MARC
Mid-Atlantic Amateur Radio Club
www.marc-radio.org
P.O BOX 557
EAGLEVILLE, PA
19408

REMARCS

Next Club Meeting: March 22, 2016 at 7:30 PM **MARCH/APRIL 2016**

Letter from the MARC President

This year we will celebrate the 40th anniversary of MARC. On November 17, 1976, the first Board meeting of what was then known as the Keystone ARC, took place to turn the users of the '06 repeater into an Amateur Radio club. The first club meeting took place on December 10, 1976. In early 1977 the club name was changed to the Mid-Atlantic Radio Club since there already was a Keystone ARC in the Philadelphia area. A lot has changed since then and I'm proud to me a member of our vibrant club. At our recent Board meeting there was a discussion about how best to celebrate this milestone. Several members suggested combining the event with our traditional holiday party. Please let me know your thought about how best to mark this success.

On a sad note, we mark the passing of long time club member Paul Tabatschkow (N3UD). Paul became a Silent Key on January 11. We will miss him and we all wish the best to his widow Lynette Evans (W3GZZ), also a member of MARC.

MARC will again be participating in several public service events this year. MARC will be providing communication services at the Penn Wynne 5k Run in Wynnewood on Saturday, April 2nd and at the Walk MS event at the East Goshen Park in West Chester on Sunday, May 1st. If you have never volunteered at these events, I encourage you to do so – it's easy, very rewarding, good camaraderie with fellow club members and there are donuts! If you can help, please contact our public service chair Bob Palin (N3JIZ) at 610-420-1535 or sign up at a club meeting.

We have some great presentations coming up at future club meetings – please see the calendar on our web site for details. Also, don't forget our regular Saturday breakfast meetings – the second Saturday of each month at the Country Squire Diner in Broomall.

73/Steve Werner – KD3WK
MARC President

VOX

Have you paid your 2016 MARC dues yet? If not, this could be the last issue of REMARCS that you will receive and that would be a shame! You can pay your dues at any club meeting or send a check to: MARC, P.O. Box 557, Eagleville, PA 19408. MARC dues are $15 for a Full Member who is a licensed amateur radio operator, $5 for an unlicensed individual as an Associate Member and $5 for a family member of a Full Member who is also licensed.

The background used on the masthead of this issue of REMARCS, is a photo of aurora as seen from the International Space Station. See pages 9-10 to learn how aurora affects radio propagation. You can see a video of aurora, as seen from the International Space Station at: https://youtu.be/aVqlmaz-xu8

Congratulations to former MARC member, Kay Craigie, N3KN! After serving three 2 year terms as ARRL President, Kay stepped aside earlier this year and The ARRL elected her successor, Rick Roderick, K5UR.Kay was first licensed in 1983 and she previously served as ARRL Section Manager for Eastern Pennsylvania, Atlantic Division Vice Director and Director, and ARRL First Vice President. As President, she presided during the League's Centennial and transition into its second century. Kay and her husband Carter, N3AO, were both very involved with MARC in the 80's and 90's. They are both former college instructors and now reside in Blacksburg, VA. They have many friends in our club and we wish them both the best!

A Gofundme site has been established to help pay for anti-seizure medication for Nick, UX0ZZ. See page 5 for complete details.

If any MARC members are planning to go to any Delaware Valley hamfests between now and July 9th, and you would be willing to distribute some of our hamfest flyers, please contact Mike, KF3CD at kf3cd@arrl.net

INSIDE THIS ISSUE OF REMARCS:

MARC REPEATERS

Did you know that MARC operates SEVEN repeaters, providing wide area coverage of southeastern Pennsylvania, southern New Jersey and northern Delaware?

The 147.06 repeater is located at the site of the commercial radio tower in Newtown Square. The 145.13 and the 445.675 repeaters are located at Paoli Hospital. The 224.42 repeater is at Bryn Mawr Hospital and is not linked and operates as a stand-alone system. The 147.36 repeater, the 224.5 repeater and the 444.050 repeater are located at Mercy Fitzgerald Hospital in Darby, PA.

The 145.13 and the 147.06 repeaters are linked with a dedicated bi-directional UHF radio path and have complementary antenna patterns that extend the reliable coverage area. The 145.13 repeater has a cardioid pattern directed from Paoli through King of Prussia and Norristown and covering Phoenixville, Royersford, Ambler, Willow Grove, Conshohocken and Radnor, PA.

The 147.06 repeater covers Philadelphia, Southern New Jersey, Delaware and eastern Pennsylvania. The 145.13 and 147.06 repeaters are also linked to the 445.675 repeater at Paoli. Together, they provide an impressive wide area of coverage.

The 147.36, 224.50 MHz and 444.050 repeaters are also linked and can operate on the emergency generator power system of Mercy Fitzgerald Hospital. They nicely complement the coverage of the other MARC repeater systems, extending north to the Bucks, Burlington and Mercer County and also Philadelphia and Southern New Jersey and Delaware. MARC's Darby repeaters use three Super Station Master antennas mounted on a 50 foot tower on an 11 story building.

The MARC repeater systems are open to all Amateur Radio operators.

MARC's "Drive Home" Net is held every Wednesday at 4:30 PM on our 147.06/+ and 145.13/- linked repeaters. Even if you are not on your drive home, stop by and check into this fun net! A big thank you to our Net Control Op's, Todd Tew, K1TEW and Miguel Ramirez, KC2HMG for organizing and maintaining this new Net!

MARC Info

wb3joe@marc-radio.org
http://www.marc-radio.org

MEMBERSHIP MEETINGS:

4th Tuesdays of the month at 7:30 PM (Doors open at 7:00 PM) at The Newtown Public Library, 201 Bishop Hollow Rd. in Newtown Square.

BOARD MEETINGS:
2nd Tuesdays of even months, 7:00 PM
Paoli Hospital, Willistown Meeting Room, Paoli, PA.
Members may attend as observers.

WB3JOE REPEATERS:
(CTCSS or PL = 131.8 hz)
145.130 - / 147.060 + / 147.360 + /224.420 - / 224.5 - /445.675 - /444.050 -
The 145.13 and 147.06 2-meter repeaters are linked. The 147.36 MHz, the 224.50 MHz and the 444.050 MHz repeaters are linked.

WEBMASTER:
Dennis Silage K3DS
k3ds@marc-radio.org
610-353-4829

2-METER NETS:
Club Net, Wednesdays, 8:30 PM

These nets occur on linked 145.13 - / 147.06 + Repeaters

NET MANAGER: Open

NET CONTROL OPS:
Miguel Ramirez, KC2HMG and Todd Tew, K1TEW

DUES:
$15 Full (licensed Amateurs)
$5 Associate (unlicensed persons)
Family rate $5/ham - after first member pays full dues

NEWSLETTER:

The REMARCS editor is Mike, KF3CD. Do you have something to contribute to REMARCS? Please let Mike know by sending an e-mail to kf3cd@arrl.net.

SATURDAY, MARCH 12 @ 9 AM
Breakfast Meeting at Country Squire Diner in Broomall

TUESDAY, MARCH 22 @ 7:30 PM
Club Meeting
Lightning & Grounding, Ron Block, N2RB

SATURDAY, APRIL 2
Penn Wynne 5K Run in Wynnewood

SATURDAY, APRIL 9 @ 9 AM
Breakfast Meeting at Country Squire Diner in Broomall

TUESDAY, APRIL 12 @ 7 PM
MARC Board Meeting

TUESDAY APRIL 26 @ 7:30 PM
Club Meeting- "Junque"Auction

SUNDAY, MAY 1
Walk MS, East Goshen Park

MONDAY, MAY 30
Radnor Memorial Day Parade

SATURDAY, JUNE 25 AND SUNDAY, JUNE 26
Field Day

FRIDAY, JULY 8 @ 5 PM
Hamfest Setup

SATURDAY, JULY 9, 2016
Hamfest

THURS. JULY 28, FRI. JULY 29 & SAT. JULY 30
Kimberton Fair

MARC's annual "Junque Auction" at our April meeting is always lots of fun! Our multi-talented auctioneer, Dr. Dennis Silage, K3DS promises that if you bring something you want to get rid of, you won't go home with it, even if he has to give it away! And if you come with a few dollars in your pocket, you are very likely to leave with some new treasures, at rock bottom bargain prices! So start cleaning out your old boxes of unused gear, electronics, radio and computer related parts, gadgets and gizmos and bring them to the April meeting to sell! The rules of the auction are:

1. **All items are to be sold as is and any disputes are to be resolved between the seller and buyer. MARC assumes no responsibility for the transaction.**

2. **The auction sell price is to be paid directly by the buyer to the seller.**

3. **The seller donates 10% of the sale price to a maximum of $10 to MARC. The amount is to be paid to the Treasurer.**

4. **The direction of the auctioneer is final and all sellers and buyers agree to this.**

MARC Board of Directors
2016 – 2017

PRESIDENT
Steven Werner KD3WK
kd3wk@marc-radio.org 610-574-6836

VICE PRESIDENT
Jeremy Carlo N2ZLQ
n2zlq@marc-radio.org 917-612-2163

SECRETARY
Michael Lebrun N3OMR
n3omr@marc-adio.org 610-325-7916

TREASURER
Lou Ruh WX3I
wx3i@marc-radio.org 610-630-9146

PUBLIC SERVICE
Bob Palin N3JIZ
n3jiz@marc-radio.org 610-687-4587

TECHNICAL SERVICE
Dennis Silage K3DS
k3ds@marc-radio.org 610-353-4829

MEMBERSHIP SERVICES CHAIRMAN
Chris Ruhl N3GBJ
n3gbj@marc-radio.org 484-494-7572

PUBLIC RELATIONS CHAIRMAN
Jim Biddle W3DCL
w3dcl@marc-radio.org 610-353-0880

PROGRAM CHAIRMAN
Richard Russo KB3VZL
kb3vzl@marc-radio.org 610-539-2999

MEMBERS-AT-LARGE
To 9/30/2016 -Doug Wilkens NE3U
ne3u@marc-radio.org 610-692-6819

To 9/30/2015 -Jim Smith K3RTU
k3rtu@marc-radio.org 610-494-5897

CALLSIGN TRUSTEES
WB3JOE- Dennis Silage K3DS
k3ds@marc-radio.org 610-353-4829
W3NWA- Dieter Hauer K3DK
k3dk@marc-radio.org 610-489-1920

MARC BOARD MEETING - February 9, 2016

Officers present: Steve KD3WK, Doug NE3U, Jeremy N2ZLQ, Michael N3OMR, Bob N3JIZ. A quorum was not present and no votes were take on any decisions. Meeting started at 7:00 PM

1) Approval of minutes of December 12, 2015 Board Meeting

2) Treasurer's Annual Report

a. Current account balance – not available

b. Paid membership status – 51 members paid to date

3) Upcoming General Meeting Programs – change only as noted

a. Schedule for 2016

i. February 23 – Mary Hobart (K1MMH) – ARRL HQ

ii. March 22 – Rob Block (NR2B) – Lightening & Grounding

iii. April 26 – Auction – library not available, change of venue needed

iv. May 24 – Hark Humphrey (K3XY) – APRS

v. June – No Meeting

vi. July 26 Lynette Evans (W3GZZ) – Storm Chasing

vii. August – To be determine

viii. September Gorge Riveria – Oscilloscopes

ix. October – Rich (KB3VZL) Home Brew

x. November – Elections – Need presentation

4) Old Business – completed at December meeting of the Board

a. Acceptance of revised Membership Application Form

b. Loaner Equipment Status

i. Add new equipment At this point, based on member demand, the Board does not contemplate adding additional equipment to our inventory.

ii. Training Best efforts will be made to ensure that members who borrow equipment are properly trained.

c. Elmer Program – did not gain traction, continue We will continue to address the needs of members but no changes in the Elmer program are contemplated.

5) New Business

a. Paul Tabatschkow(N3UD) SK – It was suggestd that we offer assistance to Paul's widow (Lynette Evans, a MARC member) with regard to the disposition of Paul's equipment

b. 40th Anniversary of MARC – how to recognize – investigate possibility of combining an event with the holiday party, possibly invite Craig and Kate Craigie as guests/speakers, possibility of making party in the evening instead of afternoon

c. April Meeting - library not available,

i. Cancel meeting or Edgemont Firehouse (1010 Gradyville Road) - option for the Edgmont Fire Co building being investigated through Jim Biddle

d. Nick Fund – funding needed

i. Balance $91.23

ii. Required $200? – funded by Mike KF3CD, he is trying to recoup with crowdfunding, no decision on funding by club

e. Hamfest – Mike KF3CD will need all the help he can get

i. Date for 2016 – July 9

ii. strategy for future events

1. Better advertising? Discussion: university students, rag sheets, etc…

2. Change in ticket prices? – no decision, discussion only on pros/cons of increasing ticket prices for tables and admission

6) 2016 Board Meeting Schedule

a. Need to confirm Paoli Hospital availability

b. April 12

c. June 14

d. August 8

e. October 11

f. December – prior to Holiday Party

If you have been a MARC member for 20 years or more, you are probably familiar with my project to help my friend Nick Bortnik, UX0ZZ, who lives in rural Ukraine. For those of you that might not know the story, the following is a recap of this long and complicated story.

While routinely working DX in the early 1990's, I had a QSO with Nick, who was at the time UB5ZND. We had a customary DX exchange but something clicked and we quickly discovered we had a lot in common. In the following weeks and months, it seemed that the propagation Gods were smiling upon us because we ran in to each other on the radio very often. We had many great QSO's and we exchanged letters and photos in the mail and became good friends.

In 1994, Nick started experiencing Grand Mal seizures that would knock him unconscious with loss of memory, sometimes for days at a time. He wrote me a long letter with all the details, stating that doctors could not help him, they did not know what was wrong with him and he feared he could die. Grand Mal seizures can cause brain damage or be fatal.

I felt helpless but I was determined to try to somehow help my friend. The MARC Board pledged to help me with my effort, giving my confidence a boost. Surprisingly, in May of 1995, I was able to obtain a commitment for free medical treatment, from a suburban hospital. I thought that would be the hard part but little did I know that much larger obstacles lay ahead.

Throughout 1995 and in to 1996, Nick's health deteriorated and the grand mal seizures continued to happen. We had all of the required and proper documentation in place to get him here, along with "letters of medical necessity" from doctors on both sides. All Nick had to do was to get a Visa from The US Embassy in Kiev. But despite numerous appearances and applications for a Visa throughout the year, he was repeatedly denied a Visa. He traveled several times for many hours by train, while sick, to wait in line at The Embassy, only to be denied a Visa again and again. We were both very discouraged and ready to give up. That's when the media started to help us.

MARC member Bob Josuweit, WA3PZO, wrote and sent out a news release and the story was picked up by World Radio Magazine and then by a local newspaper. Other newspapers picked up on the story and the story was published in The Philadelphia Sunday Inquirer. I never expected such media attention, it was great publicity for ham radio's spirit of international friendship and goodwill. Shortly after the newspaper blitz, the FOX 29 TV News called and came to my shack to interview me and our story was on the evening news. Around the same time, we had enlisted the help of Congressman Jon Fox, who also spoke about our dilemma on the news. It now looked like the US Embassy was preventing an international act of goodwill from happening.

Not knowing what else to do, I took original hard copies of each magazine and newspaper story and sent them via FedEx to the Consul General at The US Embassy in Kiev. I included a cover letter briefly detailing the situation and the disappointment of many people. Within days, Nick received a "letter of invitation" to reappear at The Embassy. He wrote me, fearful that he was not well enough to make the trip again, only to again be denied a Visa. I urged him to go and sent him money for travel expenses and this time it was different. They handed him a Visa, no questions asked!

A seriously ill Nick arrived at JFK Airport in June of 1996. I was there to pick him up, along with Bob, WA3PZO, Paul, WB3CEZ and my cousin Mark. The very next morning he was seen by a team of Neurologists, including former MARC member, Dr. Gene Hoenig N3HG, a retired Neuropathologist, who provided us with lots of support and assistance. Nick speaks relatively good English (self-taught on ham radio) but the hospital even provided a translator, free of charge, so that nothing would be missed. They quickly determined that Nick had epilepsy, which was the result of a head injury he received as a teenager.

Nick immediately began taking an anti-seizure medication and I am happy to report that he has been seizure free for 20 years. I ship the medication to him once a year and have always been able to obtain it at cost, from a generous local pharmacist that happens to be a ham radio operator. It's a common medication in the US that is not readily available in Ukraine and it has always been very reasonably priced, about $100 a year. Years ago, MARC established "The Nick Fund" to help pay for his medication but in recent years, I have been paying for it myself and not asked for any donations.

The Neurologist that originally diagnosed and treated Nick in 1996, continues to remain proactively involved in Nick's case and is very supportive. Last month, I asked him to refill Nick's prescription for the year because he will be out of medication soon. We were both shocked to discover that the wholesale cost for a one year supply of this medication is now over $600! After investigating many alternate options and sources, the doctor recommended we try a mail order pharmacy in Israel. Their cost was $220 for a 1 year supply vs. over $600 here in the U.S. so we placed the order and Nick's medication is on its way to him.

Because of the unexpected increase in the cost of Nick's medication, I decided to start a Go Fund Me page. If you would like to contribute a few dollars to help pay for Nick's medication, you can visit the link below or simply hand a donation to the MARC Treasurer, Lou Ruh WX3I, at any MARC meeting.

The Gofundme page for Nick is at: https://www.gofundme.com/jqrhcfpw

Two of the articles that appeared in the Philadelphia Inquirer can be found here:

http://articles.philly.com/1995-10-08/news/25694707_1_mike-pilotti-ham-radio-western-hospitals

http://articles.philly.com/1996-07-14/news/25621297_1_ham-radio-operator-michael-pilotti-seizures

73 de Mike, KF3CD

How I Became a Ham
by Chris Ruhl, N3GBJ

The official date of my first license is July 15, 1986. I was an electronics guy by trade and, in my early 20's, started working in a place in that capacity and, after some time, attracted the attention of a ham who was not employed in any sort of electronic capacity but with whom I interacted on a daily basis. I had previously been employed by the Franklin Institute in the education department and was thus at least somewhat familiar with ham radio up close. I had no desire to acquire a ham license even with my experiences and electronic background.

My ham co-worker was very proficient CW operator who worked that mode most often and was fortunate to live in a rural area that afforded him a nice tower with beams and rotators and thus had accomplished DXCC many times over. He was very much interested in and I must say persistent in, talking me into obtaining a license. I finally gave in after much friendly persuasion, if nothing else to relieve myself of his good-matured persistence which I gathered was rooted deeply in his love for radio in general and CW in particular and he naturally wanted everybody to experience his great satisfaction in the hobby. It was suggested that I had sufficient technical knowledge to easily get a Novice ticket and only needed to become familiar with the FCC regulations and such. The only real effort would require learning Morse Code and for that I obtained a code course from the ARRL. I inquired as to the examination process, out of curiosity if nothing else, and was informed that it could be done at work on a lunch break as this individual was apparently a volunteer examiner and only one signature was required for a Novice ticket.

I chewed on the material for a bit and he kept inquiring as to my code progress, which was dismal at best. I managed to acquire every imaginable bad and destructive habit which one could possibly acquire when it came to learning code. Thus, I resisted his frequent desire to give me the Novice exam. My coworker finally decided it was best to simply get me on the air at any cost with the idea that I would pick up ground at that point. The written element test was easy and I never did know my exact score. For code test, my coworker picked up a newspaper and began rattling off a news story using verbalized code, which I entirely failed.

No matter, I was passed and became KA3PWV, though it wasn't possible for me to make use of my ill-received privileges as I lived in a basement apartment with no way of employing any possible HF antenna. I had obtained a Kenwood TS-520 but it wasn't of much use with no antenna. The only reason why I simply didn't abandon the license, as I really didn't want the license anyway, was because my work assignment changed and I encountered another enthusiastic ham who was not into CW but rather into the world of a thing called "repeaters" on VHF. I saw some workable possibilities open up at this point. I then spent time getting the Technician license and in March of 1988, I joined the world of repeaters with call sign N3GBJ and spent my entire time on there until around 1994 or so. I did manage to have some HF success when I moved to better quarters and could make use of the 10 meter SSB portion granted to Technicians but, living near a hospital, the noise was a challenge. In fact, as history shows, excessive noise likes to follow me or I inadvertently fall into it. I had to retire from radio for a variety of reasons, sold all of my equipment to guys who really put it to good use, and did not return until 2012 when, out of curiosity, I wanted to see what was new.

While radio is still a take it or leave it proposition for me for, as I said, noise follows me like a puppy dog and bad QTH locations seem to be my forte which only leaves portable operation as a true option, the thrill will always be that of good, old school HF radio with its ups and downs and propagation peculiarities. One thing that truly annoyed me was my entry into the hobby under false pretenses. I spent much time over the years learning radio theory when I could but the issue of never having a CW contact truly bothered me. The only thing that settled that matter to my satisfaction was stumbling across a group of CW operators who, through their own time and love of CW, started a CW academy which is a true CW course taken on-line using web cameras in order to see one's instructor and classmates. This was not possible in 1986, so I signed up for the Level 1 course which was to last about six weeks or so, meeting two days a week for an hour on-line. Homework was assigned through a course syllabus and students are expected to do the homework, be prepared, and give proper effort with studying or otherwise not apply to take the course.

I have to say that it wasn't easy. As I mentioned previously, I had managed to learn and firmly acquire every known bad and destructive habit when it comes to learning Morse Code. The worst of these was element counting and fear of missing a letter. Those CW experts who point out that learning certain bad habits with code can cripple one for life are not over-exaggerating. The CW course required 30 minutes of practice a day. I needed two hours. I had to employ every bit of mental determination to reverse all those bad habits while learning the good ones at the same time. It was not the time spent but the methods used in that time which made the difference, plus informing my instructor of my handicaps at the starting gate. I not only had to concentrate on good receiving, but good sending skill with a straight key as well and sending was something that I had never engaged in prior. Fortunately, it paid off. After 25 years, I finally made on-air CW contacts with a straight key, generally around 10 WPM, got the QSL cards to prove it, and finally felt that I had passed my Novice ticket long ago.

Bully for Amateur Radio! By Jeff DeKonty, AB3WM

To my knowledge, there's no historical record of Theodore Roosevelt ever talking on a ham radio, but so ardently did he crave new experiences and adventure that it isn't difficult to imagine the craft that has caught all of our imaginations would have interested him as well. Other than that, there appears to be no link between the Rough Rider President and our service/hobby. That was true for 99 years; 2016 is different.

The National Park Service is 100 years old this year. Inspired by the celebration of the Park Service's Centennial, the ARRL launched its National Parks On The Air (NPOTA) initiative. The focus is to "activate" or "chase" as many National Parks, Historical Sites and other NPS-managed units as possible in calendar year 2016. By doing so, amateur radio operators have a dual mandate to educate each other about the parks and units they activate or chase while taking advantage of portable operations in the park to attract non-hams to learn more about "the radio arts."

I became interested in NPOTA after hearing Sean Kutzko (KX9X) of the ARRL on the 100 Watts and a Wire podcast hosted by Christian Cudnik (K0STH). I think it's safe to say that Sean is the "father" of NPOTA and his enthusiasm expressed in Christian's interview was infectious. Sean is no stranger to portable/mobile ops; his activities with Summits on the Air (SOTA) have him climbing mountains on a regular basis.

As a new ham (I was licensed in January of 2015) my only experience with portable ops was last year's Field Day and while I had looked into SOTA and Islands on the Air (IOTA), hiking to high altitudes or manhandling my precious equipment into a boat lacked appeal. Here was an opportunity to "hit the road" but still operate out of the relative comfort of places as close as 15 minutes from my house! I was hooked.

As with any endeavor I faced answering the questions of what, where and when. What equipment I had already was my beloved Yaesu FT-991. How to power it and what antenna to use posed some interesting challenges. The guidelines of NPOTA are consistent with any interaction with nature: Take nothing but pictures and leave nothing but footprints. Some activators had no issue burning dead dinosaur juice to keep their battery charged. I'm no tree hugger, but I craved the additional challenge of operating entirely "green." That more or less led me down a solar path.

"Where" was easy; within less than 45 minutes of my house, I had First State National Historical Park, Valley Forge and Hopewell Furnace. "When" didn't particularly jump out at me as a pressing question initially since the event lasts all of 2016, but as my equipment came together, the prospect of starting on January 1 started to have appeal. With Delaware a coveted state for WAS chasers and First State National Historical Site so convenient, I could easily imagine myself calling CQ "From the First State on the first day." I made my plans to activate on January 1, 2016.

Working out the specifics on the Solar power source necessitated a lot of research. Running QRP would have simplified the process, but since I'm a fairly active member of the "100 Watts and a Wire" online community, and since it seemed a waste to have the 991 putting out anything much less than full power, I was hoping to be able to run close to 100 watts.

Choosing a battery to buffer the voltage fluctuations from the solar panel was the next step. I settled on a LiFEPO4 battery because it was capable (24ah) and incredibly light (43 ounces); the trade off, of course, was cost. A 100 watt solar panel from Amazon paired with a charge controller suitable for the LiFEPO4 battery chemistry rounded out the power side of the equation.

Radio needs a source, a force and a place to go. The source was my solar ensemble; the force was the 991. Now all I needed was an antenna. Naturally, a simple wire dipole would be the simplest, but nature, and those charged with guarding it, take a dim view of hanging wires in trees in many of the parks. That meant stand-alone was the best option. I reached out to the ARRL National Parks On The Air Facebook group and got a consensus answer: Buddipole. I also (perhaps not so coincidentally) found someone with a used Buddipole for sale.

Another first for me in this whole experience was requesting a special event call sign, N3P. I reserved it for the first 15 days of the year and got QSL cards printed. I also learned the ropes on managing multiple call signs, logbooks and locations on TQSL, LoTW (logging on LoTW is a necessity for this event since that's the only way ARRL tracks activations and chasing) as well as QRZ.com and eQSL. Those processes could be the subject of an entire article (if not a book)!

When January 1st rolled around it wasn't so bright and clear; nevertheless, I headed down to Delaware and set up shop in an open field just inside the park boundary. I "self spotted" on the NPOTA Facebook group and within 3 minutes of my first CQ, I was dealing with an honest-to-gosh, real-life pile up. I worked 145 QSO's in 92 minutes. It was INTENSE!!! The next day at Valley Forge was even more frenetic with over 160 QSO's in 62 minutes. Hopewell Furnace on January 9th also yielded a respectable level of activity. Over the three activations I had nearly 400 contacts in 41 states and 7 countries. I

learned how to work a pile up "by the numbers" and found that having a "partner in crime" would be very beneficial. Solo ops with nobody to mind the equipment get uncomfortable after too many cups of coffee (if you know what I mean).

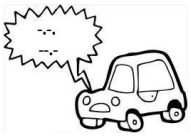
NPOTA has been much more popular than even those who came up with it could ever have imagined. To me the success is in the achievability. I can't do a DXpedition to a far off Antarctic island, but I can set up a Buddipole in a parking lot 15 minutes from my house and have nearly as much fun. The learnings from all of this for me personally have been tremendous and the moderate cost is more than justified by the rush of being on "the other end of the pile up."

For me, the next adventure will be activating a portion of the Appalachian Trail which is officially a NPS "unit." I'm waiting for spring for that, though, because I've had my fill of shivering on the radio. After that, who knows? Maybe a road trip!

System shakedown under the watchful eye of Test Director Patrick

"From The First state on the first day!" at First State National Historical Park on 1/1/16

At Valley Forge National Park 1/2/16



Amateur Adventures by Kevin Perrot, K3NTD

Several years ago, I was caught in a monumental traffic jam in Munich, Germany on an otherwise pleasant summer afternoon. It was evident that no one was going to be moving anytime soon. Many motorists were outside their cars, walking around. Everyone was blowing their horns, it was quite deafening.

What to do? What would a ham radio operator do? What would a CW operator do? I tapped out CQ CQ DE K3NTD several times on my car horn! I thought that the chances of getting a response were minuscule, but it was worth a try.

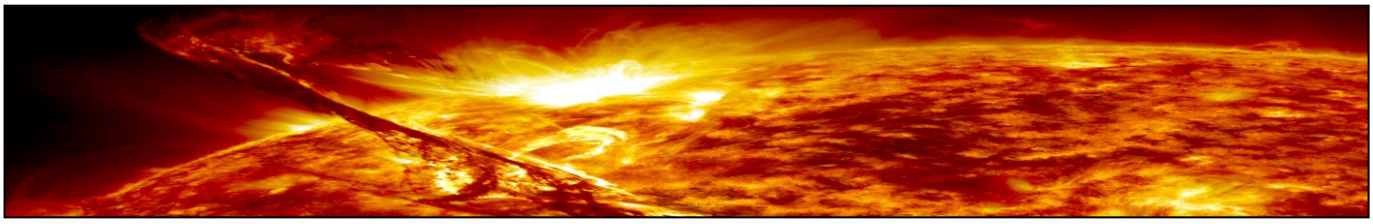
A few minutes later, four burly German men approached my car and a fabulous DX eyeball QSO ensued. We introduced ourselves and we traded stories in pigeon German and English. The traffic jam was over all too soon, then 73 all around and we went our separate ways, experiencing what the Germans call "gemütlichkeit". This word is called -untranslatable- because it conveys the 'feeling' of coziness, contentedness, comfort and relaxation. We all were in truly better, relaxed spirits because of the encounter. It was the best traffic jam of my life!

January Club Meeting

At our January club meeting, MARC's own Brian Kelly, AA3BK, gave an excellent and informative presentation on satellites.

February Club Meeting

At our February club meeting, former ARRL Chief Development Office Mary Hobart, K1MMH, spoke about how The ARRL functions and its role in supporting the amateur radio community.



Auroral Propagation: An overview about the basics of auroras and auroral propagation used by radio amateurs and what an aurora is.

Source: http://www.electronics-radio.com/articles/ham_radio/amateur-propagation/auroral-propagation.php

The sight of an aurora in the sky at night can be awe inspiring, taking the form of beautifully colored glows gracefully changing sky. The colors are usually greens and reds, although on occasions bluish tints can be seen. To many people an aurora is a beautiful sight to see but it is also an indication of activity in the skies that can also result in some dramatic changes to radio propagation. For radio amateurs this could mean degraded performance on the HF amateur radio bands, while at VHF it can give the opportunity for a unique form of radio propagation.

In order that radio hams can make the best use of these radio phenomena it is useful to have an understanding of the reasons they occur and the mechanics of how the radio signals are propagated under these conditions. To do this it is first necessary to look at the Sun.

The Sun and its effect on radio propagation

The Sun generates a colossal amount of energy, some of which provides light and heat for us here on Earth. It also generates ultraviolet light and X-rays which have an effect on radio propagation. As a result the ionosphere is formed in the upper atmosphere and this enables radio waves to be reflected, or more correctly refracted back to earth, thereby enabling global radio communications on the HF or short wave bands.

The levels of energy emanating from the Sun are not always constant. This in turn affects the condition of the ionosphere, which in turn affects HF radio propagation. Monitoring the energy from the Sun can give a good indication of the state of short wave radio communications, and this can be used by the users of the HF radio bands including radio amateurs, short wave broadcasters and commercial users.

At times there are major disturbances on the Sun and these can have major effects on radio propagation conditions. Solar flares and other forms of disturbance known as Coronal Mass Ejections can totally change the condition of the ionosphere and give rise to auroral activity.

Of the two types of disturbance, it is now thought to be the CMEs that are the major cause of auroras. These CMEs consist of gigantic eruptions on the surface of the Sun that throw vast quantities of material into space, along with this there is a huge increase in the level of radiation emitted.

Under normal conditions the Sun emits matter and this forms what is known as the solar wind. When CMEs occur, the solar wind significantly increases and this affects the Earth when it arrives.

Effect of Solar disturbances on radio propagation

The way in which the solar wind interacts with the earth is quite complicated. Essentially it is normally deflected by the Earth's magnetic field, although some enters via the areas around the north and south poles where the field enters the Earth. This is normal and no undue effects are noticed.

When there is a solar disturbance and the level of the solar wind increases changes occur. The most obvious sign is that a visible aurora occurs lighting up the northern or southern skies. This occurs because high energy particles enter the Earth's atmosphere along the magnetic lines of force entering the Earth at the poles. As the travel they collide with molecules in the atmosphere releasing positive ions and negative electrons. When this occurs a small amount of light is generated and it is this that causes the Northern and Southern Lights.

The increase in solar wind from the disturbance has a significant effect on radio propagation, and this is naturally of great interest to radio amateurs. It is found that the particles pass through the outer parts of the ionosphere with little effect. However as the altitude decreases they reach the E layer. Here they start to collide with the gas molecules, and this increases the levels of ionization in these areas to a very large degree. The result of this is that the ionization reflects signals at much higher frequencies than normal. Communications can be established well into the VHF portion of the spectrum and sometimes reflections have been detected at frequencies up to up to about 1000 MHz.

This top figure is somewhat exceptional although the normal maximum for amateur radio communications is around 430 MHz. Unfortunately for HF amateur radio enthusiasts, many of the plasma particles travel on downwards into the D layer where again the levels of ionization are greatly increased. Here the increased level of ionization serves to absorb radio waves at much higher frequencies than would normally be affected. In this way much of the HF band communications can be blacked out.

It is found that during the course of a normal auroral event, the polar regions are affected first and for this reason the absorption is often called Polar cap Absorption (PCA). Usually the polar cap absorption is confined to latitudes greater than 60, although during some of the larger events this will extend further towards the equator.

Progress of an Auroral Event

Although different events will vary widely from one to the next they will have many similarities. Often the event will commence with a number of small flares. These cause the level of solar radiation to increase and this brings an improvement in HF band radio conditions. Coupled to this, the solar noise also rises.

These small flares are only a precursor to the solar disturbance which occurs causing a Sudden Ionospheric Disturbance or SID. At this point the HF bands close for ionospheric radio communications for a short while. However they soon recover as there is an increase in solar flux. About 20 to 30 hours after the solar activity the solar wind shock wave hits the earth causing a magnetic storm. Radio communications on the HF bands fail and the full auroral event starts. At this point VHF radio propagation is enhanced and contacts can be made over distances of a several hundred kilometers. Then having reached a peak the aurora ends and the HF bands slowly recover, the low frequencies becoming useable first.

Using Auroral radio propagation at VHF

The onset of an aurora is bad news for HF amateur radio users as band conditions are most likely to be badly affected. All that can be done is to wait until the radio propagation conditions recover, but it can take up to a week before the HF amateur radio bands are back to the state they were before the storm.

For VHF amateur radio operators the onset of an auroral event brings exciting possibilities of DX with the possibility of amateur radio contacts being made over many hundreds of kilometers. As the ionization is concentrated around the poles communication is only possible at certain latitudes. For example in the UK those radio amateurs in Scotland, Northern England and Northern Ireland are best placed, although it is possible for stations in Southern England to use it when there is a large aurora. Interestingly is found that stations in Southern Scotland and Northern Ireland seem to be well placed for making some of the longest distance contacts, although stations further north will see more auroras.

Good antennas are essential when using auroral radio propagation. Directional or beam antennas are required and these should be rotated towards the auroral zone, i.e. to the north in the Northern Hemisphere and to the south in the Southern Hemisphere. Signals are then reflected back, i.e. using back-scatter. This means that the beam heading for the optimum signal will not be in the direction of the station being contacted.

It is found that signals that have been propagated using auroral radio propagation are distorted and this means that voice transmissions can be very difficult to copy. The wider the bandwidth the greater the problem and therefore SSB is the best voice mode to use, although copy is difficult. Naturally Morse is good because it occupies a very narrow bandwidth is very resilient to distortion. However even this becomes distorted, having a very rough tone superimposed onto it. This can vary from one aurora to the next, or even during the course of an event. Typically signals flutter very rapidly because of the changes occurring in the ionosphere This flutter can even be so fast that it appears as a low frequency tone or buzz up to 50 or 60 Hz.

In addition to the distortion on the signal, it is also subject to a Doppler frequency shift. This is caused by millions of plasma particles entering the ionosphere. Each is a minute point for reflection and has a different velocity. This means that the Doppler shift has a spread of frequency shifts, resulting in the very distinctive hissing sound. As a general rule the average frequency shift on the 145 MHz amateur radio band is about 0.5 kHz.

Auroral radio propagation summary

Auroral propagation can be a fascinating and rewarding form of propagation for radio amateurs. It provides an interesting means of making radio contacts and has the advantage that it can be sued at times when the propagation conditions on the HF amateur radio bands are likely to be poor. As no special equipment is required, it makes an ideal way in which to make radio contacts on an occasional basis as the conditions arise.

The Mid Atlantic Amateur Radio Club Presents the

VALLEY FORGE HAMFEST

Saturday, July 9th, 2016

Kimberton Fire Co. Fairgrounds

Route 113 (Pike Springs Rd.) & Firehouse Lane • Kimberton / Phoenixville, Pa.

Admission: **Buyers 8 a.m.** - $6 **Sellers 7 a.m.** - $6

Free admission for unlicensed spouse and children of licensed ham

*Tailgate space:

$6 - Car width space/head in parking
No reserved tailgate spaces
**not including admission*

*Indoor Tables:

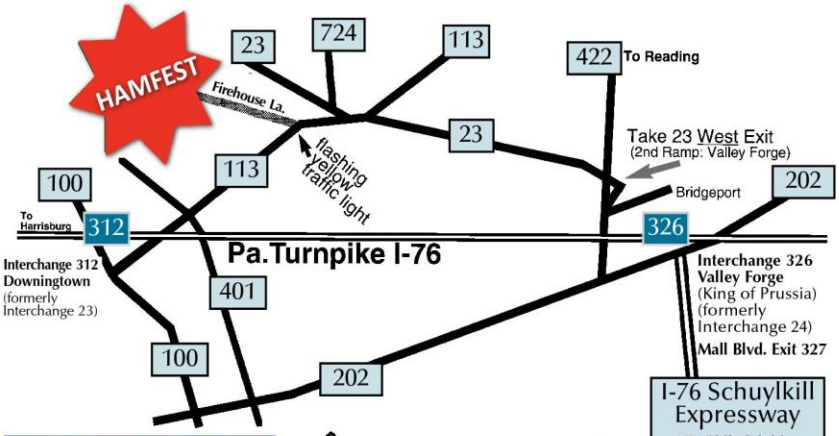
$10 Each for 1-4 tables,
$8 each for 5 or more
**not including admission*

Indoor table reservations - contact Mike Pilotti, KF3CD
Phone: 610-696-5040 • E-mail: kf3cd@arrl.net

Hamfest Information: hamfest-info@marc-radio.org or visit our website: www.marc-radio.org

---

- **Rain or shine Indoor & Outdoor Facilities!**
- **VE Tests at 10 am! Register by contacting Dick Stewart at k3ith@arrl.net**
- **Free QSL Card Checking for ARRL DXCC & WAS awards while you wait!**
- **Lots of great Door Prizes!**



Talk In: 145.13/-
and 147.06/+ CTCSS 131.8

Food and Beverage Sales by Authorized Vendors Only.

MID-ATLANTIC AMATEUR RADIO CLUB
www.marc-radio.org