



SPARC Cap

The Official Newsletter of the Saint Petersburg Amateur Radio Club

Vol. 2 No. 1

April 2024

Club Station Tower Gets Upgraded

by: Bruce H. Solov, KF4TYA

After a very long wait and many ongoing discussions about how to motorize the club's tower, it has finally come to fruition. Our 72-foot tower supports a Tennadyne T-8 Log-Periodic beam antenna. The tower which is also used as the center support for the club's 160-meter dipole and the future end-support for an additional 40-meter dipole has been motorized with a new electric winch.

On January 27, 2024, a handful of members congregated to make this a reality. Until now, the tower had to be raised and lowered using a manual crank. This was both laborious and time consuming, especially for Field Day and other operating contests. The membership agreed

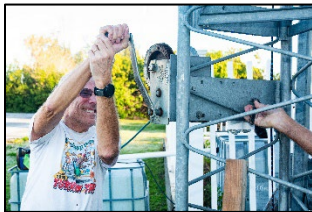
that the upgrade was needed.



The members in attendance at this work event were: Ed Erny-NZ1Q, Richard Cariello-AA2MF, Mike Marano-

KN4LVA, Mark Opyd-KN4YQC, Glenn Cate-N4GRC, Norman Breed-KA1IJA, Bruce Solov-KF4TYA and Carol De La Torre-AB4YI.

It was a bittersweet moment as the tower was cranked up by hand for the very last time. Everyone in attendance took turns at the arduous task of raising a 72-foot tower by the way of a hand crank. The crew convened at the club station in Pinellas Park at approximately 0800 and the work lasted until approximately 1145.



Just before the club meeting on February 1, it was determined that additional bolts were needed to ensure a more solid install of the new winch. A small group of members gathered to get that done. The work was deemed successful and a good time was had by all.

SPARC Members Gather to Assist in Dismantling Silent Key's Tower

by: Bruce H. Solov, KF4TYA

On Saturday, March 9, 2024 a handful of SPARC members gathered at the former home of Dr. Warren Brown, KD4GUA, in Largo to dismantle a tower and the HF beam antenna that was mounted to it. Dr. Brown recently became a silent key

Those in attendance were: NZ1Q-Ed, KC9CS-Bill, KC4SXO-Bob, KN4LVA-Mike, KO4CEE-Alex and

KF4TYA-Bruce.



The weather outside was overcast with some fog and light drizzle (which came and went very quickly without hampering the job at hand) with an ideal

temperature. A few of the participants brought their toolboxes to ensure that all the right tools would be available for the project. Mike, KN4LVA arrived on scene with his pickup truck and a trailer to haul away the antenna and tower to its new location. The work started at 09:00 and was guided by Dr. Brown's son, Eric. The work lasted about two and a half hours.



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The antenna was a Mosely TA-33 Tri-Band three element beam with the additional M-WARC single element for 12 and 17-meter operation. It is supported by a US Tower MA-40, crank-up tower with an MAF40 tilt over fixture, upgraded CZ2M cable guides and a MARB40 rotor base.



Dr. Brown's family donated the antenna, tower and his gear which includes an HF transceiver, an Icom IC-751A transceiver, a few 2 meter transceivers (from Icom, Azden and Kenwood, an MFJ antenna analyzer and a myriad of accessories.

This is a true example of both SPARC's and Amateur Radio's commitment to the community it is in. Dr. Brown's legacy will live on in the equipment that was donated and his love for Amateur Radio.

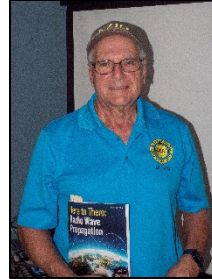
Propagation and the Sun- Part II:

*How Radio Waves Travel & are
Affected by Solar Activity*

by: Bruce H. Solov, KF4TYA

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:

- The sun will energize all the layers (D, E, F, F_1 and F_2) further noting that F_1 and F_2 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.



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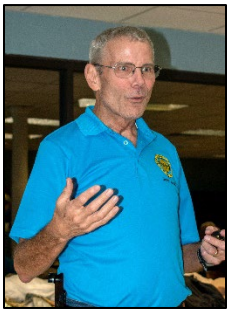
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Propagation and the Sun- Part III:

Tools and Resources for Obtaining Solar Weather Information

by: Bruce H. Solov, KF4TYA

The St. Petersburg Amateur Radio Club held their first monthly meeting of 2024 on January 5, 2024. January's program was the third and final part of the Solar Weather Series, with Glenn Cate, N4GRC making this



presentation. Ed Erny, NZ1Q hosted Part II of the series at the December 2023 meeting where he dove into the proverbial meat and potatoes of what the numbers mean.

Glenn gave us a myriad of tools and resources that are available to obtain solar weather information. He went on to give an overview of resources. He discussed what he calls The Propagation Toolbox. His Propagation Toolbox consists of:

- Basic Propagation Tools
- Solar Activity Tools
- PC Propagation Tools
- Web-based Propagation Tools
- DX Activity Websites
- Grayline DXing Websites
- Propagation Resources (Books)
- How he has his shack set up for propagation testing and DX operation

He briefly touched on VOACAP which is HF propagation prediction software originally developed for Voice of America. You can get specific propagation predictions based on your grid square, which can be found in *Google*, (e.g.: the grid square for Pinellas County, FL is EL87). He also spoke about Grayline Propagation which is mainly used on the low bands, and recommended a couple of books which cover this very topic.

An expert on this is Dr. Tamitha Skov, WX6SWW, aka: The Space Weather Woman. Dr. Skov is a space weather physicist, researcher and public speaker. She gives space weather forecasts and information.

Glenn also took some time to give a real-time, live demonstration of some of the available tools and websites. One such website is Propy, which gives solar weather and propagation predictions.

Some other available information resources are:

- PSK Reporter
- NG3K.com
- DX Watch.com
- DX Summit
- Hamspots.net
- DX View.org

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

Homebrew Night

Members Showcase Their Electronics Prowess

by: Bruce H. Solov, KF4TYA

The program for the February 2, 2024 meeting of The St. Petersburg Amateur Radio Club was Homebrew Night where club members get to showcase their home designed and/or home built creations.

The presenters were: Pat Connelly-AAØØ, Ed Erny-NZ1Q, Norman Breed-KA1IJA, Dave Wiegman-K4DRW, Fred Friedman-K4SPF, Alex Harvey-KO4CEE, Tom Schaeffer-W4CU and Joe Rubin, W4CBJ.



Pat, AAØØ (*Hermes Lite 2+ SDR Transceiver*)-This is a five-watt, HF transceiver with an SMA connector. This transceiver can be used on the 40-meter through 10-meter bands and maybe the 6-meter band as well. Pat



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gave a detailed list of the approximate costs of the project.

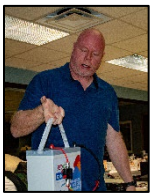
- Hermes-Lite 2 board \$269
- Filter board \$53
- I/O board (optional) \$53
- Enclosure \$17
- HL2+ board \$94 (CW/SSB/Amp)
- Shipping from China via DHL \$41

The device also has a built-in decoder for FT-8.



Ed, NZ1Q (*Step IR Antenna*)-This is a multiband antenna that changes in length. The step IR vertical has a 32-foot copper beryllium tape (which serves as the antenna itself) wound on a spool to assist in extension. The antenna is good for 40-meters through 6-meters. Ed pointed out that there is also an available 80-meter coil.

The antenna has no built-in tuner as the tuning is preset. The height of 33 feet is to be a full 1/4 wave antenna on 40-meters.



Norman, KA1IJA (*Battery Box Radio*)- This radio starts with a Group 27 battery box. All the radio is actually on the microphone. The radio runs on 12 volts, with a solar panel included. The battery is 100-amp hours lithium ion phosphate

battery.

The radio is programmed via the website using a UV-5R programming cable.



Dave, K4DRW (*Battery 300-400 amp hours*)-This contains a module to get the battery started from wifi. The battery weighs about 50 pounds with each battery costing around \$800.

The battery also has a 20-watt heater as it cannot charge at temperatures of 32°F or below and contains two temperature sensors.



Fred, K4SPF (*Flagpole Antenna*)-This antenna is mounted on a 25-foot flagpole and connects to a Baofeng radio.

He also showed a Smith Chart, which measures RF patterns from an antenna.



Alex, KO4CEE (*Surveillance Headset*)- Alex very often is on the air as a bicycle mobile. He built this headset with a bicyclist in mind.

Essentially this consists of a tiny clip-on microphone mounted into a headset. He pointed out that it similar to the headsets that Secret Service Agents use when they are on duty.

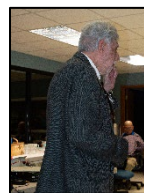


Tom, W4CU (*Crystal Controlled Radio*)- These crystals were obtained from surplus of those used in communication devices from World War II. The crystals were not originally tuned to the ham bands and thus, had to be modified to work on the

ham bands.

He said that crystals are still being used, but pointed out that they were the standard back in the day.

A crystal grinder kit can be obtained for a mere \$50.



Joe, W4CBJ (*Minimalist Antenna*)-This antenna is constructed using two pieces of PVC piping that are approximately 7/8" in length and three pieces on 3/32" brazing rod.

All the homebrew projects were very unique and very interesting. Thank you to all those who showed off their handiwork.



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Ham Radio Communication Satellites: An Overview

by: Bruce H. Solov, KF4TYA

The St. Petersburg Amateur Radio Club held its monthly meeting on March 1, 2024. The program for this meeting was a look into the world of communication satellites, specifically those used for Amateur Radio.



The presenter was the Vice President of Operations for AMSAT (Radio Amateur Satellite Corporation), Drew Glasbrenner, KO4MA. Glasbrenner is also on the company's Board of Directors and has been since 1987. He currently holds an Extra Class Amateur Radio license.

He began the presentation by noting that amateurs have launched about 100 satellites for communication. The size of these satellites ranging anywhere from five centimeter cubes to ones that are 600+ kilograms. Some of the bullet points he noted are:

- Terrestrial Tropospheric Ducting
- E skip on 2-meters
- Meteor Scatter
- Earth Moon Earth (EME)

He also briefly touched on some of the modes that were included such as VHF/UHF FM repeaters, digipeaters and linear transponders (SSB/CW). The equipment can range anywhere from simple to complex. You can look up satellite frequencies/modes at www.amsat.org. Further stating that The ISS (International Space Station) was the most popular. Other noteworthy points that Glasbrenner touched on were:

- The equipment can be simple or complex

- linear transponders, like FM repeaters listens to a chunk versus one FM repeater.
- Most start with an HT and a handheld antenna.
- a 3 kHz doppler shift is present with linear transponders.
- There is a phone app available to tell you what satellites are coming by inputting your Grid Square information (e.g.: Pinellas County, FL is Grid Square EL87)
- Many satellites also have a PLsquelch on FM

Operational satellites change on a minute-to-minute basis, with some of those being on 24/7 and others being on intermittently. There is a webpage available that gives AMSAT satellite status information.

Drew went on to play a short video clip demonstrating a communication made from a tugboat, using a satellite. He also played a short audio clip of his son working the ISS.

Who pays for all this? Originally, satellites were launched on test launches for free, however this is no longer the case. These satellites are paid for by NASA. Educational satellites will be paid for by NASA up to \$100K. The average cost per launch ranges anywhere from \$50,000 to \$100,000, with those going to the ISS being cheaper due to the many launches that happen. There is a maximum power limit of 50 watts.

He went on to state that he moderates an AMSAT Group on Facebook



Glasbrenner noted that the next two big projects for AMSAT are Golf Tee and Golf One, with the power generated being able to jump from 10 watts to 30-40 watts with the panels open.



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The question is how you know you got into a satellite. The answer is...when someone answers your call.

Additional information can be found on AMSAT's website at www.amsat.org.

Surprise! CW Skimmer

by: Pat Connelly, AA0O

I've used a CW Skimmer before as an aid in assisted contesting entries. Using a FlexRadio 6600, I could dedicate three of the available four Rx slices to skimming different bands for CW signals. With this, I am able to monitor three bands at a time. An Rx slice is what FlexRadio calls a receiver. You can set up four on the model I have. These signals are then output to a Telnet cluster which can feed into the NIMM+ contesting software to give me callsign spots. FlexRadio software only works with FlexRadio hardware and is commercially available. A Telnet cluster is a spotting network where callsigns that are heard are listed with their frequency. The benefit of this versus a publicly available Telnet spot is that my antenna hears these signals whereas a public one could be anywhere. This may result in me not hearing anything when I tune to the spot frequency. One disadvantage of this is that simultaneously running both the FlexRadio and CW Skimmer software puts a huge load on the computer, thus slowing it down. I use my laptop to do the actual contesting with the remaining Rx slice. Another disadvantage is that I can only monitor three bands at a time. I investigated other ways to have a CW skimmer at my house but didn't find too many options that I liked. I mostly gave up on the idea.

Last year, my FlexRadio had a problem with the network interface. As a result, I had to send it back for repair. During this time, I bought a Hermes-Lite 2 SDR to keep me busy while my main radio was down. Hermes-Lite 2 SDR is a circuit board with an FPGA modem chip that some figured out that it could do HF. It functions

similarly to FlexRadio in that it uses the same network as the interface, no knobs. It is very DIY in that you have to assemble it and it uses open-source software. It has a maximum Tx power of five watts. I showed this at the SPARC homebrew night at the February meeting.

After the homebrew meeting, I was tinkering with the HL2 and found there is a gateway (which is firmware for an FPGA). A Field Programmable Gate Array or FPGA is a programmable logic chip. This chip typically has a specific purpose. This one is a modem, so it has programmable RF analog-to-digital converters, amplifiers and filters that make it useful for HF. It was designed for networking over powerlines. This will give the HL2 10 Rx slices, but at the expense of Tx functionality (with Tx, there are four slices). This made me think it would be perfect for a CW skimmer. With a *Google* search, I found that someone had already figured that out. It was amazingly easy to connect it to the CW Skimmer Server. This allowed me to start monitoring eight bands at once. The CW Skimmer Server has a limit of eight bands, thus can't use the 10 available on the HL2. The CW Skimmer Server uses less CPU load than the regular CW skimmer software.

I looked into a T/R switch because switching my coax from the FlexRadio to the HL2 for skimming isn't very functional. By searching, I found the RF AUDITE SDR switch from a company in Czechoslovakia. It is also available from DX Engineering but it's significantly cheaper ordering direct. I received it in nine days. This AUDITE is my new favorite box. It has connections for my antenna, transceiver and the SDR plus the transceiver TX signal. This isolates the SDR when I transmit, thus allowing simultaneous function of the skimmer and the transceiver. N4ZR reviewed this in the April 2023 issue of *QST*. I used it in the ARRL DX CW Contest, which allowed me to ignore the US/CA stations which are not worth any points and focus on DX. I managed an average of 47 QSOs per hour search and pounce over eight hours.

I feed the CW spots into the PSK reporter and the Reverse Beacon Network. My hopes for the future is to code my own CW skimmer software by leveraging a



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graphics card to do the FFT that decode the CW and running in a Docker container on Linux. The CW Skimmer is Windows only.

Here are a few Links:

PSK Reporter page for my CW Skimmer
<https://pskreporter.info/pskmap.html?preset&callsign=aa0o&mode=CW&timerange=86400&mapCenter=18.8419,10.558,2.4467>

Hermes-Lite 2 SDR (~\$400 with case and filter board)
www.makefab.com/hermes-lite-2.html

RF AUDITE SDR T/R Switch (\$246 + shipping)
<https://hamparts.shop/rx-audite-sdr-switch.html>

CW Skimmer Server (\$75 license)
www.dxatlas.com/SkimServer/

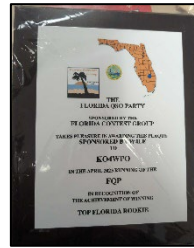
Using Hermes-Lite 2 SDR with CW Skimmer
www.george-smart.co.uk/2020/12/using-cw-skimmer-with-hermes-lite-2-sdr/

SPARC and a SPARC Member Win Awards

By: Bruce Solov, KF4TYA

In addition to a very informative program at the March 2024 monthly meeting. A couple of awards were given out.

The first award was given to The St. Petersburg Amateur Radio Club. SPARC won First Place in the **Florida QSO Party 2023**. All the call signs of the participating members were engraved into the plaque. However a small error was made on one of the participant's callsign. The good news is that he took it in stride and got a laugh from it.



Another plaque was given to Zach Craig, KO4WFO. Zach was recognized as the Top Florida Rookie for the Florida QSO Party 2023.

Congratulations to all award winners. Well Done!

Radio Needs Repair? Here are Some Local Repair Shops

By: Bruce Solov, KF4TYA

Radios and radio gear are electronic devices that may malfunction from time to time. Sometimes these malfunctions are easily corrected and other times, they require the intervention of a trained professional.

Pete, KB9LXM has furnished us with some local repair shops. This information was obtained from the Zephyrhills Area Amateur Radio Club (ZAARC) Website.

Disclaimer: *Neither the St. Petersburg Amateur Radio Club, Pete (KB9LXM) nor the newsletter editor have any financial interest in any of the businesses listed below. They are only shown for informational purposes only.*

Metro Electronics
Dave Callahan, KC4WHO
www.metrodave.com
4760 96th St.
St. Petersburg, FL
727-391-1577

Technical Specialists
Lee
www.amateurradiorepair.biz
2014 Finland Dr.
Spring Hill, FL 34609
813-784-5536

RadioSmith
W4AF@arrl.net



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[The Radiosmith \(eham.net\)](http://TheRadiosmith(eham.net))

Clearwater, FL

New-General

Grant Hauck, KQ4OZL

Upgrade-General

Alex Owen, KN4EDS

Raiffe Regalado, KQ4NVS

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:

12/19/23

New-Technician

Bart Heflin, KQ4NIU

New-General

Brandon Stoy, KQ4NHY

David Johnson, KQ4NHX

Upgrade-General

David Johnson, KQ4NHX

1/16/24

New-Technician

Christopher Calkin, KQ4NVO

Dan Reynolds, KQ4NVP

Mason Nash, KQ4NVQ

Henrik Nordstrom, KQ4NVR

Raiffe Regalado, KQ4NVS

New-General

Alain Omila, KQ4NUZ

Upgrade-Extra

David Johnson, KQ4NHX

2/20/24

New-Technician

Michael "Tanner" Simmons, KQ4OZM

3/19/24

New-Technician

Randall Wood, KF0PPN

Richard Optiz, KQ4QBZ

Michael Fauser, KQ4QDJ

Ulrike, Nichols, KQ4QDA

Upgrade-General

Ronald Brown, KC8ZFF

Dan Nichols, Sr., KQ4MTW

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.

What Do You Think?

By: Bruce Solov, KF4TYA

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, like I did for the inaugural edition of the *SPARC Gap* newsletter, real reviews of gear that you have (whether it is good, bad or downright ugly)

Of course I can be reached by email:



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

All are welcome to make submissions.

73's,

Bruce H. Solov, KF4TYA

SPARC Gap Editor

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)