

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)**

August 2023

Volume 56 No. 8

Regular Meetings

Second & Fourth Mondays

8/14/23 - Business Meeting on Zoom

8/28/23 - Technical Meeting on Zoom

Upcoming Events

Digital Net Mondays at 9:00 PM – 7.086 MHz (+/-)

CW Net, Thursdays at 9:00 PM – 7050+QRM

Check www.nparc.org for details.

Meeting Schedule

Regular Meeting: 7:30—9:00 PM
**2nd & 4th Monday
of each month**
Watch for Emails

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 2023

President: K2UI, Jim Stekas
908-868-4970
Vice President: W2EMC Brian DeLuca
973-543-2454
Secretary: K2AL: Al Hanzl
908-872-5021
Treasurer: K2YG Dave Barr
908-277-4283
Activities (Acting): KC2OSR, Sam Sealy
973-635-8966

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
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
Contact KC2WUF, David

MOUNTAIN SPARK GAPS

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Acting Editor: K2UI Jim Stekas
Contributing Editors:
WB2QOQ Rick Anderson

Climatological Data for New Providence for June 2023

The following information is provided by Rick, WB2QOQ, who has been recording daily weather events at his station for the past 43 years.

TEMPERATURE -

Average temp

June 2023, 68.7 F

June 2022, 70.6 F

Maximum temp

June 2023, 92 F (June 2)

June 2022, 95 F

Average Maximum temp

June 2023, 78 F

Minimum temp

June 2023, 48 F (June 8)

June 2022, 53 F

Average Minimum temp

June 2023, 59.4 F

Minimum diurnal temp range, 3 F (67 - 64 F) 6/23

Maximum diurnal temp range, 32 F (86 - 54 F) 6/1

PRECIPITATION -

Total precipitation

June 2023 — 4.7" rain

June 2022 — 3.65" rain

Maximum one day precip. event

June 27, 1.57" rain.

Measurable rain fell on

11 days this June

12 days last June.

YTD Precipitation — 23.15"

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Rick Anderson

7/24/2023

243 Mountain Ave.

New Providence, NJ

(908)464-8911

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

The weather forecasts for the Sussex hamfest were much the same as those for Field Day and it threatened to be a washout. The turnout was lower than normal but true to its rain-or-shine promise the Sussex ARC held their 44th annual hamfest. Al Hanzl (K2AL) reports on NPARC's showing at Sussex in this issue.

Every week brings new operating events: contests, QSO parties, special events, etc. Dave Barr (K2YG) has contributed a list of August events to encourage more contest participation by NPARC members. Al Hanzl (K2AL) has contributed an overview of the NJQRP "Skeeter Hunt" to be held on August 27.

The hardest job in NPARC is Activities Chairman, and John Zellhofer (KC2MTN) has filled that position this year. Unfortunately, work commitments have forced John to step down. Sam Sealy (KC2OSR) has agreed to step into that role on an interim basis until a new Activities Chairman can be elected.

73,

Jim - K2UI

August Contest Calendar

Below is a selection of the more popular of the 145 contests held during the month of August, 2023. The QSO Parties, especially the individual state ones, are the most “friendly”.

<u>Contest Name</u>	<u>Date/Time</u>	<u>Exchange</u>
North American QSO Party – CW	Sat 8/5 2pm to 2am (Sun)	Name & State/Province
WAE (Worked All Europe) – CW	Fri 8/11 8pm to Sun 8/13 8pm	RST ^[3] & Serial Number
Maryland-DC QSOP cw/phn/digi	Sat 8/12 10am to Midnight	Class ^[2] & State/Province ^[1]
SARTG WW RTTY RTTY only	Fri 8/18 8pm to Sat 8/19 4am Sat 8/19 Noon to 8pm Sun 8/20 4am to Noon	RST & Serial Number
North American QSO Party – Phone	Sat 8/19 2pm to 2am (Sun)	Name & State/Province
Hawaii QSO Party	Fri 8/25 Midn - Sun 8/28 Midn	RS(T) & State/Province ^[1]
WW Digi DX Contest - FT4/8 only	Sat 8/26 8am to Sun 8/27 8am	Grid Square (4 digit)
Kansas QSO Party cw/ssb/digi/rtty	Sat 8/26 10am to 10pm Sun 8/27 10am to 4pm	RS(T) & State/Province ^[1]
Ohio QSP Party cw/phone	Sat 8-26 Noon to Midnight	RS(T) & State/Province ^[1]

Notes:

- For state QSO parties, in-state stations send county instead of state, and out-of-state stations send their state, and may only work the in-state stations for that contest.
- For Maryland-DC QSO party, the first part of the exchange is as follows:

A. Club (Single Op or Multi-Op)	D. Mobile	G. Amplified (>150W, but <600W)
B. Rover	E. QRP	H. Unlimited
C. Oddball (see rules)	F. Standard	

 See Maryland-DC rules at <http://w3vpr.org/mdcqsop/>
- WAE contest is potentially complicated by the optional exchange of QTCs (lists of previous QSOs in the contest). Fortunately, you only can send QTCs to EU stations, not receive them, so no worries about copying high speed cw. And you do not have to use QTCs at all. Only attempt to send them if you are using a contest logging program (like N1MM+) which can automatically send the QTCs, and become familiar with the process before the contest.

Check the WA7BNM Contest Calendar at: <https://www.contestcalendar.com/contestcal.html> for more information.

Dave - K2YG

NJQRP “SKEETER HUNT”

The annual NJQRP Club “Skeeter Hunt” will take place on Sunday, August 27.

The Skeeter Hunt is a four-hour on-air sprint/contest that lasts from 1PM to 5PM EDT. It encourages operators to take their QRP rig outdoors and to work other QRP “Skeeter” stations. You can operate from the home shack, but bonus points are earned for using home-brewed or kit-built rigs and operating outdoors/portable. The exchange is RST, State, and your Skeeter Number.¹ Call “CQ BZZ” and have some QRP fun in the great outdoors.

Last year I operated from my backyard with my Elecraft K1 on battery power using an end fed dipole.



Skeeter Hunt details can be found at www.qsl.net/w2lj/

AI - K2AL (Skeeter #158)

¹ Send an email to Larry, W2LJ, at w2lj@arrl.net requesting your Skeeter number.

NPARC at the Sussex Hamfest

Despite morning tornado warnings and pouring rain, NPARC carried on and set up several tables at the Sussex Hamfest on July 14 so members could sell their stuff. Dark clouds loomed over the fairgrounds and there were fewer outdoor sellers than normal.



The inclement weather forced many sellers to upgrade to indoor tables.

Fortunately, NPARC had reserved two indoor tables so we had nothing to fear from the weather. K2UI, K2DAM, K2AL, and K2OSR took advantage and had good luck selling equipment.



K2DAM (Don) and K2UI (Jim) ready to sell.



View from the NPARC table.

Overall, it was a success for those NPARC members who attended, and it was an opportunity to see some old friends from other local clubs.

AI - K2AL

Visit to InfoAge Science and History Museums

Al Hanzl - K2AL

On Saturday, July 22, three members of NPARC took a trip to Wall Township to go to the NJ Antique Radio Club hamfest and swapmeet at the InfoAge site in Wall Township.

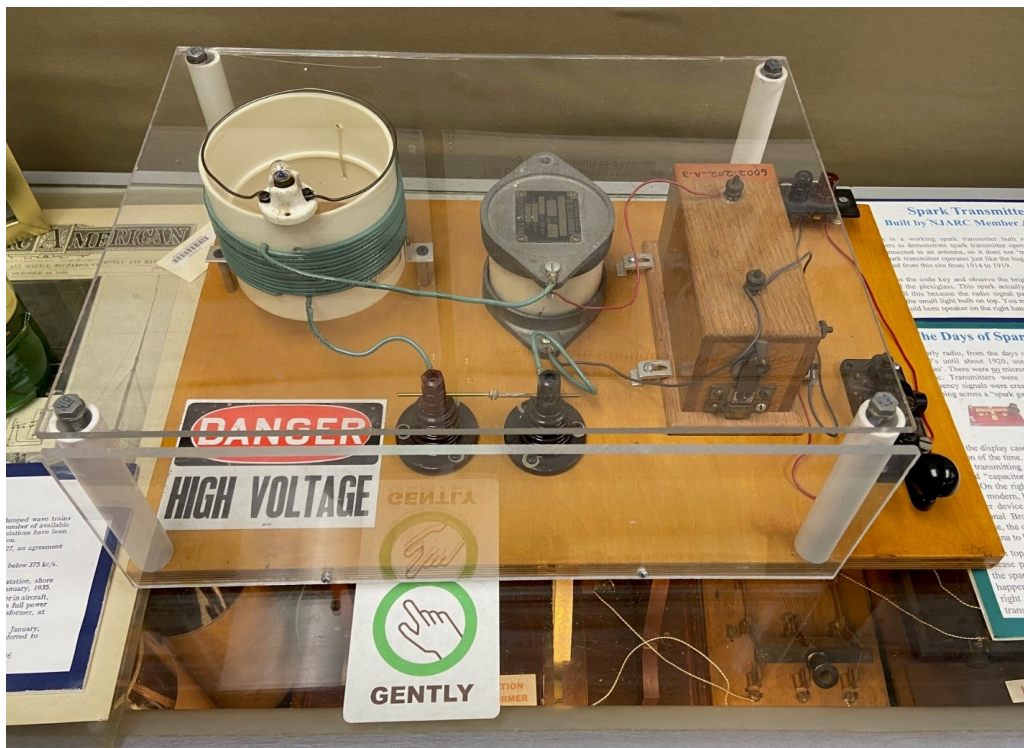
Eric (K2ESH), Ken (W2IOC), Al (K2AL) went to the hamfest there, which was small, mostly selling vacuum tubes and old broadcast radios. But what was most interesting was the campus containing several museums related to the history of radio and television, computers and a sprawling exhibit of wartime and warfare artifacts, weapons and vehicles.



InfoAge touts itself as "New Jersey's mini-Smithsonian". It includes the Vintage Computer Museum, Military Technology Museum, HO Model Railroad exhibit, Shipwreck Museum and radio technology museum including a spark-gap transmitter and the NJ Antique Radio Club station W2RTM. It was all quite fascinating, and one would have to spend days there to take in everything. A visit there would make for a great NPARC field trip. See <https://www.infoage.org> for details.



K2AL, W2IOC, K2ESH on grounds of the Military Museum



Working model of a spark gap transmitter at the radio museum.



K2ESH and W2IOC in the Radio Technology Museum display.

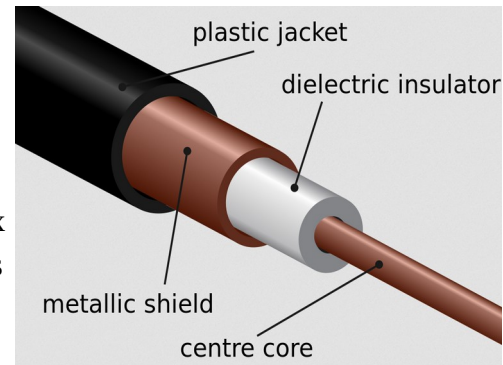
Ins and Outs of Coax Shields

Jim Stekas - K2UI

Transmission lines are designed to transport high frequency signals with low loss and minimal distortion.² Before WW2, open wire line was the most common transmission line used to feed antennas. Post WW2, coaxial cable quickly displaced open wire line in almost all applications. Coax replaced open wire feed just as Romex replaced knob and tube house wiring, and for the same reasons.³

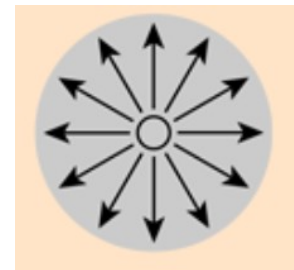
In order for the coax to function as a transmission line, the current in the center conductor (I_C) and shield (I_S) must be equal and opposite, so $0 = I_S + I_C$.

If we connect the legs of a dipole antenna directly to the coax shield and center conductor there is no guarantee the currents will be equal and opposite. In general the currents will be unbalanced and there will be a net current of $I_U = I_S + I_C$.



A choke balun will force $I_U = 0$ and balance the currents. It is often said that the choke prevents current from flowing on the “outside of the braid”. The implication is that the current flowing on the “inside of the braid” is **exactly** opposite the current flowing in the center conductor. Is there any reason for this to be true?

In fact, the current on the “inside of the braid” and the center conductor **are equal and opposite** and cancel exactly. Maxwell’s equations tell us that the electric field everywhere on the surface of a conductor is perpendicular to it. Therefore, the electric field inside the coax looks like the figure at right, and the electric flux⁴ **exiting** the center conductor is equal to the electric flux **entering** the shield. Maxwell also tells us that the electric field at any point on the the surface of a conductor is equal to the surface charge density. Therefore the charge on the center conductor **must be** opposite the charge on the inside of the shield. Since current is just the flow of charge, it follows that the shield and center conductor currents are equal and opposite and must balance each other. Therefore the unbalanced current, I_U , must flow on the outside of the shield.



For RG8/U coax, the braid (shield) is about 15 mils thick. At 7 MHz, the skin depth of copper is about 1 mil. Therefore the electric field on the outside of the braid is reduced by a factor of $e^{-15} = 3 \times 10^{-7}$ on the inside of the braid, and we can treat the inside and outside of the braid as independent conductors.

2 Distortion is minimized when the speed of propagation through the line is the same for all frequencies.
3 Coax figure from https://commons.wikimedia.org/wiki/File:Coaxial_cable_cutaway.svg
4 Electric flux is defined as the field strength times the area. $E * A$