

# MOUNTAIN SPARK GAPS

NPARC—The Radio Club for the  
Watchung Mountain Area



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

VOLUME 49 NO. 9 September, 2014

## UPCOMING EVENTS

### Regular Meetings

10/13 and 10/27

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](mailto:nparc@mailman.qth.net)  
Contact K2UI, Jim

## MOUNTAIN SPARK GAPS

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WB2QQQ Rick Anderson  
WB2EDO Jim Brown

Climatological Data for New Providence for  
July 2014

The following information is provided by  
Rick, WB2QQQ, who has been recording daily  
weather events at his station for the past  
33 years.

### TEMPERATURE -

Maximum temperature this July, 95 deg. F  
(July 2)  
Last July(2013) maximum was 98 deg. F.  
Average Maximum temperature this July, 85.0  
deg. F  
Minimum temperature for this July, 55 deg. F  
(July 30)  
Last July(2013) minimum was 58 deg. F.  
Average Minimum temperature this July, 64.6  
deg. F  
Minimum diurnal temperature range, 14 deg.  
(81-67 deg.) 7/24  
Maximum diurnal temperature range, 31 deg.  
(90-69 deg.) 7/3

Average temperature this July, 74.8 deg. F  
Average temperature last July, 78.8 deg. F

### PRECIPITATION -

Total precipitation this July - 6.23" rain.  
Total precipitation last July - 3.69" rain.  
Maximum one day precip. event this July;  
July 3, 1.88" rain.  
Measurable rain fell on 14 days this July,  
13 days last July.

This July there were 6 days of 90 degree or  
higher temperatures.  
Last July there were 13.

=====  
Rick Anderson  
8/3/14

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



## **PRESIDENTS COLUMN** **By K2MUN**

August 1984

President's Column - David Berkley, K2MUN, September, 2014

The EZNEC tutorial, Part I, took place at the September 22th meeting. It was directed at a quick introduction to some of the basic functions of EZNEC. If you missed it, but are interested in the subject, the built in tutorial is quite good and can be done using the free EZNEC software from W7EL that can be loaded onto any laptop very quickly. If you wish, you can download it yourself, before the next session. Just go to: <http://www.eznec.com/demoinfo.htm>. The free version doesn't expire. Modeling is limited to 20 segments which can model many simple antennas.

My tutorial approach was almost exactly the same as that using the help files in EZNEC itself: Introduce the basic operation and then show how the controls work starting with a dipole in free space and building up to a more complex antenna. Here's the outline I worked from:

Open EZNEC and show the control panel:

Open Help file; show contents and introductory tutorial

Open Dipole1.ez

Change to 14 MHz

Change Units to Feet

Open wires info

Change to -33 ft and 0

Move up to 30 feet; set ground to Real/MININEC (on fast machines use 'High Accuracy')

15. Move to a more complex design -- first split antenna into two pieces
16. Introduce split source
17. Bend ends (not Inverted V example in Help) 90 degrees at 10 feet  
Redo plot and compare to original
18. Call it a night! Suggest moving height above ground, etc.

There's also a lot to be learned by just playing with the program. If you want to see more of what can be done, come along to part II of the tutorial on October 13. Bring your laptop if possible but, if not, we have a few club laptops available to work with. See you then!

## SCIENTIFIC TIDBITS

### **Squeezing Out the Leakage**

As is commonly known, all silicon transistors drain a device's batteries by using both active power and leakage power. It is not so widely appreciated that leakage has become a major concern for ICD designers who work with submicron (65 nm and below) process technologies. In fact, leakage can account for as much as 30 to 50 percent of total IC power consumption which is one reason why you have to charge your laptop and cell phone so often.

If you compress a vein in your arm, this restricts the flow of blood. Oddly enough, the opposite is true of silicon. The more you compress it, the more easily electrons can move through it. This is why transistors in modern microchips are continuously exposed to pressures of up to 147,000 psi. Unfortunately, squeezing the semiconductor also increases its leakage current. However, Tom van Hemert and Ray Huetting of the Netherlands' University of Twente have recently theorized that you can beat the system by sandwiching the silicon material between two layers of a piezoelectric material. Because this material expands only when the device is in the on state, the pressure and leakage will slack off in the off state. At least in theory, a transistor of this type can operate on a charge of 50 mV rather than the standard 60 mV, offering you the choice of reduced leakage or a higher on-state current. This study was published in a recent issue of IEEE Transactions on electron devices. It will be interesting to see where further research on this theory leads.

### **Drones into Hot Spots**

The military has come up with a way to recycle prior generations of drones. U.S. military research agency Darpa said it plans to repurpose drones for use as airborne Wi-Fi hot spots in remote locations. The Army's RQ-7 Shadow drones were used in Iraq for surveillance and will be rebuilt with integrated wireless electronics capable of transmitting data at speeds up to 1 gigabyte per second, equal to a 4G smartphone. Soldiers in remote areas will be able to access tactical operations and mission data.

## **Marijuana**

When taken in pill or spray form, marijuana can help lessen multiple sclerosis spasms, according to an analysis by researchers at the American Academy of Neurology. Current medications slow progression of MS but do not stop the “pins and needles” pain of the disease. Twenty states and D.C. have laws allowing the medical use of marijuana. However, marijuana did not have an effect on Parkinson’s nor was there evidence that the drug alleviated Tourette syndrome, epilepsy or Huntington’s disease. But there is definitely enough evidence that marijuana has positive medical properties that demand further research. I wonder if the researchers are tempted to smoke a little of it? Hihi

Jim WB2EDO