

MOUNTAIN SPARK GAPS

NPARC—The Radio Club for the
Watchung Mountain Area



Website: <http://www.nparc.org>
Club Calls: N2XJ, W2FMI

VOLUME 49 NO. 8 August, 2014

UPCOMING EVENTS

Regular Meetings
9/8 and 9/22
Mon. 7:30
NP Senior Citizens Center

**Note that the regular meeting place
for NPARC has moved.
From now on it will be the
N.P. Senior & Adult Center
15 East 4th Street New Providence**

Meeting Schedule

Regular Meeting: 7:30—9:00 PM
2nd Monday of each month at the
NP Senior & Adult Center
15 East Forth Street
New Providence

Informal Project Meeting: 7:30—9:00 PM
4th Monday of each month
Same location

Everyone is Welcome
If a normal meeting night is a holiday,
we usually meet the following night.
Call one of the contacts below
or check the web site

Club Officers for 2014

President: K2MUN David Berkley
908-500-9740
Vice President: KC2WUF David Bean
973-747-6116
Secretary: KD2EKN Tim Farrell
908-244-6202
Treasurer: K2YG Dave Barr
908-277-4283
Activities: W2PTP Paul Wolfmeyer
201-404-6914

On the Air Activities

Club Operating Frequency
145.750 MHz FM Simplex

Sunday Night Phone Net

Murray Hill Repeater (W2LI) at 9:00 PM
Transmit on 147.855 MHz
With PL tone of 141.3 Hz
Receive on 147.255 MHz
Net Control K2AL

Digital Net

First & Third Mondays 9 PM
Details as announced.

Club Internet Address

Website: <http://www.nparc.org>
Webmaster K2MUN David Berkley
Reflector: nparc@mailman.qth.net
Contact K2UI, Jim

MOUNTAIN SPARK GAPS

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Editor: K2EZR Frank McAneny
Contributing Editors:
WB2OOQ Rick Anderson
WB2EDO Jim Brown

Climatological Data for New Providence for
June 2014

The following information is provided by
Rick, WB2OOQ, who has been recording daily
weather events at his station for the past
33 years.

TEMPERATURE -

Maximum temperature this June, 91 deg. F
(June 17,18)
Last June (2013) maximum was 95 deg. F.
Average Maximum temperature this June, 81.9
deg. F
Minimum temperature for this June, 48 deg. F
(June 1)
Last June (2013) minimum was 50 deg. F.
Average Minimum temperature this June, 60.9
deg. F
Minimum diurnal temperature range, 10 deg.
(71-61 deg.) 6/11; (70-60) 6/12
Maximum diurnal temperature range, 32 deg.
(80-58 deg.) 6/21

Average temperature this June, 71.4 deg. F
Average temperature last June, 72.4 deg. F

PRECIPITATION -

Total precipitation this June - 4.69" rain.
Total precipitation last June - 8.61" rain.

Maximum one day precip. event this June;
June 9, 1.45" rain.
Measurable rain fell on 11 days this June,
14 days last June.

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Rick Anderson
7/8/14

243 Mountain Ave.
New Providence, NJ
(908) 464-8912

rick243@comcast.net

Lat = 40 degrees, 41.7 minutes North

Long = 74 degrees, 23.4 minutes West

Elevation: 380 ft.

CoCoRaHS Network Station #NJ-UN-10

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New Providence, NJ

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PRESIDENTS COLUMN

By K2MUN

August 1984

I started my July column by saying, “I am sitting at my rig, waiting for the Monday night edition of the NPARC Digital Net to start. If you haven’t participated, which is true of most of our members, this is a great deal of fun and an easy way to get into using various digital modes.” Those of us who enjoy digital modes have been encouraging other members to join us in our pleasure and have offered to help with the sometimes tricky business of setting up to make that first digital QSO. As a result I was thrilled to hear from Bruce, KQ2E, one of our members asking for aid in doing just that — getting on the air, using Hellschreiber, for the digital net.

To make matters easier for me, Bruce had previously been set up with all the needed hardware and was also a Mac user with the appropriate Mac software. Note that there is plenty of digital software for all manner of PC’s including Apple, Microsoft and Linux operating systems. In fact, one of the most popular pieces of software, FLDIGI, is available free for all three.

Outside of just using wires to connect the pieces together, which works but can be plagued by ground loops and RFI, one of the simplest hardware setups uses an inexpensive (about \$100) digital mode interface, the Signalink USB.

Tigertronics, the parent company, provides headers for the little device that work with just about any rig and, from personal experience, their telephone support is excellent. There are, of course, many much more complex, complete and expensive interfaces for every taste and pocketbook! I use a Signalink with my K2 and Bruce had one his daughter had ordered for his older rig, an ICOM model 751.

I mentioned that this is sometimes a tricky business, and I meant just that. There are no major technical pitfalls but there are many potential potholes on the way from never having run digital on your rig to making that first exciting contact. Of course, anyone taking this road is almost certain to hit every one of them. Even though those of us wise in the ways of the path can make it seem easy, using an Elmer can make the task much less frustrating and the temptation to return to whatever your “comfort zone” is less appealing.

The beauty of the Signalink USB is that it contains a built-in sound card. That means you can operate independent of the PC/Computer sound card interface. In fact, having that flexibility can add additional capability as an advanced setup can use the additional audio i/o for monitoring, if desired and supported by your software. Of course, monitoring digital mode signals is not essential... but it doesn't take much experience to distinguish the various modes by ear so, at the least, it can be amusing.

So what actually happened from the time I walked in the door until Bruce was on the air on the Monday night Digital Net? Well, that's the story of the potholes, and there were many of them.

Receiving digital modes should have been a piece of cake. Sort of. Of course, the Mac and PC default to using their internal a/d-d/a converters so the first step is to be sure that the USB a/d-d/a (both, not just one or the other) are being used. Again, depending on the application, this may have to be set for each desired digital mode (e.g. PSK, RTTY and Hellschreiber) as we discovered to our not so pleasant surprise using CocoaModem 2.0 software.

Then make sure all the cables are plugged in (and in the proper goesinta's and goesouta's — highly technical terms). This requires understanding how the Signalink USB functions and, regardless of how good the instructions, this is quite mysterious. Adding digital to your previously friendly rig adds a layer of additional adjustments and knobs to twiddle, all guaranteed to be set incorrectly! As the 751 has a total of 50 knobs and switches already, there were a lot from which to choose.

Let's take the signals and the parts one at a time in the form of a generic check list that should work for any setup:

Receiving — check to be sure that each link in the receiving chain is providing a reasonable audio level (not overloading but at least turned on at each step from the rig to the software). You should be able to see an indication of reception on the digital PC/Mac interface. Fortunately, most applications are not very sensitive to level and will adapt to anything reasonable. Overload is the biggest danger.

Transmitting — similar to reception, check transmission is enabled for the mode you want to work on your software and that nothing overloads. Unlike reception, however, transmission level can be critical to avoid creating unwanted sidebands on your signal. Typically, output level is set to just activate ALC (although some rigs, e.g. the K2 with all

mods in place, can work with ALC more fully activated). For PSK31, there are hardware monitors (PSKmeter) available to check signal quality. Aiming for at least 25 dB of sideband suppression is appropriate — and can also be reported as signal quality, as imDb by a receiving station (RSQ vs. RST).

USB/LSB/Digital — When you set up your rig, it is helpful if the mode of transmission is set appropriate to the digital mode. What has been discussed so far assumes you are using AFSK as your digital signal. This means using audio to/from your radio and PC rather than FSK where the appropriate digital keying is directly controlled. FSK is available on some rigs but most setups use AFSK, which is what the Signalink enables. For PSK and Hellschreiber, convention uses USB while RTTY must use LSB. Although some modes will work in either (e.g. PSK) some won't (e.g. RTTY) but sticking with the convention makes understanding the relationship between the audio frequency displayed on your software and your actual transmission frequency easier.

Signalink — TX and RX (see figure) enable some additional control over signal audio levels. This is especially useful if your rig doesn't have audio level controls in the connection path. The third control DLY, deserves comment. Many digital modes, such as PSK, send continuously but other, such as Hellschreiber, have breaks in the transmission. This means two things: in general your power setting for your rig should be kept low, to assure no smoke — assume the 100% keydown specification. This usually means derating relative to SSB or CW by a factor of 3 to 5 (run your 100 watt rig at 20 watts maximum). Also, if the signal is intermittent, you must set the DLY knob high enough to maintain the rig in transmit even when the audio signal drops. For PSK, DLY should be set at minimum since it is

on all the time. Read the Signalink instructions to avoid problems!

If you see erratic operation, remember that computers and RF don't mix well. Although the Signalink provides excellent isolation from your rig to your PC, RF can still appear on various control cables. A little ferrite, judiciously placed, can work wonders.

Overall, digital modes can be (and should be) operated at surprisingly low power levels. Running 20 watts on PSK is high and milliwatts can be sufficient on JT9 to work DX reliably.

As you can see, there are a fair number of steps to take in order to get on the air. Working with Bruce, we went through all of the above, getting most of them wrong at least once. However, in the process, using his recently realigned and recalibrated rig (thanks to the amazing skills of Brian Lynch, KA2MPG) we made a quick, but solid, BPSK31 QSO with an R6 on 20 meters. In the end, KQ2E, running Hellschreiber, shows up in the NPARC Digital Net logs for the night! A little patience, and possibly some help from an expert the first time, should enable you to join him in the fun!

SCIENTIFIC TIDBITS

The Petri Dish in Your Pocket

A cash-stuffed wallet may as well be a petri dish. A new genetic analysis reveals that a U.S. one dollar bill can be home to more than 3,000 types of bacteria. It was actually found that microbes grew on money. The bacteria, including some found in fecal matter, are picked up from dirty hands of people, with microbes feeding on the waxy residue of skin and oils that collects on bills in circulation. It's still unclear if money's material, a cotton-linen blend, further encourages bacterial growth. Researchers examined 80 dollar bills from a Manhattan bank, finding a total of 1.2 billion DNA segments. About half of the DNA was human, and only about 20% of the nonhuman material could be identified. The most common microbes were those that cause acne, but bacteria linked to gastric ulcers, pneumonia, food poisoning, and staph infections were also found, as well as some responsible for antibiotic resistance. Though money's role in actually causing disease is unknown, the findings may help health scientists identify potential disease outbreaks before they spread too far. If I were a teller in a bank, I sure would be wearing rubber gloves to work. Maybe we should only be using Bitcoins?

Politics Claim another Victim

One hundred years ago, while an undergraduate at Columbia University, Edwin Howard Armstrong invented and patented the regenerative circuit which, as we all know, allows a signal to be amplified many times by the same vacuum tube or other component. He followed this up with the superheterodyne receiver in 1918 and the super regenerative circuit in 1922. Perhaps most notably, he was also the inventor of frequency modulation which, of course, remains the basis of today's FM Radio.

In 1934 Armstrong accepted an offer from RCA President David Sarnoff to work for him. According to accounts, Sarnoff was impressed with the FM concept but soon realized that it threatened RCA's AM empire. Plus, the company was more interested in getting into television broadcasting. Taking the bull by the horns, Armstrong personally financed construction of the first FM Station, and the early FM industry began to take off. Unfortunately, Sarnoff (with encouragement from AT&T) sabotaged it by convincing the FCC to reallocate the FM spectrum, thereby rendering all existing FM receivers useless. In addition, RCA claimed that it had invented FM and was issued its own patent on the technology, leading to a legal battle that continued for years. This left Armstrong in extreme financial and emotional distress.

The lawsuit against RCA was eventually settled in Armstrong's favor, but the victory came a bit late. His wife became very wealthy, but the inventor had already committed suicide in 1954 by jumping from his 13th floor New York apartment. Thus, 2014 is also the 60th anniversary of Armstrong's final undertaking. This situation is just one more example of crooked politics subverting justice.

Jim WB2EDO