



SPARC Gap

The Official Newsletter of the Saint Petersburg Amateur Radio Club

Vol. 2 No. 3

► SPECIAL 2024 YEAR IN REVIEW EDITION ◀

December 2024

New Officers and Board Members are Named for 2025

by: Bruce H. Solov, K2BHS

The Annual Meeting in which new officers are elected and board members are appointed was held on November 1, 2024. The officers & board members are as follows:

-Elected Executive Staff:

- President: Tom Schaefer, NY4I
- Vice President: Carol Del La Torre, AB4YI
- Treasurer: Will Scott, W7WMS
- Secretary: Bruce H. Solov, K2BHS

-Board Members:

- Paul Krahmer, KA4IOX
- Dee Turner, N4GD
- John Toth, KI4UIP

-Non-Elected board members:

- Immediate Past President: Rich Cariello, AA2MF
- Club Trustee: Dave Trewin, KR4U
- Repeater Trustee: Alex Harvey, KO4CEE
- SPARC Gap Editor: Bruce H. Solov, K2BHS

Congratulations to all!

A Look Into Magnetic Loop Antennas

by: Bruce H. Solov, KF4TYA

The St. Petersburg Amateur Radio Club held its monthly meeting on August 2, 2024. The program for this meeting was a look into magnetic loop antennas.



Richie Cariello, AA2MF was living in Brooklyn, NY back in the 1970's. Anyone who knows anything about real estate in New York City, knows that the living spaces are small and the rent can be high (might I digress..)

It all started in 1985, when Cariello read an article in *QST* Magazine about magnetic loop antennas. The article was originally published back in 1967. It gave a history of magnetic loop antennas.

He said that even though loops are not the best option when space is limited, it was the best solution for him at that time. Loops, if built correctly, will do the job said Cariello. Also, loop antennas are cost-effective the antenna in the photo is a 20-meter loop.

Lou McCoy wrote an article in March 1968. Essentially, his first one (antenna) was a complete "flop". McCoy then asked for help to improve the antenna. He found it critical to keep losses to an impedance of less than 1Ω.

Loop antennas have been around since the creation of radio and were often used by the military. In 1985, the ARRL had a design competition with the ultimate goal for one antenna to be resonant on multiple bands.

Ted Hart, W5QJR, wrote an article for *QST* on small loop antennas with a high efficiency. Hart also published a book in 1985 on the same topic. It was pointed out that a loop antenna that is perpendicular to the ground has a bidirectional radiation pattern. A loop that is horizontal to the ground has an omnidirectional radiation pattern. The horizontal loop needs to be four feet above ground, not used near any metals and must have a non-conductive (e.g.: PVC pipe) framework for a horizontal mount. The maximum bandwidth on this antenna is 50 kHz.



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The antenna did have multiple shortcomings. The goal was to have one antenna for multiple bands. These drawbacks included:

- Problems with cost and construction.
- Not designed to be constantly tuned as the copper bellows will fail over time.
- It was just better to make monoband loops vs. a multi-band loop.

The wavelength would be anywhere between 1/3 and 1/8 wave. For example:

Band	Circumference
20 meters	20 feet
15 meters	15 feet
10 meters	10 feet

Richie gave the formulas for figuring out the circumference for any given band, based on 1/3 vs. 1/8 wave.

$$1/3 \text{ Wave} = 308/\text{frequency (MHz)}$$

$$1/8 \text{ Wave} = 558/\text{frequency (MHz)}$$

He also showed a bunch of antennas that he had built for himself. Some of these antennas included an 80-meter octagonal loop, a 10' tri-band loop which is resonant on 10, 15, and 20 meters. Also a full-size 10-meter loop which took 10 feet worth of copper pipe, a capacitor of a couple of picofarads, and he adjusted the spacing to account for SWR.

He also mentioned that the performance of the antenna is affected by its shape. A circular antenna is optimal which makes it more effective than a square or an octagonal loop, Cariello said.

VK3CPU is a program that will “crunch the numbers”, by inputting all the variables. It will also give you the capacitor size and voltage based on that information.

Cariello summed up the 45-minute presentation by saying that magnetic loops antennas work if they are constructed correctly, and if the connections are soldered and not mechanical connections.

Propagation and the Sun- Part II:

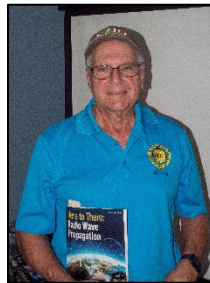
How Radio Waves Travel & are Affected by Solar Activity

by: Bruce H. Solov, K2BHS

*****Reprinted from the April 2024 Issue*****

The St. Petersburg Amateur Radio Club held their last monthly meeting of 2023 on December 1, 2023. After the club’s business was conducted, it was time for the program portion of the meeting. December’s program was Part II of the Solar Weather Series, with Ed Erny, NZ1Q making this presentation. Bob Burke, KC4SXO hosted Part I of the series at the November 2023 meeting where he gave an overview of what the numbers mean.

Erny dove into the details of how the sun and solar activity can and does affect propagation. He started off by mentioning that radio waves are refracted in the ionosphere, with higher frequencies requiring more of an effort to bend. This is in part because the higher frequencies travel a shorter distance. Also, the angle of the radio waves affects how the signal is bent.



He went on to mention that there were certain phenomena that would degrade propagation. These include solar flares, Coronal Mass Ejections, which NOAA defines as “large expulsions of plasma and magnetic field from the Sun’s corona” and solar wind.

A couple of things that are conducive to propagation higher Solar Flux Index (≥ 160) and a positive B_z .

Other key points that Ed mentioned were:



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- The sun will energize all the layers (D, E, F, F₁ and F₂) further noting that F₁ and F₂ will come together at night.
- The D-layer is the densest in terms of ions
- Sunspots have their own magnetic fields.
- A change to solar conditions can happen within minutes.
- Bands will totally close when a solar flare is present.
- An elevated K-index can create havoc with our bands.

A link to a video of Ed's presentation is available on the club's website at www.sparc-club.org.

Getting a New Vanity Callsign

Here is what is involved to obtain one

by: Pat Connelly, AA0O

******Reprinted from the November 2024 Issue******

Applying for a new callsign is a surprisingly arduous and involved process. First and foremost, each application will cost \$35 regardless of whether or not your request is granted. If the callsign is not granted, your license expiration date will be reset to ten years from the date of the new license grant. You will need to use the FCC ULS (Universal Licensing System) website to make your application.

Callsigns in the 2x2 format (previously issued for Advanced license class), 1x2 or 2x1 are only available to Extra Class licensees. Some club member examples of these callsigns are AB4YI, N4GD and KR4U respectively. 2x3 and 1x3 callsigns are available to any class. You also, can request a callsign in any area (0-9) but only within the continental US and using a continental US prefix. You would need to live in Alaska, Hawaii, Puerto Rico or any other special prefix

are to request any callsign (having the second prefix letter of L, H or P).

If the callsign you want is available, you can apply for it and you will receive it after eighteen calendar days (including weekends). If you submit your application on a weekend or holiday, it will not be processed until the next business day, and you 18 days will commence at that time.

This gets more complicated with the four digit calls (1x2 & 2x1). These callsigns are all accounted for at this time. After a callsign expires and is not renewed, cancelled or the owner becomes a silent key and the FCC is notified, it will become available two years and one day from that date. That is the day you will want to put in your application. Remembering that applications only get processed on business days, if the two years and one day falls on a Saturday, apply on the following Monday. Most likely, there will be multiple applications for these callsigns. Keep in mind that call area 4 is the most popular.

If the FCC receives multiple applications for any given callsign, they will use a lottery system to randomly determine who receives it, after those eighteen days have elapsed. This eighteen-day period allows for mail-in applications, for those that prefer to apply by mail (though uncommon in this day and age). Only the processed date matters and not the time, which makes it unnecessary to stay up until after midnight to apply. You can also apply for multiple callsigns with one application. If more than one callsign is available on the application date, this will increase your chances. There are websites available for tracking callsign availability. The best two are: <https://vanities.k2cr.com> which focuses on four digit callsigns and <https://www.ae7q.com> which has a myriad of information on all callsigns.

Additionally, if a close relative becomes a silent key, you can request their callsign and this will bypass the lottery system. You must have the license class for that callsign.



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It is important to note that 1x1 special event call signs are available to all hams. This is limited to one request per year and used for a maximum of 15 days. They can be requested without a fee using the website <https://www.1x1callsigns.org> They must be used in relation to a public event.

Best of luck in getting your new call sign.

What is Echolink and How Does it work?

By: Bruce Solov, KF4TYA

The St. Petersburg Amateur Radio Club held its monthly meeting on October 4, 2024. The program for this meeting was a dive into the world of EchoLink. How it works, and what is needed to use Anyone that uses Echolink, whether it is every so often or every day has a general idea of how it



works. SPARC has an Echolink node for those who wish to use it. The node is tied to the WA4AKH 2-meter repeater on 147.060 MHz. He mentioned that he has a dedicated radio set to the SPARC 2-meter frequency However, the Echolink node for this repeater is NZ1Q-L. Ed Erny, NZ1Q manages the

Echolink node and makes sure that it is up and running for all wish to use it.

Getting started on Echolink is not difficult, Erny said. There are a couple of things that are needed for this. First and foremost, you need an official copy of your Amateur Radio license to access Echolink. This is obtainable from the FCC's website in the ULS System. Then you just need a

computer or cell phone that is capable of accessing the internet. That's it!

Erny gave step-by-step instructions on how to set up access. The internet is Echolink's server using a mobile rig via an interface with a USB connector. Additionally, Echolink does not require much in the way of processing power.

Some links are repeaters, but most are just private people that set up these links. For SPARC, the node for Echolink access is set up as NZ1Q-L, since it is not a repeater site. Only the 2-meter repeater is accessible via Echolink.

Many people have used NZ1Q's Echolink link. There have been stations that have checked into the clubs nets from, Indiana, the Blue Ridge Mountains, Dallas. There have also been DX stations checking in from Germany, the United Kingdom and Erny himself checked in via Echolink from a cruise ship out in the Atlantic.

He demonstrated how Echolink works on his cellphone. There are a couple of limitations to be aware of. First of all, an Echolink node is tied to a single frequency. Here are a couple of other items to be aware of when using Echolink:

- Because it is tied to only one frequency, it cannot be used for HF communications.
- Also, when a signal is being received, the Transmit button will not show up.
- There is a delay of 15 seconds after the carrier drops, so at least that time needs to be allowed for any users to begin making a transmission
- There is also a 500 millisecond delay between what the user is saying and what is received by the rest on the frequency. So the moral of that story is...Be Patient!



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Erny concluded the presentation by taking additional questions from the membership.

VE Testing Results:

By: Bruce Solov, K2BHS

The St. Petersburg Amateur Radio Club holds monthly VE testing sessions at the Club Station located at DMI Research, in Pinellas Park.

The results are as follows:

11/9/24 (SPARC Fest)

New-Technician

Jason Knobloch, KQ4YIZ

Upgrade-General

Craig Bushby, KM4FXP

11/19/24

New-Technician

Ian Timmins, KQ4YVN

12/17/24

New-Technician

Kevin Edwards, KQ4ZVL

Upgrade-General

Ian Timmins, KQ4YVN

1/21/25

VE Session was CANCELLED

No candidates signed up

VE testing sessions are held on the third Tuesday of each month at DMI Research in Pinellas Park. If you wish to test, please contact the club. Congratulations to all the new hams and upgrades. Job well done! Enjoy.

Looking for Participation from club members.

By: Bruce Solov, K2BHS

As your editor of the *SPARC Gap* Newsletter, I am always looking for feedback, suggestions and submissions for future editions.

I am also always looking for a couple of staff members so that any event I am unable to attend, someone will be able to cover it and submit an article to me.

Also, a reminder that I would absolutely love some *real* reviews of gear that you have (whether it is good, bad or downright ugly). The reviews are not limited to just transceivers, but everything (e.g. antennas, tuners, accessories, testing equipment, etc.) As we all know this type of information would be beneficial to new and seasoned amateurs alike. If you have any questions on this, please feel free to reach out to me.

Of course I can be reached by email:

bsolov@hotmail.com or kf4tya@spectrum.net.

All are welcome to make submissions.

73's,

Bruce H. Solov, K2BHS

Secretary and SPARC Gap Editor

Current SPARC Net Schedule

SPARC Nightly 2-meter Prenet from 18:00-18:30 on 147.060 MHz (7 days/week)



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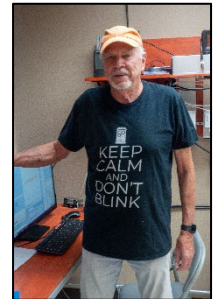
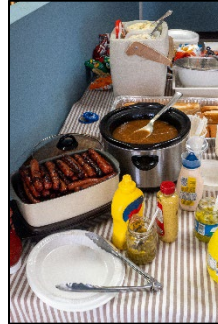
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SPARC Nightly 2-meter Net starting at 18:30 on 147.060 MHz (7 days/week)

SPARC 220/440 Net starting at 19:15 on 224.66 MHz/444.475 MHz with a tone of 146.2 Hz (meets every Thursday evening). At this time, the 220 MHz repeater will remain down until further notice. The repairs are still a work in process as of the November 2024 meeting. Stay tuned for further updates.

Also, all Net Control Stations will continue to deliver their net reports to Ed, NZ1Q until further notice. Those reports may be delivered on-air or via email.



2024 SPARC Photo Gallery

By: Bruce Solov, K2BHS

As promised in a couple of the past meetings...here is the moment we have all been waiting for. The Year 2024 in Pictures. A cornucopia of images from SPARC events and meetings in the past year. Enjoy!



Some of the events that will be showcased in the photo gallery include:

- ARRL Field Day 2024
- Power Winch Installation at the Club Station
- Florida QSO Party 2024
- Antenna Work Parties
- SPARC Monthly Meetings





SPARC Cap

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