

# **MOUNTAIN SPARK GAPS**

**NPARC—The Radio Club for the  
Watchung Mountain Area**



**Website: <http://www.nparc.org>  
Club Calls: N2XJ, W2FMI  
Facebook: New Providence Amateur Radio Club  
(NPARC)**

**VOLUME 53 NO. 11 November 2020**

## **Regular Meetings**

**Second & Fourth Mondays  
“ZOOM” until we can all  
get together again  
12/14 this month only**

## **Upcoming Events**

**Digital Net Mondays at 9:00 PM  
PSK on 80 or 10 meters  
CW training Net, Thursday at 9:00 PM  
Watch for Email announcements.**

## Meeting Schedule

**Regular Meeting:** 7:30—9:00 PM  
**2nd & 4th Monday  
of each month** at the  
New Providence Hall  
Elkwood Ave. NP

**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 2018

President: W2PTP Paul Wolfmeyer  
201-406-6914  
Vice President: K2GLS Bob Willis  
973-543-2454  
Secretary: K2AL: Al Hanzl  
908-872-5021  
Treasurer: K2YG Dave Barr  
908-277-4283  
Activities: Open  
Volunteer?

## —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  
28,084 — 28,086  
Will be using PSK and RTTY  
Net control K2YG

## Club Internet Address

Website: <http://www.nparc.org>  
Webmaster KC2WUF David Bean  
Reflector: [nparc@mailman.qth.net](mailto:nparc@mailman.qth.net)  
Contact K2JV, Barry

## MOUNTAIN SPARK GAPS

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Contributing Editors:  
WB2OOO Rick Anderson  
W2PTP Paul Wolfmeyer  
K2UI Jim Stekas

## Climatological Data for New Providence for October 2020

The following information is provided by  
Rick, WB2OOO, who has been recording daily  
weather events at his station for the past  
39 years.

### TEMPERATURE -

Maximum temperature this October, 71 deg. F  
(October 7)

Last October (2019) maximum was 86 deg.  
F.

Average Maximum temperature this October,  
61.8 deg. F

Minimum temperature this October, 30 deg. F  
(October 31)

Last October (2019) minimum was 36 deg. F.

Average Minimum temperature this October,  
49.1 deg. F

Minimum diurnal temperature range, 6 deg.  
(58-52 deg.) 10/13; (68-62) 10/22; (67-61) 10/23.

Maximum diurnal temperature range, 21 deg.  
(60-39 deg.) 10/18

Average temperature this October, 55.5 deg.  
F

Average temperature last October, 57.2 deg. F

### PRECIPITATION -

Total precipitation this October- 5.20"  
rain.

Total precipitation last October- 7.22"  
rain.

Maximum one day precip. event this October-

October 29, 1.47" rain

Measurable rain fell on 14 days this Octo-  
ber, 9 days last October.

YTD Precipitation - 38.91"

=====  
Rick Anderson

11/16/2020

243 Mountain Ave.

New Providence, NJ

(908) 464-8911

[rick243@comcast.net](mailto: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

## President's Column November 2020

WOW! Two ZOOM meetings and two great programs.

Thanks to Bob K2GLS for his program on Kwajalein. As part of the Western Electric Radar Group he shipped out to the atoll in January of 1968 to do testing. Kwajalein is 5000 miles from San Francisco out in the Pacific Ocean. Bob covered the history of the atoll, showed pictures and maps. Always the planner, Bob took equipment and acquired a ham call for Kwajalein, exercising it for DX and for many, many phone patches. Again, thanks, Bob, for the presentation and for your work on Kwajalein.

And thanks to Sam KC2OSR's persistence, he successfully arranged for Dr. Bob Heil K9EID to speak to us on the "Science of Amateur Radio" at our November 23<sup>rd</sup> meeting. Bob covered his history from being first licensed in 1956, his learning to listen while playing the theater pipe organ, his branching into music reproduction and reinforcement, his learning about sound (from Bell Labs work), his development of sound reproduction equipment and antennas. His talk was almost two hours and included many demonstrations about articulation (optimum at 2700 Hz) and phasing. What a talk!! We recorded it with his permission; here is the link:

[https://us02web.zoom.us/rec/share/8wWzxEpgPvp9XU9AQvuNo70BfutTqQKwx\\_uHqFvmroStnr2e1G6WIwcs\\_8XrxzUa.9PxiztCMxjZP201Q](https://us02web.zoom.us/rec/share/8wWzxEpgPvp9XU9AQvuNo70BfutTqQKwx_uHqFvmroStnr2e1G6WIwcs_8XrxzUa.9PxiztCMxjZP201Q) Passcode: 7SFfj\$2p

On more mundane matters, we did elect (re-elect) our President, Vice-President, Secretary, and Treasurer. We could still use someone to step up for the Activities Role, which is principally programs planning. Contact me if you're interested.

December 14<sup>th</sup> will be our 16<sup>th</sup> ZOOM meeting. It will primarily be recognition!! We'd normally do this at the banquet—but we had to put that off and I think it is important to celebrate some good things of the year 2020.

We welcomed a new member Andrew Rizkalla AD2BJ, an Extra!!

Thanks to Dave K2YG, Al K2AL, and David KC2WUF for running the great weekly nets.

Please participate!! Call us if you need help getting on them

Finally, dues are still \$20—you can send your renewal check made out to NPARC to Dave Barr, our treasurer, at 29 Montrose, Summit, NJ 07901-01556.

So stay safe...the only ZOOM meeting in December is the 14<sup>th</sup>--hope to see you...

73

Wolf W2PTP

201-404-6914 or W2PTP@arrl.net

## Antennas for Limited Spaces

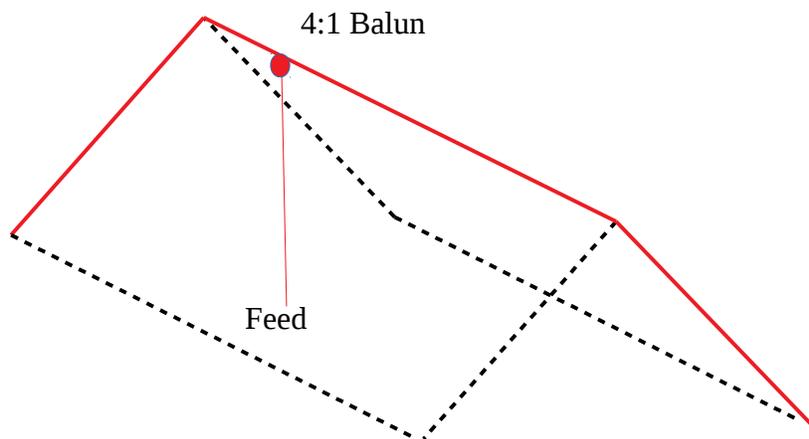
Jim Stekas - K2UI

Bob Heil's (K9EID) approach to antennas follows the fundamental principal: *get as much metal as possible up as high as possible*. At K2UI I worry about far more mundane problems than phasing 80m dipoles suspended from 120 foot towers. Namely getting a practical antenna arrangement that works decently on all bands from 10-80m. I have an OCF<sup>1</sup> dipole that handles 40/20/15/10m bands, but doesn't cover 80m or the WARC bands. My current top priority is figuring out how to get a full half wave 80m dipole (132') to fit on my lot before the winter snows hit. Solving this is more a matter of overcoming laziness and not real estate.

The physical constraints my QTH imposes on antennas is nothing compared to what hams constrained by HOA<sup>2</sup> rules face. Almost all HOAs forbid outdoor antennas with the exception of satellite TV dishes. For those hams living under HOA constraints there are limited options:

1. Construct an indoor antenna, preferably in an attic that is large and high.
2. Construct an outdoor "stealth" antenna that goes unnoticed.
3. Focus on other-than-operating aspects of the hobby, such as LOTW plugin development, NPARC webmaster, etc.

The attic dipole antenna is probably the "least bad" solution. Most attics will accommodate a 40m dipole with folded ends. The center of the dipole should run along the ridge beam that supports the peak of the roof. Whatever wire remains at the ends should be routed along the rafters. The diagram below shows a "bent" 40m dipole I designed for my attic using NEC. Thick red lines show the routing of the antenna wire and the dashed lines outline the shape of the roof.

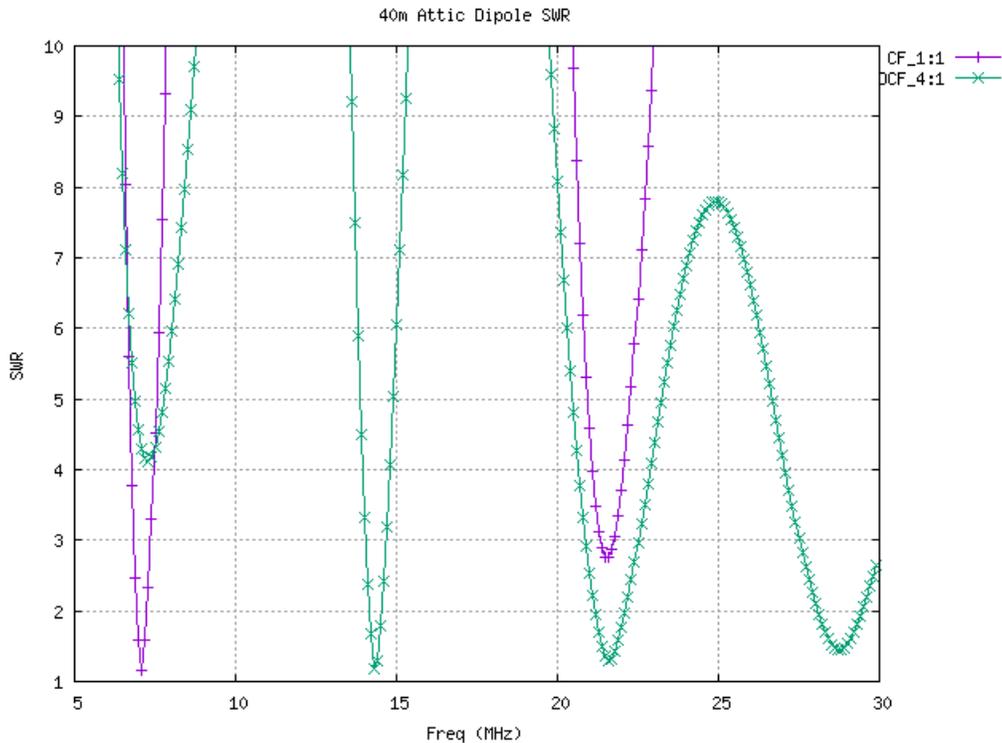


The total wire length is 69' 6" (21.2m), 36' of which runs along the ridge beam. This is about two feet longer than a standard "unbent" 40m dipole. (Remember, it is easier to trim excess wire than solder on extensions.) The antenna is fed through a 4:1 balun offset 5' 8" (1.72m) from the dipole center with a coax feedline running to the rig. Putting the balun in a gray plastic electrical box will make it look more like it belongs up there. (Running ladder line to the attic is likely to be difficult and it will stand out as something out of place in the attic.)

1 Off Center Fed

2 Home Owners Association

The reason why bent antennas work is that length is the most important factor in determining resonant frequency. Shape is a much less important factor unless the antenna is folded back on itself. For the antenna described the bent shape shifts the resonant frequency by 3% relative to a linear dipole of equal length.



The figure above compares the SWR for the OCF configuration with a 4:1 balun and a standard CF configuration with a 1:1 balun. With a simple antenna tuner<sup>3</sup> the OCF configuration allows operation on 40, 20, 15 and 10m bands. The CF configuration will only work on 40 and 15m.

The antenna wires should be mounted using standoff insulators like the ones shown at right. Avoid wire runs parallel to 120v power lines, and make sure the ends are well clear of everything. We don't want any high voltage arcing.



How about a loop antenna? A loop antenna works well when it is one or more wavelengths in circumference. I tried squeezing a 40m full wave loop into my attic by making some of the sides triangular by running along the rafters<sup>4</sup>. The result was an antenna with an impedance too low to give a good match on 40m. The loop requires twice the amount of wire as the dipole and doesn't cover as many bands.

3 A "simple tuner" refers to a garden variety LDG/MFJ auto-tuner in the \$100-150 range. A "legendary" (e.g. Heathkit SB-2060A) might be able to get a good match to a wet noodle but it cannot eliminate high SWR feedline losses.

4 The antenna was modeled with NEC, a much better way to try out antennas than building them.

Stealth antennas can get around the space constraints of an attic antenna. Fine gauge wire, e.g. 22 AWG, is practically invisible when hung high in the air. In college I used wire from a TV yoke coil to construct a long wire antenna that ran from my window to the roof of an adjacent building. It worked great for SWL-ing and was so stealthy I wouldn't know it existed if I hadn't built it myself.

One might think that fine gauge wire would have significant resistive losses, especially when skin effect is taken into account. For the attic dipole antenna described, resistive losses of 22 AWG wire are about 2.5x greater than for 14 AWG at 30 MHz. But efficiency is 95% or better, so 22 AWG will only cost you only 0.25 dB in signal strength. The most significant performance difference is a 2.5 fold reduction in antenna bandwidth. Not a serious problem if you are using a tuner.

When running a 100W CW/SSB transmitter into an antenna that is 95% efficient, the antenna will need to dissipate less than 5 W of power. That should be no problem for 22 AWG wire hanging in the air. What is a problem for a 22 AWG antenna is the attention of curious animals or a strong tug from swaying branches. So allow a reasonable droop of your stealth antenna.

Bottom line – don't be afraid to incorporate “stealthy” fine gauge wires into your antenna system.

## References

1. <http://www.arrl.org/limited-space-and-indoor-antennas> – A good place to start. (Requires ARRL member login.)
2. *Small Antennas for Small Spaces*, Volumes 1 and 2 - Just a few of the many ARRL antenna publications.
3. <http://www.google.com> - Gateway to millions of antenna articles - good, bad and ugly.