in a future meeting.

Many thanks to Amanda Nixon who volunteered an untold number of hours to ensure that the job was done correctly and submitted on time.

### **Permanent manufacturing / Moapa update**

The second strategic goal identified by the board is to have a permanent manufacturing location for WPA builders. Moapa has been the location proposed to make this happen.

Our goal is to successfully establish a location which serves as many club builders as possible. If a specific location doesn't work, we still have a framework and strategy that allows us to move forward.

We have worked to establish a clear, transparent process which engages interested club members while recognizing our responsibility to protect the WPA from legal and financial liability. Dennis, Tackett and Kevin have created a working document outlining the requirements for establishing permanent manufacturing, regardless of location. The requirements include ATF licenses, legal structure for a manufacturing entity, governance, financial, insurance, minimizing legal and financial risk to the WPA, facilities and operations. The board has reached out to a few club members seeking input on the document and is working on defining next steps.

### **Running the club more like a small business update**

With the focus on the two bigger issues, we haven't done much on this one, which is exactly what we expected. The biggest item was a switch to G Suite (Google's business package) for email and documents. The short term benefits are that all the westernpyro.org email addresses now work and our documents are available anytime, from any device, with no special software. Shared document editing has helped the small groups work on their tasks.

## **From the Secretary**

Wow! Can you believe WWB 30 is already upon us? In April of this year, the Board started discussions for WWB 30 with a goal of having our primary staff, theme, logo, and other logistics primarily in place by the end of September – we were close, we got much of this done by the end of October. My how time flies! In addition to getting things aligned for WWB 30, the Board has been working on several other items which you can read about in this addition.

Beyond those key initiatives, we continue to progress as a Club:

- » Membership continues to increase – we have over 600 active members.
- » We are still working on protecting the Club's intellectual assets – we are working on securing a federal Trademark/Service Mark for Pyro Shack which is the charitable fundraising arm of the Club. We've already received registration in the State of Arizona. You can also read more about Pyro Shack in this newsletter.

Besides this Western Winter Blast being a milestone event, we also have elections to be held during the General Business Meeting. This year, the offices of Vice President and Secretary are up for election. This is the end of my second full term serving as your Secretary. I am proud of how far we have come as a Club since I have been on the Board. Tackett has outlined several new initiatives we have undertaken or plan to in the future. And I would very much like to continue to be a part of those initiatives as a Board member. With that said, I am announcing that I am running for re-election as your Club Secretary. I am humbly thankful to you the members, should you allow me to continue in this capacity.

And in closing – smell the smoke! And see you at the Blast!

## **Elections**

As Dennis said, there will be elections during the General Business meeting at WWB. The two offices up for election are Secretary and Vice President.

Both Dennis and Kevin have announced that they intend to run for re-election. If there are other candidates, they are unknown to the Board at the time of publication.

## **Pyro Shack(tm)**

### **Buy stuff for yourself and contribute to the WPA**

Next Winter Blast, make sure to stop into the vendor tent and buy some WPA branded merchandise. All sales are handled by Pyro Shack(tm). The Pyro Shack(tm) is an arm of the WPA that performs charitable fundraising services by means of selling t-shirts, hooded sweatshirts, and hats to raise funds for pyrotechnics education. The pyrotechnics education happens through the seminars, demonstrations, manufacturing, and public displays at Western Winter Blast.

There's also something special this year - a raffle for a quilt made from WPA shirts. Tickets will be sold at registration (\$5 each or \$20 for 5), and the drawing will be held on Sunday afternoon. All proceeds will be donated to the WPA via Pyro Shack(tm).



## **Do It 2018**

For some reason, attendance was lower than expected this year. That was a huge mistake for those who chose to skip the event.

The weather was almost perfect. Manufacturing was filled with builders. The night sky was filled with pyro. The Afterglow schedule was changed to serve food about 6:00 so nobody had to leave. We really couldn't have asked for a better event.

Many thanks to the staff, volunteers, vendors and members who make the event happen.



**It was too bright, so Tony made some shade with his WWII smoke generator.**



Photos submitted by Therese and Doug Swinehart. Photos also include Steve Wilson and Raj Iyer.





Photos submitted by Lonny Ross. Lonny, Tommy and friends were making those big shells we all love. Nice job, guys!



New members, take a look at these photos to see the sequence of building a big shell.





The following items are links to videos - just click the link if you're reading this on a computer.

- » [Link to 16" shells from Do It](#)
- » [Another 16" shell from Lonny](#)





How can there not be a photo of this and the smoke generator side by side?





## **Pyros in Training - the PIT Crew at WWB 30 by Bill Stevenson**

Pyros in Training, the WPA's youth education program, will be back - bigger and better than ever for Winter Blast 30!

We welcome kids aged 5-17, and are rolling out several enhancements this year, including dedicated program tracks for younger and older kids, new hands-on seminars, and plans to build beautiful set pieces for the Sunday Night Member Showcase.

We need your support to put on a great program for the future of the WPA.

If you can help, please reach out to Bill  
- [bill@billstevenson.org](mailto:bill@billstevenson.org)

**Todd, can you make a new button for '19?**

The Winter Blast 2019 PIT Crew program PLANS feature:

Fireworks Overview and Safety  
Fusing and Electrical Firing  
Choreography and Sound Design  
Chemistry of Fire, Color, and Smoke  
Building Lance Pieces  
Twirling Tourbillions  
Pirouetting Pinwheels  
Constructing Castillos  
... And Much More!

## **Daytime Show at WWB 30**

Interested in participating in the daytime show at WWB 30? Keep an eye on the mailing list for more information from Wes.



**Here's a tray of primed 2 inch report inserts for inspiration**



# Stupidly simple beer can lampari

(the reason why the preglow is serving crappy light beer in aluminum screw cap cans)

By Jackalope Billy

## Introduction:

Every builder worth their mettle knows to keep their mind/eyes open to pyro possibilities provided by the re-purposing of readily available post consumer containment devices. Taking notice of these new fangled bottle shaped aluminum beer cans with screw caps I just knew something neat could be made with them. Wouldn't you know it, these cans make up half of a really nice lampari. No more fussing with finding cardboard tubes to sleeve over a 2L soda bottles and then messing around with foam sealant, open flash, time fusing, solid containment and finally lifting and leadering.

While not as big of effect as a 2L bottle of fuel, the 100' break height really makes up for the lack of fuel volume and your safe-shoot distance drops considerably. Undoubtedly, aluminum shrapnel is a real concern but the reality is that with a 16 oz liquid fuel device attached to a 2" salute, thin aluminum sheet shards are going to be the least of your worries. Modern beer cans are made to be as thin as functionally possible and this thin sheet material loses velocity very fast. You'll be out of the shrapnel zone way before you are a safe distance from the fireball.



**Jackalope Billy demonstrating the correct procedure for handling Coors Light.**

## The fuel tank:

Use any screw cap light weight aluminum beer can that loosely/comfortably fits a 3" gun. You'll need some slop for the assembly tape.

Dump out the beer!

**Note:** If you drink beer that comes in screw top aluminum cans, and set aside a case or two of empty, rinsed cans and lids for the Jackalopes, we'd be grateful.

**Break charge:**

Use a 2" cylinder salute as available from Flying Phoenix. 2" balls should also work but cylinders worked well at Do-it 2018 and did not overwhelm the effect.

**Lift charge:**

Use original salute lift. Easy peasy.

**QM leader:**

Field testing demonstrated that the original 2" device QM leader is a tad short for the 3" gun the completed device will be fired from. The manual firing experience will be improved with the addition of some extra leader.

**Assembly:**

Without any significant modifications to the salute, attach the device to the underside of an empty aluminum can.

Free the QM leader from the string securing it to the top of the salute.

Put the top of the salute on the bottom of the can.

Remember folks: lift goes on the bottom!

Use tape pieces that result in 1.5" on the salute and 2" on the can. Start taping and don't stop until you have about 80% coverage of the can bottom.

Wrap strapping tape around the salute, making sure to cover all the vertical tape pieces, thus tying them down. Repeat wrapping around the can base until the salute is secured to the can.



Complete the professional look with Jackalope Brand (tm) packaging tape.

**Note:**

Test the final diameter before making a 12 pack of lampari.



**Liquid fuel:**

Fill device with fuel mixture (we used 100% gas very successfully). 50:50 gas diesel mix should be good. Other formulas at your own risk. Methanol for colored fireballs might work or might be washed out by the bright salute. Maybe use a smaller salute if colored flame is desired.

Close cap and you are now ready to have fun!

Be careful not to spill gas on the can/salute exterior as this will compromise the tape adhesive.

**"I dare you" Alternative:**

Monster Energy comes in a 24oz screw cap. More bigger, more better, more spendy. Keep in mind that this aluminum can is thicker and does pose more of a shrapnel risk but you'll either go broke or die of the diabetes before that is a concern.





## Dave Ferguson 1943-2018

### Words and photos by his friend, Al Stahler

Two years work, would be gone in 11 seconds. It had been raining all day. The body is made of cardboard; the shell is wrapped in paper. It will not last ten minutes in the rain. We had no choice but to keep moving forward. The deadline is tonight, no second chance.

It will take 30 minutes just to get from Dave's garage to the launch site. The club wants no part in it. Self-proclaimed "rocket experts" advised the board that multi engine rockets would not work and posed a danger. We picked a launch site down near Walker Lake. Mary, my sister, says, "Lets wrap the whole thing in Saran Wrap". Nobody has a better idea ." Quick, go to the store and buy a bunch of Saran Wrap."

It is over 13 feet tall and 16 inches in diameter. Dave came up with the idea to use a concrete form tube as the rocket body. Brilliant, it worked great in all the test shots. The heavy duty cardboard tube is light weight, strong, the perfect rocket body, unless it is raining.



The BFR (Big F... Rocket) team had been making rockets for two years, each one getting larger and larger. We tested motors, flight characteristics, and payload. Checking our flight data against our computer simulations. Making incremental changes after each flight.

We had completed a test flight of this size a month earlier. The payload was 50 pounds of flour. We knew we could do it. This time it would go up with a 55 pound shell at the top.

The nose cone, which was just for pictures, would be replaced by a 16-inch shell. Made from scratch by Kevin and Cheryl Mather. Consisting of an inner pistol of amazing sapphire blues stars surrounded by about 400 glitter stars each the size of a golf ball.



The first time I met Dave he was struggling with his wheelchair in the manufacturing area at Do-It. I said "come on over and help us build some rockets". We were just putting headers on the Vulcan motors we buy from Flying Phoenix. Dave pitched in. We had a great time! The Do-It weekend was over and we were saying our good byes when Dave said, "Maybe we can make bigger rockets???"

Dave drove the science of our rockets. He would test a new rocket motor on the load cell. With the data he would look at the thrust curve. From that he would extrapolate payload and

altitude of a multi motor rocket. As our rockets grew bigger and bigger he compared the actual flight observations against his calculations.

The team put in three hard days of work. Pressing 6 pound motors non-stop. A 6 pound motor is about 2 inches in diameter and 16 inches long. They were core burners with a pound of black powder packed in hard with a hydraulic press. The BP was made from scratch. We made 50. The rocket fins were made from plywood. Our fear was the shell, with a weight of 55 pounds would collapse the cardboard tube during the thrust phase. Its weight would be multiplied many times over. We added a second tube inside the first. We made top and bottom plywood bulkheads to support the motor thrust and carry the shell.

It was getting dark, the Saran Wrapped rocket was loaded onto the trailer, plus an easy up for shelter, and we headed out.

To get in the Guinness Book of World Records you must provide proof. The world's largest fireworks rocket was our goal. Each component was weighed then added up so we had the total weight. We made two sextants to measure the height of the flight via triangulation. We also had an on-board flight recorder. The \$80 unit was designed for model rockets, but it would give us the data we needed, if it survived. The size of a memory stick, it was embedded in one of the plywood fins. A glow stick was zip tied to each of the three fins. In retrospect we underestimated the power of that 16" shell.

Once at the site and sheltered under the easy up, we loaded the 48 motors in against the lower bulkhead. The process of fusing each one was tedious.

It seemed hopeless. The rain had not let up at all. If we pull the easy up aside and try to stand the rocket up for launch it will take 30 minutes. It would be soaked through by then,







the motors and the fusing will get wet and fail. Andy, who is a ham radio operator and part of the emergency amateur radio program, had an idea. He called NORAD. He knew what to say and how to get directed to the right person. He did, a super sweet gal. He told her what we were trying to do. She was happy to help, and decided to do us a favor. She had NORAD fire up the radar system. They did a sweep of the entire western United States. Good news! There is a break in the cloud cover headed your way. It will be there is 20 minutes and you will have a one-hour window of no rain.

The whole team was ecstatic. We went to work with renewed vigor. We just might pull this off!

20 minutes later the rain stopped.

The canopy was pulled aside. All of us, working together, struggled to get that 200 lb. rocket off the trailer and upright. We cleared the area.

I lit the fuse, shouted, "Fire in the hole" and ran.

The roar of the 48 motors shook the windows in Hawthorne, which was 5 miles away! On a 100-foot column of fire it shot skyward. It just started to tip over when the shell went off. Enormous, spectacular, colossal, just indescribable. The best 16 inch shell I had ever seen!

Seems our sextant operators had some difficulty following the rocket. They could not say for sure that they had a good reading at apogee. We needed to rely on the data recorder. We spread out to scour the debris field. Bits and pieces were spread over many acres of desert scrubland. Stumbling through the desert brush, in pitch dark, with flashlights. We found two of the fins. The blast had blown them clean off the rocket body, each had the glow stick still attached but just barely. We found the third glow stick, not attached to the fin. The fin with the data recorder could be anywhere. It was extremely difficult to find with flashlights. We were lucky. The fin had landed about 10 yards away. The cover we had screwed in place over the data recorder was nearly blown off. With cameras rolling we removed the rest of the cover. The recorder was still there, and the digital display was working. We carefully cycled the unit. All the data was there! We had flight time: 31.2 seconds, max thrust: 5.7 G, max speed 143 MPH, altitude 820 ft.!





Dave was a brilliant man. He got things done. He was generous, and had a witty sense of humor. He was the genius behind the BFR Boys. He did the calculations, studied the science of rocketry. Pushed us against impossible odds into new territory and achieved a Guinness Book world record.

Dave was called home August 18th.

I think he enjoyed the walk.

We will miss him.

Link to Guinness:

<http://www.guinnessworldrecords.com/world-records/largest-firework-rocket>

Published in the 2018 book, page 194

Link to the launch video.

<https://www.youtube.com/watch?v=c9l4SgMzLPE>

Link to Mineral County News obituary:

<http://mcindependentnews.com/2018/09/dave-charles-ferguson/>





## Mark Matt

To The Members of WPA,

My husband Mark passed away suddenly in an ATV accident on 9/11/2018.

My sons and I are heartbroken, as is all of our extended family.

Mark was a reserved man, but loved to have fun.

He was a respected business owner (USA RV and MARINE) here in Lake Havasu and a resident of this community since 1978, 40 years.

Mark LOVED fireworks, from the time he was a young boy. His father had a shooting range in their basement in Illinois and Mark began experimenting with gun powder at a young age.

Mark had been a member of USA for 22.5 years. We reside in Lake Havasu City, so this event meant a lot to him.

This year we plan to have a Memorial Show for him during Winter Blast.

[Editor's note: if you want to help with a memorial show, please keep an eye out on the mailing list.]

Thank You,  
Patti Matt and Family





# Do You like Things that go **BOOM** in the Night?

**THEN PYROTECHNICS GUILD INTERNATIONAL IS THE PLACE FOR YOU...**

The Pyrotechnics Guild International (PGI) is a non-profit fellowship of pyrotechnic enthusiasts founded in 1969, that is dedicated to the advancement of safety, skill, and artistry in Pyrotechnics through communication and education, and to the preservation of pyrotechnics throughout the World.

- Membership is open to all ages
- Members receive our Bulletin magazine 5 times a year
- The PGI Bulletin contains Guild news, technical article and stories of interest to pyrotechnic enthusiasts
- Our 2019 50th Anniversary Convention, in Gillette, Wyoming is a must do!
- Educational classes and display operator courses are available at Convention and throughout the year via regional clubs
- Our Display Operators course book and Anthologies of our best Bulletin articles are also available.



# PGI

PYROTECHNICS GUILD INTERNATIONAL

**For more information on membership, convention  
and fireworks, please visit our site at [pgi.org](http://pgi.org)**

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