



# SPARC Gap

The Official Newsletter of the Saint Petersburg Amateur Radio Club

Vol. 1 No. 1

December 2023

## SPARC Resurrects the Club Newsletter

By: Bruce H. Solov, KF4TYA

The St. Petersburg Amateur Radio Club in its monthly meeting held on September 1, after an approximate six-year hiatus, has voted to resurrect the official club newsletter. The membership voted for Bruce Solov, KF4TYA to spearhead the project and be the chairperson and editor.



Bruce, KF4TYA

Solov got the idea from it being mentioned earlier in the meeting that the archives of past newsletters are accessible on the club's website at [www.sparc-club.org](http://www.sparc-club.org). The last *SPARC Gap* newsletter was published in 2017.

The newsletter is slated to include a myriad of articles on different facets of amateur radio from points of training, club announcements and events to equipment reviews.

One of his short-term goals for the newsletter is to get a small staff of at least one or two others who are willing to seek out and write additional newsworthy stories on a consistent basis. Anyone interested can contact him via email

He hopes to see the membership provide ideas for features and other material to be placed in the newsletter. The format is like newspapers from years past and will contain illustrations and photographs as well. He can be reached at [bsolov@hotmail.com](mailto:bsolov@hotmail.com). Please place the word "Newsletter" on the subject line. Everyone is welcome to submit articles, photos, and ideas. This will be the first of many newsletters to come.

## Special Presentation-Solar Report:

By: Bruce H. Solov, KF4TYA

For those of us that regularly check in to the SPARC Nightly Net at 18:30 hours, gets to have a daily Solar Report from Bob Burke, KC4SXO, at the beginning of each net.

For some of us, it is an enigma as to what the concepts of a what a solar flare is or K-index vs. an A-index and/or proton flux vs. electron flux. You may just want to know what the significance of the Maximum Usable Frequency in Boulder, CO is. Bob is versed in this very phenomenon.

At the SPARC monthly meeting on November 3, 2023, Burke did a presentation on this very subject. The solar weather is one of the factors that affect propagation on the HF bands.



Burke gave an overview on the D, E and F layers of the earth's ionosphere and how each of these layers affect HF propagation.

The D-layer is the lowest layer in the ionosphere with a distance of 48-90 km and only reflects radio waves during the daytime hours. It also attenuates HF frequencies less than 10 MHz. He gave an example of how on an AM radio, you will be able to receive stations that are farther away during the night time, as these signals are absorbed during daytime hours.

The E-layer, said Burke, is at a distance of 90-150 km and reflects radio waves with a wavelength of



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less than or equal to 10 meters (28 MHz). Higher frequency radio waves will go through the E-layer. He also mentioned Sporadic E which are clouds of intense ionization that support radio waves starting at 50 MHz and above. This layer causes a 2 meter skip distance of around 1600 kilometers.

The F-layer, which is at a distance of 150-500 km is responsible for shortwave propagation and is broken down into the F, F1 and F2. The F-layer is prevalent at night while the F1 and F2 layers are prevalent during the daytime.

These numbers are consistently renewed because they change throughout the day. The times are always given in UTC (Coordinated Universal Time) also known as "Zulu", which is the Military Name for UTC.

The Solar Flux Index is the amount of solar noise measured daily and at 2500MHz. This number gives you an idea of how the F-Layer can support HF communications (especially in the 20-meter band).

The A and K indices refer to the presence of geomagnetic storms. The A Index is the daily average long term stability. The K Index is the daily average short term stability.

	A Index	K Index
<b>Calm</b>	4	1
<b>Minor Storm</b>	40	5
<b>Severe Storm</b>	80	7

Burke also explained the significance of Proton and Electron Flux Density and how they impact E-layer propagation. Proton Flux Density is the density of protons (positively charged particles) in the solar wind; with .10 being good, 2.0 being moderate and 20.0 being heavy. The Electron Flux Density is the

density of electrons (negatively charged particles) in the solar wind; with less than 1000 having little impact and greater than 1000 having heavy impact.

The B<sub>z</sub> (B subset Z) is the interplanetary magnetic field vector (strength & direction).

20 = good      -2 = not ok  
2 = ok          -20 = disruptive

Another part of Bob's nightly solar report is the Maximum Usable Frequency (MUF). Maximum Usable Frequency is the highest frequency that can be readily used for communication via skywave propagation, which is listed in MHz.

There are eleven sites worldwide that collect and distribute this information. The site for the United States is located in Boulder, CO.

Burke closed out the presentation by pointing out that there is a myriad of information available on this very subject, such as the ARRL book titled, *Here to There: Radio Wave Propagation* (ISBN: 978-1-62595-173-1). He also mentioned a list of additional resources for more information.

In closing, Burke remarked, "It has been an educational experience for me. I learned how to make a PowerPoint presentation."

Ed Erny, NZ1Q will present Part Two of this presentation at the December 2023 monthly club meeting.

## KO4CEE: Bicycle Mobile

By: Alex Harvey, KO4CEE & Ed Erny, NZ1Q

Almost every day you hear Alex, KO4CEE on the SPARC Repeater. He is frequently in a QSO from



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his mobile, that is, his mobile bicycle installation. The installation is simple and effective. Alex is either on his way to or from an errand that he is running. Sometimes, he is just enjoying a bicycle ride and radio.



Along the way he will give an updated weather report. One challenge that Alex encounters is the challenges that a windy day poses. Even with this and

other challenges, Alex is in a good frame of mind and gets the job done.

KO4CEE is the Net Control station on Tuesday evenings at 18:30 for the SPARC Traffic Net. Stop by and “give him a number” or take part in the net by telling him what you were doing today and what is going on in radio. The net always loves to hear about new equipment, what you have worked or different antenna arrangements.



All are welcome to come and join the net on 147.060, no tone required, on Echolink (NZ1Q/L, node 1002437, or listen on Broadcastify.com (WA4AKH St. Petersburg, FL)

## Key Designs:

### *A Look Into the Myriad of Keys Old & New*

By: Willie Ball, KG4ZQZ

Continuous Wave radiotelegraphy, better known as “CW,” is the second oldest mode of radio communication. The earlier spark-gap (damped-wave) (which also inspired the name of this newsletter, “SPARC Gap”) transmission was phased out by 1934.

CW operators use the Morse code, a series of dits & dahs to communicate with others over the air. Samuel F.B. Morse (1791-1872), in-part, first developed this communications method in 1837. Morse began using this code in 1844 for communication via wire, also known as the telegraph.

CW remains popular for several reasons:

- Reception is easier in crowded, noisy or poor band conditions as opposed to voice transmissions (eg: SSB, FM, etc.).
- extremely narrow filtering allows clearer and perceptible reception to the human ear.
- CW-only transceivers use less power, less bandwidth in transmissions and contain less complex circuitry.

Most CW operators use a key, a paddle or even computers also be used. There are many types of keys, these types include straight, cootie/sideswiper, bug, single lever and dual lever (or iambic). The straight key is the most recognizable to the general public.



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The “grandfather” of straight keys is the 1844 Vail Lever Correspondent. The straight key shown here is a vintage 100+ year old Bunnell straight key and sounder (picture courtesy of Ed, NZ1Q).



Other keys are single and dual lever paddles. Unlike straight keys, these keys produce timed dits and dahs when either side is pressed left or right using either an external keyer or an internal keyer built into your transceiver.

Dual paddles can also support iambic modes for example, while holding down one paddle to send dahs; you can tap and insert a dit into that string of dahs or vice versa. If the paddles are squeezed at the same time, the keyer will send alternating dits and dahs. The key shown here is a Russian single lever and precision made German portable mini dual lever key attached to an 8-band portable transceiver.



Keys and paddles come in all shapes and sizes. If you are an experienced CW operator, you most likely have a tool of choice for working CW on the airwaves. If you are new to CW, try different keys and paddles until you find a favorite.

It is not too difficult to learn CW. To get my General Class Privileges twenty years ago, I had to pass a five word per minute test. I promptly (and sadly) lost interest until late 2022. You will find yourself operating CW, with a little effort and a bit of practice in no time at all. Learn to listen for and

send your callsign and information using simple CW exchange language. Such language is used for Parks on the Air (POTA) activations and CW contests. The following is an example of a simple POTA CW exchange:

Activator: **CQ POTA CQ POTA DE KC1YL**  
You: **KG4ZQZ**  
Activator: **KG4ZQZ TU UR 5NN K**  
You: **RR GM UR 5NN 5NN FL FL K**  
Activator: **TKS FL 73 (dit-dit)**  
You: **(dit-dit)**

Give CW a try and have some fun!

## VE Testing Results:

By: Bruce Solov, KF4TYA

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:

### 9/19/23:

Gary Morris, KQ4LKY-*Technician*  
Benjamin Landry, KQ4LKX-*General*

### SPARCFest 11/11/23:

James Stahl, KQ4MON-*Technician*  
Thomas Swain, KQ4MMD-*General*  
David Gromko, KQ4LSM-*General Upgrade*  
Frank Diaz, KZ4BX-*Extra Upgrade*  
Richard Halbach, WA9NMX-*General Upgrade*  
(Pre-1987 Tech License Upgrade)

There was no VE testing session held in October. Congratulations to all the new hams and upgrades. Job well done! Enjoy.





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## SPARC Antenna Workday

By: Bruce Solov, KF4TYA

The St. Petersburg Amateur Radio Club had an antenna party on October 28, 2023, at the club station in Pinellas Park. Ed, NZ1Q organized the event. The agenda was to build a 160 meter twin-lead dipole and balance the dual coax feedlines, make improvements to the 40 meter vertical's feedline by, adding a 90 degree elbow coupling, construct a secondary 40 meter dipole and install the 6 meter loop antenna that Dean, W8IM generously donated to the club.

There was a large turnout for the work which began at 8:00 am. Some of those that were at the event was NZ1Q (Ed), N2ESP (Bob), KO4CEE (Alex), KF4TYA (Bruce), AA0O (Pat), AA2MF (Richie), KC4SXO (Bob), KB9LXM (Pete), W7WMS (Will), KN4LVA (Mike), KR4U (Dave), W4XXI (JoJo), W4CU (Tom) and many others partook in the festivities.

Mike, KN4LVA handled all the work that was needed to be done on the roof. Dave, KR4U was charged with tuning the multi-band (160 meter-10 meter) vertical.

The work progressed according to plan with only a minor hang-up. There was an issue making all the necessary connections in the junction box to get everything fully operational. Ed, NZ1Q diagnosed and corrected the problem.

In addition to the repair, construction and installation of antennas, Kathy who is the property owner, requested the club's assistance to empty the storage trailer. This was so that Kathy may remove the two vehicles that were being stored inside. With

that, the club uncovered a myriad of communication relics from yesteryear, including an old military bullhorn from World War II.

Additionally, The CQ Worldwide SSB Contest was taking place. Some of the members on hand worked some DX at the club station on 10 meters USB. Bob, N2ESP was successful in making many DX contacts with Crete, Spain, Portugal, England and France to name a few.

## New Officers and Board Members are Named for 2024

By: Bruce H. Solov, KF4TYA

The Annual Meeting in which new officers are elected and board members are appointed and installed was held on November 3, 2023. The officers & board members are as follows:

### *-Elected Executive Staff*

- President: Rich, AA2MF
- Vice President: Carole, AB4YI
- Treasurer: Will, W7WMS
- Secretary: Charles, W4BPP

### *-Board Members*

- Tom, W4CU
- Dee, N4GD
- John, KI4UIP

### *-(non-elected board members):*

- Immediate Past President: Pat, AA0O
- Club Trustee: Dave, KR4U
- Repeater Trustee: Bill, KN4LUZ
- SPARC Gap Editor: Bruce, KF4TYA

A new honorary title of *President Emeritus* was created. Past President Bob Wanek, N2ESP was



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given that honorary title by a majority membership vote. Congratulations Bob!

## SPARC Fest 2023

By: Bruce H. Solov, KF4TYA

The St. Petersburg Amateur Radio Club held their annual SPARC Fest on November 11, 2023 at Freedom Lake Park in Pinellas Park, Florida. Ed, NZ1Q said there were approximately 43 vendors on hand for the event.

Everything from vintage radio gear to antennas to state of the art gear, and even some costume jewelry was for sale at the event. SPARC had a table offering coffee, chips, sodas and Pop Tarts.



There was also VE testing at the event, under the direction of the SPARC past-president, Pat Connelly, AA0O. The other VEs in attendance were: Past president of SPARC Pat Connelly, AA0O; Dee Turner, N4GD; Norm Breed, KA1IJA and Richard Stevens, N4BUA.

Connelly said that the results were as follows:

- 1 straight to General
- 1 new Technician
- 1 upgrade to General
- 1 upgrade to Extra

There was also one “paper upgrade” which is defined as for anyone with a Technician class license prior to 1987 who can provide proof of said licensure can get a free upgrade to General.



The meteorological conditions were favorable with temperatures in the low 70’s with a steady increase into the low 80’s by the time the festivities wrapped up at 12 noon. All in all the event had a great turnout. Good “eyeball” QSO’s & bargains were had by many.

## Product Review: Yaesu FTM-6000R

### Dual Band (2 meter/440) Mobile Transceiver

By: Bruce H. Solov, KF4TYA

Back at the end of September I needed to acquire a transceiver that had a larger power output while fitting in with my shack’s unique layout. I live in a fourth floor, one-bedroom apartment. I am unable to construct any substantial antennas for my VHF/UHF (or any ham radio related) activity.

Most of you have heard me as NCS on the SPARC Nightly 2-meter Prenet. I was running said net with a five-watt handheld, hooked up to a cheap ¼ wave dual-band, mag mount mobile antenna on my windowsill. Because of this, I sometimes had problems making it into the repeater.

Another club member encouraged me to become an NCS for the SPARC Nightly Net. While very interested in (and flattered by) this, my power limitations and tight budget made me delay this until I could acquire something with more power. Enter the Yaesu FTM-6000R.





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The Yaesu FTM-6000R is exactly what I needed! It is a dual band 2m/70cm mobile rig. At only \$300 (“only” being a relative term compared to the steep prices for decent gear), gave me the biggest bang for my buck in many ways. Also, another club member highly recommended this radio to me.

The pros? Well, where do I start? There are almost too many pros to mention all of them, but I will highlight the important ones. The biggest “pro” for me is the output power. The Yaesu FTM-6000R has a power output of 50 watts (high)/25 watts (medium)/ 5 watts (low) (This also happens to be the “high” power setting on my handheld). It 100% makes the grade, even with the ¼ wave mobile antenna. This speaks volumes on the accolades of this rig. Depending on the conditions I am usually running it between the high and medium power settings. Also, the physical size is small which is very important considering the lack of space in my shack. Setup was easy and once it was programmed; I was on the air in no time. The audio from the speaker is better than I expected and crystal clear even at lower volume settings. There is also a generous number of preset slots available. One of my favorites (being a student pilot/aviation enthusiast) is that the radio can receive VHF Air communications from 118-136 MHz. The DTMF keypad and the preset Up/Down right on the mic is a big plus. The size of the mic was perfect. The LCD display is easy to read and substantially backlit. I also like the detachable control head.

Now the cons. My biggest con, as with all new radios that are on the market, programming it without the computer software/cable would be very difficult. Another minor issue is that the microphone connects directly to the radio itself and not the control head which may potentially pose a problem for a mobile installation or keeping the head attached directly to the radio. I am unaware if there is an accessory that would solve this issue.

The Yaesu FTM-6000R is truly a great radio at a great price. If you are in the market for a dual band

mobile rig, you need to consider this one. You will be glad you did.

## Looking for Equipment and Gear Reviews

By: Bruce H. Solov, KF4TYA

Part of the enjoyment of our hobby is always upgrading and getting new equipment & gear. Whether it is a new rig or handheld, an antenna even accessories like an amplifier, I would love to publish your review. Whether it is a positive or a negative review, it will be welcomed and will be very helpful to others that are in the market.

I just ask that a couple of parameters are met when writing it. First of all, it should be honest! We all know that retailers post reviews but one is never sure how honest it may be (due to the possibility reviewers being paid by the manufacturer or retailer, thus coercing a not so honest review). It should also include a picture (or two) of the item. Thirdly, it should be anywhere between 100-500 words, to give the reader a true picture. Also, it needs to be in either a Word (.doc, .docx) or an Adobe Acrobat (.pdf).

Please submit equipment reviews to me via email either at [bsolov@hotmail.com](mailto:bsolov@hotmail.com) or [kf4tya@spectrum.net](mailto:kf4tya@spectrum.net). Also make sure that you provide me with your email/phone number in case I need anything clarified. I look forward to your reviews. Thank you and 73's from KF4TYA.



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## Current SPARC Net Schedule

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

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)



## In Memoriam

### Silent Keys

*It is with a heavy heart that the St. Petersburg Amateur  
Radio Club announce the following members have  
become silent key:*

Leslie Johnson, WA4EEZ

Kyle Jeske, N4NSS

*They will be sadly missed. May their memories be  
cherished forever.*