



Ø-BEAT

Volume 65 Issue 08

August 2015

Activities/Meetings

- Ham Breakfast
Saturday, Aug
was at Omelets etc., on
8th street.

Sept will be at:
La Tartine,
1420 Kelly Johnson Blvd
Join us between
8:00-9:30 AM
All are warmly invited

- PPRAA Board Meeting
Mon, August 8th
IHOP
- PPRAA general member-
ship meeting, Wednes-
day, August 10th.
- 10 Meter/2 Meter net
Every Thursday 7:00 pm
28.390 MHz—USB
144.200 MHz-USB

Inside this issue:

| | |
|-----------------------|----|
| Officers | 2 |
| Online Resources | |
| Monthly Activities | |
| Meeting Topics | 3 |
| PPRAA picnic | |
| Area Hamfests | |
| Minutes: Board | 4 |
| COQP | |
| Minutes: Membership | 5 |
| Board of directors | |
| Resonance | 6 |
| Just a quick question | 7 |
| Licensing | 8 |
| Anna WØANT | 9 |
| PPRAA Scholarship | |
| Application | 10 |
| Scholarship | |

From the desk of our PPRAA President

The last seven months have been both exciting and busy. During this time we have gotten a place for the PPRAA club station at Ellicott Volunteer Fire District (EVFD) and have started putting up antennas. We have moved the trailer to the new site, purchased a new storage building and erected antennas. We have purchased a tower and received many tower associated items as donations. An additional donation was a VHF/UHF radio which will be used for event talk-in purposes as well as other simplex and repeater operations using the J-Pole the club has installed about 20 to 25 foot above ground level.

We have raised a 160 meter dipole. I was the first operator using the 160 meter dipole the club installed. The 160 meter setup worked great. During one of the work days, we marked places for towers and guy wires. We are planning on the holes for the tower and guy-lines to be dug in the near future.

Sometime this summer/fall we should have the first tower setup along with its associated antenna up and running. Next spring or summer we should have the other tower and antennas up

and running as well.

So far the club station has been used for special events, bar-b-ques, Field Day, and working parties. Even though the station is not 100% complete, we are getting good use of the resource. Some of the working parties were held on a weekday and, as expected the many that are not retired were unable to attend. We understand that some things cannot be attended by all. We will try to have more station related activities on the weekend so more that want to help can attend.

On 16 August we will have the annual PPRAA club picnic at the EVFD site. All members and their family members are invited to attend. It would be great for everyone attending to let someone on the board know how many will be in your party. That would help us to know how much to buy. Also, if you can, please bring a side dish to share. I am bringing myself, my wife, and three teenagers and we hope to see you there as well.

PPRAA President,

Raleigh n4hyf



PPRAA Officers and Board of Directors

PPRAA Board of Directors consists of four elected officers, seven board members, as well the past president (time limit dependent). The Ø-Beat editor is a board appointed position and is also a member of the board.

Officers include:

- ⇒ President
- ⇒ Vice-President
- ⇒ Secretary
- ⇒ Treasurer

To send board member's email, browse to the officers section of our website: <http://ppraa.org/about-ppraa/officers>

| | | |
|----------------|-----------------|--------|
| President | Raleigh Holcomb | N4HYF |
| Vide-President | Jim Bishop | KDØKQL |
| Secretary | Diana Nordstrom | KCØNPP |
| Treasurer | Pam Scott | WØPRS |
| Past President | Michael Derbort | KCØELG |
| Board Member | Dan Martin | KDØSMP |
| Board Member | Glenn Brodt | N3ULW |
| Board Member | Jim Rader | KDØNQM |
| Board Member | Charlie Coyner | KD6CBC |
| Board Member | Jim Harris | WØEM |
| Board Member | Virgil Yost | NØXRS |
| Board Member | Frank Roger | KB3PDT |
| Ø-Beat Editor | Dan Scott | WØRO |
| Webmaster | Doug Nielsen | N7LEM |

Online Resources

PPRAA Website

<http://ppraa.org>

The PPRAA website is the cornerstone for club related information, events, and technical information.

In addition you can register, pay dues, and submit donations. Donations to the PPRAA college scholarship fund are managed by FAR Scholarship Committee

Facebook / Google+

Follow activities as they unfold, or get reminders of upcoming events.

Links to both Facebook and Google+ social media sites can be found on the PPRAA.org.

Or from each social media site search on: Pikes Peak Radio Amateur Association

PPRAA Forums

The PPRAA forums are intended to allow users to exchange of ideas, ask and answer amateur radio related questions, and plan/discuss upcoming events.

This is a fantastic, but underutilized, tool. Check it out and register at: PPRAA.Forumotion.net

Monthly Activities

Membership Meeting

Held the 2nd Wednesday of the month starting at 7:00.

IHOP
5749 Stetson Hills Blvd
(Just west of Powers Blvd)

NOTE: Many show up at 6 pm for kibitzing and grub.

Board Meeting

IHOP
5749 Stetson Hills Blvd

6:30pm—8:00pm
On the Monday preceding the membership meeting.

Board Meetings are open to all members.

Ham Breakfast

Location changes monthly: Check ppraa.org or table of contents, page 1 for the breakfast meeting location.

10 Meter/2 Meter Net

Every Thursday at 7pm
Starts on 28.390 USB then transitions to 2 Meter SSB at 144.200 USB.



Meeting Presentation Topics

Last Meeting

Mike, W77T—Sand Dunes operation.

This Month's Meeting

John Bloodgood, KDØSFY will be speaking on a topic of his choice.

Next Meeting

TBD

PPRAA annual picnic

Something interesting about the PPRAA Annual Picnic, it is the only social event that is required by the PPRAA bylaws. This, of course, is not a bad thing because the annual picnic is always a great family event.

This year the picnic is Sunday August 16th from 10:00 AM until 3:00 PM.

The picnic will be at the PPRAA club station that is located at 72 N Ellicott Highway, Ellicott, Colorado. This is the address of the Ellicott volunteer fire station.

If you have not been to the PPRAA radio station it is easy to get to. First find your way to the intersection of highway 92 and 24 (just around 2 miles east of Powers). Travel East on Highway 92 for 16.5 miles than turn right on N. Ellicott Highway. Travel about 0.5 and turn left into the fire station. The picnic is behind the fire station.

The picnic is potluck. Please bring a salad, side dish, or a dessert. The club is providing burgers, brats, and drinks. Bring the family, bring chairs, bring your smiles!

PPRAA Annual Picnic Summary: Sunday August 16, 2015

- ◇ 1000-1500 MDT
- ◇ Food served: 12:30 PM
- ◇ Pot Luck (Bring a salad, side dish, or dessert)
- ◇ Club provides burgers, brats, drinks
- ◇ Club Station (72 N Ellicott Hwy) Ellicott, Colorado (See Field Day page for map)
- ◇ **Note: if using a GPS use the address "135 S Ellicott Hwy, Calhan, CO".**

We will also be having a tailgate swap-fest going on as well. Bring "stuff" to sell, look for "stuff" to buy.

Talk-in is 146.46.

Hope to see you there!



Area hamfests

◇ Denver Radio Club Hamfest

- Sunday August 16
- Golden, Colorado
- www.w0tx.org/

◇ Alamogordo Hamfest

- Saturday August 29,
- Alamogordo, NM
- www.qsl.net/k5lrw/hamfest.htm

◇ Boulder Amateur Radio Club BARCFest

- Sunday September 27
- Longmont, Colorado
- www.qsl.net/w0dk/barcfest_files/barcfest.html

◇ Socorro Hamfest

- Saturday October 3
- Socorro, New Mexico
- socorroara.org/hamfest.html



PPRAA Board Meeting Minutes—6 July 2015

PPRAA BOARD MEETING MINUTES
6 July 2015

Call To Order -18:37

Approval of the June Meeting Minutes -Pam motions to approve as published, Jim B. seconds, board approves.

Committee reports

Treasurer's Report -\$10,900

Grant committee-Dan M has begun talks with Peggy Littleton to get grant money. She recommended talking to the Mayor of Calhan, but due to political issues have to put this on hold. John Bloodgood recommends that maybe the club should attempt to pursue grants through ARES. Virgil states he and Peggy will be doing a visit to the club station on July 15th

Megafest 2015 -70 tables reserved. School is giving us 100, we have 50 to be rented. Do we need 50? Pam will cut the number of rentals down to 30. Setup is from 4-6 on Friday.

Zero Beat - Still need articles! Submit articles to zerobeat@ppraa.org with [ZeroBeat] in the subject and/or cc w0prs@me.com for guaranteed receipt

Tech Ed - Had 10 students sign up, ended the class with 8. Class tests at Megafest.

ARES - Bicycle Hill Climb, need at least 4 more volunteers on Aug 9. Need volunteers for the Pikes Peak Marathon and Ascent on

Aug 15 & 16. Visit the ARES website to sign up.

Field Day - Seemed to go well. Had several non-club members who visited and got on the air. Had a few kids on the air as well. Need to get the logs from Field Day. Please send the files to Mike A.

Around the Table

Jim B - visited Dick W0RAA, seems to be doing better. Looking for friends to visit. No longer has a driver's license to drive himself around.

Mike A. - Doug moves reimburse Mike for his expenses for his classes, Jim B seconds, board approves. Would like to propose the club put together a "mobile public view team," will research legality for proposed locations. Doug moves that the board buy the 2 general license books for Mike's classes, Dan M. seconds, board approves.

Virgil - The fire station requests we take care of the weeds near our equipment.

Email Motions -

July 17th - Dan M moves to pay \$300 for 5 Rohn tower sections and accept other equipment as a donation. Jim B seconds, the board approves

July 23rd - Pam S moves to reimburse Raleigh for truck rental and gas, \$339.92, Dan S. seconds, the board approves.

Next Board Meeting: August 10th, Location: IHOP

Adjourn - Diana motions to adjourn, Pam seconds, 20:01

Colorado QSO Party

The Colorado QSO Party is a PPRAA sponsored national and international event. Over the last few years this event has picked up quite few out of state followers. It needs more in-state participation though.

The event is labor day weekend which like any weekend is a great date or bad date for you. Time of operation is:

1300 UTC 5 September 2015 until 0400 UTC
6 September 2015
(7AM to 10PM MDT)

The goal of state QSO parties is to talk to as many counties within the state having the QSO party as you can coupled with as many contacts to that state as you can.

Participation is easy and fun, or it can be not-so-easy and fun. The level of difficulty is up to you. This means you can sit at home and make contacts (easy), Operate mobile (easy to hard depending on your mobile situation, portable in one or many counties.

For more information visit PPRAA.org/coqp

PPRAA General Meeting Minutes—10 June 2015

Call to Order – 18:57

Introductions

Silent Keys - none

Approval of the June Meeting Minutes - Pam moves to approve as published, Jim B seconds, accepted.

Committee reports

Treasurer's Report - \$10,900

Building Report - Two solar panels set up currently, going to set up 2 more. The board discussed raffling off some of the spare panels.

Club T-Shirts - Glenn brought up printing of club shirts, if you would like to order one, please send him an email.

Megafest 2015 - On the 11th! Setup is the 10th from 4m-6m. Currently sold 75 tables with 69 admissions.

Field Day - Big turnout, made lots of contacts, had several non-hams get on the air. Did run off batteries and solar power some of the time. Had two CW stations. Did conduct a minor fox hunt.

Zero Beat - Need more articles! Please send them to zerobeat@ppraa.org as often as you wish. Include [ZeroBeat] in the subject and/or cc: w0prs@me.com to guarantee receipt.

Tech Ed - Mike A has several Extra and General students and a few hands on students.

CSVHFS Conference - 23-26 July at the Denver Marriott in Westminster. Check the club website for more information.

HamCon 2016 - Will be in Keystone on May 13-15. Will need to buy convention meals ahead of time.

HamCon Utah 2015 - Bryce Canyon, UT

31 Jul-2 Aug
ARES - PPIHC was a

success. Summer

Roundup Trail Run on 12th, Bicycle Hill Climb on the Aug 9th, need min of 4 more volunteers, Pikes Peak Marathon and Ascent on 15&16th Aug, need 22 and 20 for both of those. Need 25 for Tour De Cure in Sept.

HR-1301 - US House of Rep version of CO 5315 -041. Do not have our local rep (Lamborn) co-signing it yet. Please contact ARRL to send a letter to your local rep.

Senate Bill 1685- A similar bill to HR-1301 has been introduced into the Senate. Visit the ARRL's website to send a letter to your Senator.

Scholarship Fund - Need donations! Currently at about \$100 out of \$1000

Club picnic - August 16th at Ellicott Fire Department, 75 N Ellicott Hwy. Please bring side dishes, club will provide meats, condiments and drinks.

10m Net - 28.390 USB at 7pm on Thursdays.

Next Meeting: Aug 12th, Location: IHOP

Adjourn - Doug moves to adjourn, 19:44



Officer's of the board of directors

When the October meeting rolls along, it will be bringing our annual election of the board of directors with it.

Criteria for running for a seat on the board are not overly stringent. You must be a full member of PPRAA. Therefore, if you are a paid member, you are eligible to run.

The board of directors does a lot of activities, not only keeping the club activities humming along. The board members also seem to be active in all the

events including working on the club station, active in ARES activities, and attend the monthly general membership meetings.

If you would like to fill one of the 2-year positions please get in touch with the PPRAA secretary at secretary@PPRAA.org.

The web master and ØBeat editor are the only appointed positions. If you would like to be involved with either of these, please inform the club secretary as well.



ISOTRON 6 Meters anyone

"I have been publishing this technical article since January of 2013. For the past 35 years I have manufactured the Isotron Antennas. This also involved helping many with their very difficult installations. Some of the information will be from what we learned solve these problems. Some information will be right from a text book or credible article.

You are welcome to contact me at: wd0eja@isotronantennas.com with question you may have.

RESONANCE - SERIES AND PARALLEL

I have been publishing this technical article since January of 2013. For the past 35 years I have manufactured the Isotron Antennas. This also involved helping many with their very difficult installations. Some of the information will be from what we learned solve these problems. Some information will be right from a text book or credible article.

You are welcome to contact me at wd0eja@isotronantennas.com with question you may have.

Our radios are packed full of resonant circuits of both kinds. Our antennas are resonant circuits of both kinds. To understand a few basic characteristics of these circuits will give us a good understanding of how our stations work.

RESONANCE IN SERIES CIRCUIT

Consider a resistor, capacitor and inductor (coil of wire) connected in series with a source of alternating current (RF). One side of the AC source is at the inductor (L), the other side at the resistor (R) and the capacitor (C) in the middle. The frequency can be varied over a wide range.

At some low frequency, the capacitive reactance XC (resistance of the capacitor) will be much greater than the resistance R. R normally is low because it is mainly the resistance of the wires in the circuit. The inductive reactance XL, will be low compared to the XC. On the other hand, at some high frequency XC will be very low

and XL will be very high. R stays the same. Either extreme the current will be low (little power consumption), due to the net reactance being high.

At some intermediate frequency, the XC and XL will equal and the voltage drops across the coil and capacitor will be equal and 180 degrees out of phase. Therefore, they cancel each other completely and current flow is determined wholly by R which is normally very low. At that frequency the current has its largest possible value. This means that power consumption is at maximum. At this point where $XC=XL$ is said to be resonant.

Most antennas react as a Series Resonant Circuit. Therefore, you want to cancel the reactances (XC and XL) to resonate the antenna. This commonly applies to most varieties of dipoles, verticals and the Isotron (had to throw that in).

The 2 values, XC and XL, are good to know to understand our antenna systems. If your antenna is in a tight location, or is not as straight as it should be, one or both of the reactances will change. This means the antenna will not tune like it should. Can it be fixed?

Yes, quite easily. You will need to know the 2 values, XC and XL of the antenna. Without coax, you can use most analyzers at the antenna to get this reading. With coax connected, you can use a Noise Bridge at the

antenna to find these values. Once you know, it is a simple matter of adding or reducing the value of one of the reactances to make it equal at the frequency you want. Lengthen the antenna to increase XL and lower XC or shorten the antenna and lower XL and increase XC. Or, you can add the component (capacitor or coil) to the circuit or antenna to equalize the reactance.

Knowing these values can allow you to get an antenna to work in tight and restrictive locations. Much of this compensation can be done at the radio. This is basically what a tuner is doing. Keep in mind that most of the correct values should be at the antenna. The Tuner can be used to make a reasonable adjustment. You can also add the values needed at the antenna if you know what they are.

Next article will be on the parallel configuration.

73,
Ralph WDØEJA

July 2015

Pease forward this article to those you feel would be interested.

*Bilal Compay
137 Manchester Dr.
Florissant, CO 80816*

PH/FX: 719/687-0650
wd0eja@isotronantennas.com

“Just a quick question...”

By Dan Romanchik, KB6NU

A reader recently e-mailed me: “Just a quick question – Are you still in the thinking stage about getting an Elecraft K3? Great rigs, aren’t they?”

“What I would like you to think about, though, is how many contacts you log in one year’s time. If you log 100 per year (check your log) then your cost will be \$50 per contact for that year. If you log 500, then your cost will be \$10 per contact. If you keep that rig for three years, and log 500 contacts over that time, then you will have spent \$10 per contact.

“Now, consider what that rig will be worth in three years. Will there be something come along that just blows the K3 away in terms of performance?”

I replied:

“K3s are great radios. I’ve just purchased a used KX3, though, so I am not planning on getting a K3 in the near future. I have purchased a 50-W HobbyPCB amp to use with the KX3, so I’m not going full QRP.

“I make a lot of QSOs/year. My average over the last 13 years is more than three per day, and that doesn’t include contacts made with other call signs, such as the club station, or on Field Day. I’m sure that my cost/QSO will be low enough to justify my investment. :)”

“In addition, rigs seem to keep their value pretty well. I’d guess that you can sell a three-year-old K3 for at least 80% of what you paid for it. I think that one of the reasons that an Elecraft K3 is worth the investment is

that Elecraft provides such good customer support, and that they are continually improving their radios. For example, they just came out with a new synthesizer board, with better RF specs, for the K3.

“I don’t see anyone coming out with a radio that blows the K3 away in terms of performance in the near future, although I might be wrong. FlexRadio has perhaps the best chance of doing that, but you’ll have to buy into the Flex user interface philosophy to take advantage of that. I think that Elecraft and Flex, plus the three Japanese manufacturers, will make incremental performance improvements over the coming years, leapfrogging one another as they bring out new models.

“One thing to think about is how much performance is overkill? Just like you can now buy a computer that has way more computer power than the average user will ever need, I think that most of these high-end radios offer way more performance than the average ham will ever need. It’s cool to look at the Sherwood Engineering receiver tests and see that your rig is in the top ten, but will the average ham actually notice the difference? My guess is probably not.

“Thanks for sparking my thought process on these issues.”

My guess is that most amateur radio operators don’t think about what the rig will be worth in three years when buying an HF transceiver. Instead, they’re looking at what the radios that are currently available cost, and when there’s a big price difference between

two models that appeal to them, they’re trying to figure out if the higher price is warranted. In many cases, the lower-priced model wins out. It’s not because the more expensive radio isn’t better, but it’s not that much better.

It all goes back to how much performance you actually need. Yes, you can probably do more with a \$10,000 radio than you can with a \$1,500 radio, but is it really worth the added expense? In other words, are you going to have more fun with a \$10,000 radio than you are with a \$1,500 radio?

Let me know what you think.

E-mail me at:

cwgeek@kb6nu.com.

When he’s not agonizing over what radio to buy, Dan operates CW on 30m and blogs about amateur radio at:

www.kb6nu.com

He’s the author of the “No Nonsense” amateur radio license study guides and the CW Geek’s Guide to Having Fun with Morse Code.



VE Testing & Education—Colorado Springs (PPRAA)

Pikes Peak Radio Amateur Association (PPRAA)
 When:
 Feb, Apr, Jun, Aug, Oct, Dec
 2nd Saturday at 9 AM
 Location:
 Colorado Technical University (CTU)
 4435 North Chestnut
 Colorado Springs, CO 80907

Directions available at:
ppraa.org/ve-testing
 or contact:
 Dan Martin
 VE@PPRAA.org

Mike Anderson, WV7T does personal and small group training for all license classes.
 Mike also does Morse code training.

Mike can be reached at:
 719-229-8610
wv7t@aol.com



VE Testing Woodland Park (MARC)

MOUNTAIN AMATEUR RADIO CLUB (MARC)
 When:
 Jan, Mar, May, Jul, Sep, Nov
 1st Saturday at 10 AM

Location:
 Woodland Park
 Woodland Park Library-Community Meeting RM
 218 East Midland Avenue

Directions:
<http://www.nx0g.org/ve.html>
 or contact
 Wes Wilson (KØHBZ)
k0hbz@arrl.net
 Call (719) 687-8758



Applicants will need the following items:

1. A valid PHOTO ID, driver's license preferred (if you do not have a valid photo ID, please call for alternative identification requirements).
 2. Your FRN or SOCIAL SECURITY NUMBER (now required - this includes children).
 3. Your CURRENT ORIGINAL amateur radio license (if any) and a PHOTOCOPY for the VE Team to keep.
 4. The CURRENT ORIGINAL CSCEs you have and a PHOTOCOPY for the VE Team to keep.
 5. Cash, Check or Money Order for \$15 (standard ARRL VE Fee). Checks and money orders should be made out to ARRL. This covers all exams you wish to take at this VE session.
- Teams, is to not allow same day retests on failed exams.*
- PPRAA – Colorado Springs testing only:**
 Anyone passing their Technician Class examination at a PPRAA test session will receive a free year's membership to the Pikes Peak Radio Amateur Association
- NOTE: PPRAA and MARC VE Team policy, as with many VE**

WØANT makes a clean sweep

Anna Veal from Littleton, Colorado is no stranger to PPRAA. Anna, has been PPRAA member, and has presented several times at our monthly meeting over the last 5 years.



Now fourteen-year-old Anna has added to her already impressive amateur radio resume by being named the winner of both the 2015 Newsline Young Ham of the Year award and ARRL's Hiram Percy Maxim award.

Anna's parents are both amateur radio operators. She earned her technician class license 8 years of age and quickly advanced to General.

She started a ham radio club, "Rabbit Ears", in her elementary school. Anna is now the president of her high school amateur radio club.

In addition to presenting at PPRAA and other Colorado clubs, Anna has been a present-



er at the Radio Club of America youth forum. One of the presentations at PPRAA was about her adventures at part of the the T15 Youth DX Adventure program in Costa Rica.

As Newsline Young Ham of the Year, Anna will receive radio equipment from corporate sponsors Yaesu, Heil Sound and RadioWavz, as well as a week at Space Camp, courtesy of CQ.

The \$1500 ARRL's Maxim award recognizes young peo-

ple who provide leadership in amateur radio. Anna exemplifies leadership.

WØANT is scheduled to receive the Young Ham of the Year award at the Huntsville Hamfest in August.



You can listen to an interview with Anna on internet radio "[100 Watts and a Wire](http://100wattsandawire.com/100-watts-and-a-wire/2015/8/3/the-next-generation-anna-veal-w0ant-1)"

(<http://100wattsandawire.com/100-watts-and-a-wire/2015/8/3/the-next-generation-anna-veal-w0ant-1>)

Be warned there is a lot of talking before the interview with Anna.

Congratulations Anna!!



WØANT

2015 recipient:

Newsline Young Ham of the Year

ARRL's Hiram Percy Maxim

PPRAA Scholarship Fund

The PPRAA scholarship was established with the vision that it would be a deserving young ham that keeps on giving. However, that can be realized if the scholarship continues to be funded year after year. Individual hams, clubs, and organizations, are kindly asked to consider supporting the scholarship's future and its great cause through a tax-deductible contribution, even if just a few

dollars. Contributions may be made via the PPRAA website (<http://ppraa.org>) as part of the membership renewal, or at club meetings and event.

The scholarship fund can be reached at:

FAR Scholarship Committee
P.O. Box 911
Columbia, MD 21044

The PPRAA is a not-for-profit 501c3 organization. As a benefit, all contributions will be acknowledged with a tax receipt letter and are deductible to the full extent of the law.

**PIKES PEAK RADIO
AMATEUR
ASSOCIATION**

Send membership application to:

Pikes Peak Radio Amateur
Association, Inc.
P.O. Box 16521
Colorado Springs, CO 80935

General Questions:
ppraa@ppraa.org

ØBeat:
zerobeat@ppraa.org



ppraa.org

Get Radio Active, get on the air!

Membership Application:

Date: ___ / ___ / ___ New Membership: Yes / No

Name: _____

Address: _____

City/State/Zip: _____

Call: _____ Class: ___ Phone # (____) _____

Email: _____

Are you a ARRL member: Yes / No

Additional Family Members:

Name 1: _____ Call: _____ Class: ___ ARRL Member: Yes / No

Name 2: _____ Call: _____ Class: ___ ARRL Member: Yes / No

Name 3: _____ Call: _____ Class: ___ ARRL Member: Yes / No

___ \$15.00 Full Member

___ \$10.00 Full Member over 65

___ \$18.00 Family Membership

___ \$12.00 Family Membership over 65

\$ ___ Membership Amount

\$ ___ Scholarship Fund Donation

\$ ___ PPRAA General Fund Donation

\$ ___ Total

2015 Scholarship Fund

This last year the donations to PPRAA Scholarship Fund have been slipping.

The scholarship is for a hard science or math related field of study. Those fields of study are, or are similar to, Physics, Chemistry, Math, Electrical Engineering, Bio Engineering, ..etc.

There are many ways to make your tax deductible donation to this fund. Contributions may be made via:

⇒ [PPRAA website \(http://ppraa.org\)](http://ppraa.org)

⇒ Part of your membership renewal,

⇒ Club meetings and event.

⇒ Directly to the fund at:
FAR Scholarship Committee
P.O. Box 911
Columbia, MD 21044

**Make checks to:
PPRAA Scholarship**

Ø- Beat Banner

Photo by Dan—WØRO.

This photograph was taken May 27th 2015.

The theme of the banner is Pikes Peak. If you would like to submit pictures for the Ø-Beat banner, please send them to:
zerobeat@ppraa.org

Please Include "[Ø-beat]" as part of the subject line.