

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)**

October 2025

Volume 58 No. 10

Regular Meetings

Second & Fourth Mondays

at New Providence Municipal Bldg (3rd Floor)

Oct 13 - Intro to Foxhunting, KB2FCV

Oct 27 - Topic To Be Announced

Upcoming Events

**Digital Net Mondays at 9 PM – 28.085 MHz (+/-)
CW Training Net, 9PM Thurs – 28.050 or 7.030 MHz**

Check announcements in the Reflector 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 2025

President: K2AL, Al Hanzl
908-872-5021
Vice President: W2EMC Brian DeLuca
973-615-1262
Secretary: K2AL, Al Hanzl
908-872-5021
Treasurer: K2YG, Dave Barr
908-277-4283
Activities: N2TO, Kevin Glynn
917-885-4424

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 MHz
Will be using PSK and RTTY
Net control KC2WUF

CW Training Net
Thursdays 9 PM
28.050 or 7.050 MHz
Net control K2YG

Club Internet Address

Website: www.nparc.org
Webmaster KC2WUF David Bean
Reflector: nparc@mailman.qth.net
Contact K2AL, Al

MOUNTAIN SPARK GAPS

Published Monthly by NPARC, Inc.
The Watchung Mountain Area Radio Club
P.O. Box 813
New Providence, NJ 07974
©NPARC 2025 All Rights Reserved

Editor: K2UI Jim Stekas
Contributing Editors:
WB2QOQ Rick Anderson

Climatological Data for New Providence - August 2025

The following information is provided by Rick, WB2QOQ,
who has been recording daily weather events at his station
for the past 44 years.

TEMPERATURE -

Maximum temp. this August, 91 F (Aug 13)
Last August(2024) maximum was 95 F.
Average Maximum temp this August, 79.4 F

Minimum temp this August, 51 F (Aug 30)
Last August(2024) minimum was 53 F.
Average Minimum temp this August, 61.9 F

Minimum diurnal temp range, 9 F (73 - 64 F) 8/18
Maximum diurnal temp range, 24 F(84-60 F) 8/4,
(85-61)8/10, (77-53)8/28

Average temp this August, 70.7 F
Average temp last August, 73.0 F

PRECIPITATION -

Total precipitation this August – 4.06” rain
Total precipitation last August – 9.99” rain

Maximum one day precip. Event: Aug 17, 2.83” rain
Measurable rain fell on 5 days this August
13 days last August.

YTD Precipitation – 38.8” rain

=====

Rick Anderson 9/2/2025

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

October Presidents Report

During our last club meeting, we created an “NPARC Mentor List”, that is, a list of ham radio related topics for which members may need assistance or advice. We then asked for volunteers to be “mentors” for each specific topic. The list grew quickly from about five categories to forty with twenty members volunteering to be mentors! It really shows how diverse our interests are and how talented NPARC members are. I will be emailing the list to all members. Please take a look and do not hesitate to contact a “mentor” if you need help with any of the topics. I know I will be asking for assistance with several of them. And please, let me know if you want to add something that is not on the list. And of course, let us know if you can be a mentor for any of the topics.

It is October already and a reminder that the election of NPARC officers for 2026 will take place in November. So, start thinking about being an officer. Despite some predictions about the slow demise of ham radio, I think on the national level, the hobby is doing fine. At the local level, it is radio clubs that keep it alive. We need to be ambassadors of ham radio, keep the hobby interesting to newly licensed hams, assist fellow club members by way of things like mentoring programs like I mentioned above and try to get local youth interested in this great hobby. A challenge, yes. So, give some thought to running for office so that we can keep NPARC vibrant and proactive.

And a reminder that the NPARC Holiday Luncheon and Annual Awards are on Saturday, December 6. Dave, K2YG, is taking reservations. There is a reservation limit so get your request in as soon as you can. We hope to see many of you there.

Annual dues are still only \$20 (\$10 for students). We value your membership highly so please consider renewing your membership for 2026.

Tnx much and Happy Halloween!

73,
Al K2AL

Popular Contests in October 2025

Dave Barr – K2YG

Contest Name*	Dates (EDT)	Modes	Exchange	Notes & Websites**
Oceania DX SSB	10/4 Sat 2am – 10/5 Sun 2am	SSB	RS/Serial Number	LP/HP Bands:160-10m Rules: oceaniadxcontest.com
California QSO Party	10/4 Sat Noon- 10/5 Sun 6pm	CW Phone	CA: Serial # + County Non: Serial # + state/prov	qrp/LP/HP Bands: 160-10m Rules: www.cqp.org
Makrothen RTTY	10/10 Fri 8pm to 10/11 Sun 12 N 8 hrs on-8 hrs off	RTTY	4 Character Grid Square	LP/HP 80-10m. Note: 8 hrs on/off/on/off/on Rules: www.pl259.org/makrothen
Nevada QSO Party	10/10 Fri 11pm- 10/12 5pm	CW SSB Digital	NV: rs(t)+NV+county Non: rs(t) + ARRL Section	qrp/LP/HP All Bands Rules: at nvqso.com
Oceania DX CW	10/11 Sat 2am – 10/12 Sun 2am	CW	RST/Serial Number	qrp/LP/HP Bands 160-10m Rules: oceaniadxcontest.com
Arizona QSO Party	10/11 Sat 11am- 10/12 Sun 1am	CW Phone	AZ: rs(t) + county Non: rs(t) + state	qrp/LP/HP Bands:160-10m Rules: www.azqp.org
Pennsylvania QSO Party	10/11 Sat noon- midn 10/12 Sun 9am- 6pm	CW Phone	PA: Serial # + county Non: Serial # – ARRL sect.	qrp/LP/HP All Bands Rules: paqso.org
S Dakota QSO Party	10/11 Sat 2 pm- 10/12 Sun 2 pm	CW Phone	SD: rs(t) + county Non: rs(t) + state	qrp/LP/HP Bands:160 – 2m Rules: www.sdqsoparty.com
JARTS WW RTTY	10/17 Fri 8pm- 10/19 Sun 8pm	RTTY	rst + Operator's Age	LP/HP Bands: 80-10m Rules: jarts.jp
New York QSO Party	10/18 Sat 10am to 10pm	CW SSB Digital	NY: rs(t) + county Non: rs(t) + state	qrp/LP/HP All Bands Rules: www.nyqp.org
Stew Perry Topband Challenge	10/18 Sat 11am- 10/19 Sun 11am	CW	4 Character Grid Square	qrp/LP/HP Band: 160m Rules: www.kkn.net
Illinois QSO Party	10/19 Sun 1pm - 9pm	CW SSB Digital	IL: rs(t) + county Non: rs(t) + state	LP/HP (no qrp) Bands: 160 – 2m Rules: w9awe.org
CQ Worldwide DX SSB	10/24 Fri 8pm – 10/26 Sun 8pm	SSB	RS + CQ Zone	qrp/LP/HP Bands: 160-10m Rules: www.cqww.com

Check www.contestcalendar.com or contest specific websites
for more information on these and many other radio contests.

* State QSO Parties allow out-of-state stations to contact only in-state stations for that specific contest. In-state stations may contact all contest stations. See websites for county abbreviation lists.

** No WARC bands in any contest.

First Transatlantic Telegraph Cable

Jim Stekas – K2UI

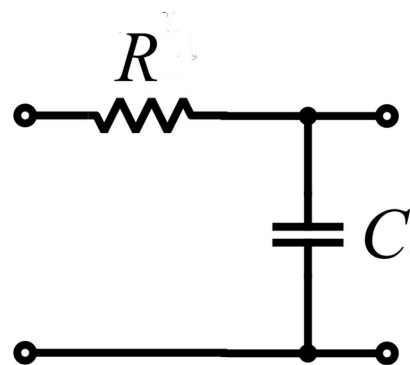
While returning from Europe by ship in 1832, Samuel Morse was captivated by demonstrations of electromagnetism by fellow passenger Charles Thomas Jackson. Morse conceived of an electromagnetic telegraphy system using relay repeaters to span long distances. Progress toward a working prototype remained stalled while Morse used uninsulated wire to wind his electromagnets. A breakthrough came when Morse learned of the work of Joseph Henry from NYU Professor Leonard Gale. The team of Morse, Gale, and Alfred Vail developed a working telegraph leading to a patent in 1840 and construction of a telegraph link between Washington and Baltimore in 1842.

Over the next decade there was a furious build out of overland telegraph lines and some short underwater cable. In 1854 work began on the telegraphy equivalent of a “Moon landing”, an undersea cable across the Atlantic. The 3200 km cable was ready for service in 1858 but performance was disappointing. Queen Victoria’s 98 word message to President Buchanan took 16 hours to transmit, a rate of only 0.1 words per minute. Chief engineer Wildman Whitehouse, a physician, reasoned that increasing the voltage driving the cable would improve performance. Whatever the resulting performance gains, they were short lived as the high voltage destroyed the cable within the first months of operation. Nevertheless, there was great excitement that the telegraph had spanned the ocean.



1858 Telegraph Cable Souvenir

Telegraphy was high tech in those days and it attracted the interest of some of the best engineers and scientists of the day.¹ Most notable among them was William Thomson, a Cambridge professor, who would one day be honored with the title of Lord Kelvin. Thomson thought about the problem and reasoned that the 1858 cable could be viewed as 3200 sections of 1km each with a resistance R and a shunt capacitance C . When he analyzed the resulting circuit he found that the signal propagated not as a wave of constant velocity but by diffusion, like a drop of ink in water. As a consequence, the time for a signal pulse to traverse a cable is not proportional to the length, but the length squared: $T \approx \frac{1}{6} RC \cdot L^2$.



1 - Among them was Oliver Heaviside who would advance transmission line theory and patent the coax cable in 1888.

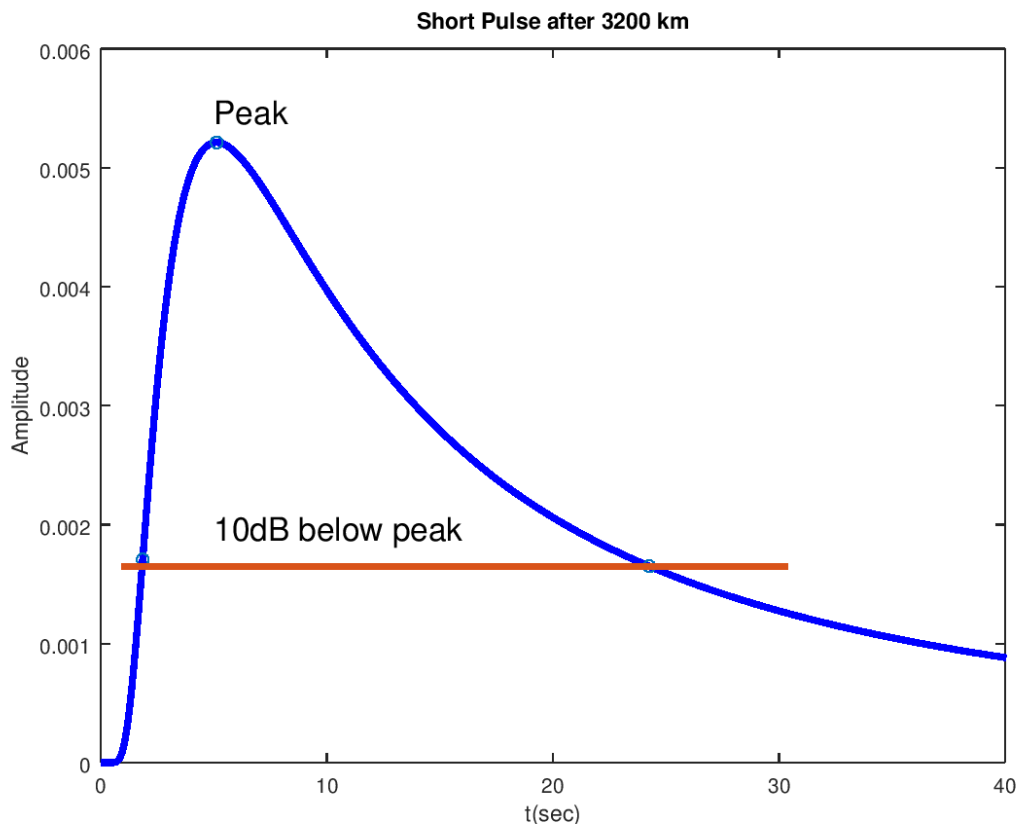
Thomson's square law was counter-intuitive and telegraphy "experts" scoffed at his prediction. One even complained "Why must math be injected into everything." But Thomson's design for a cable that was "guaranteed to work" convinced investors to lay a new cable in 1866. The new cable reduced the time to send a message from "two weeks to two minutes." Thomson accomplished this by reducing delay by doubling the diameter of the center conductor to reduce R , and hence RC .

The phenomenon that limited the performance of the cable was dispersion caused by different spectral components propagating with different velocities. The result of dispersion is that pulses are distorted and stretched as they travel down the cable.

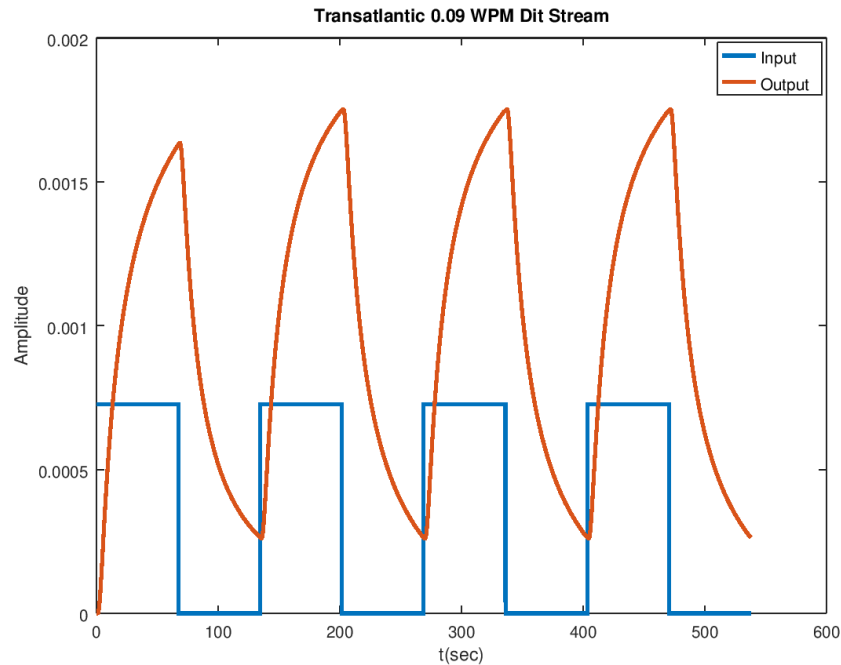


1866 Cable Cross-Section

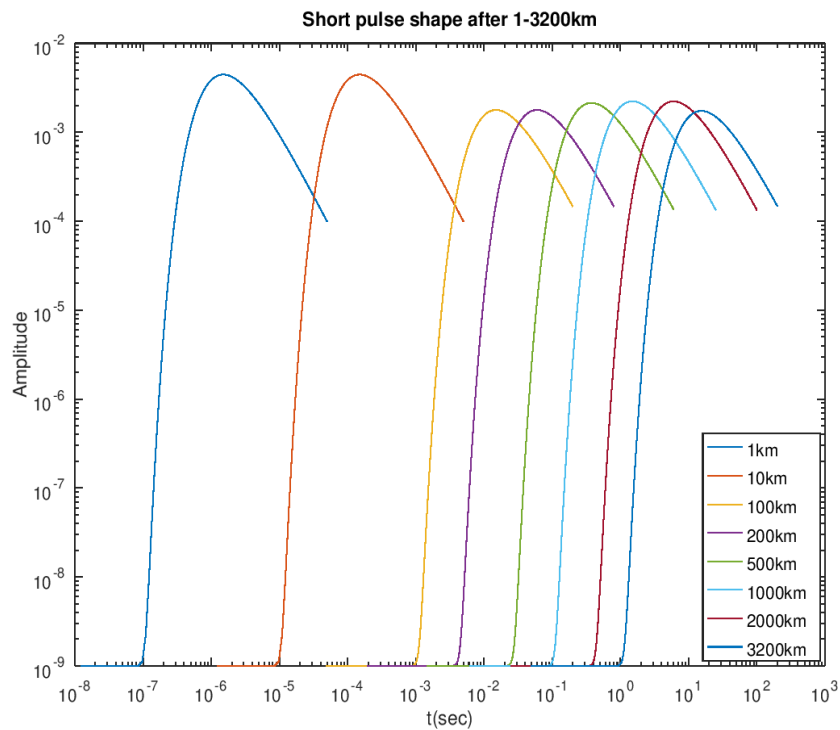
Thomson discovered that the propagation of telegraph pulses obeyed the same equations as heat conduction and he was able to apply Fourier's heat equation to calculate the behavior of telegraph pulses. Using Thomson's equation one finds that the peak of a very short transient pulse would take about 5 seconds to cross the ocean over the 1858 cable. (See plot below.) It would take an additional 20 seconds for received signal to fall 10 dB below the peak value. So, by the time a short pulse has reached the receiver it has been stretched out to a duration of 25 seconds.



A stream of Morse dits consists of square pulses (key down) and spaces (key up) of equal length. If we send dits at too high a rate, the tail of each dit will interfere with the next one.¹ Choosing a rate where each dits tail will be 16 dB down when the next dit arrives will mitigate the interference. This sets an upper limit of one dit every 100 seconds, or 0.09 words per minute, the rate achieved by the 1858 cable. (See plot below.)



Simulating short pulses traversing different lengths of the 1858 cable gives the results below.



¹This is known as “inter-symbol interference”, or ISI.

For a cable run of 500 km, dits (pulses) would propagate about 40x faster than the 3200 km transatlantic run, and communications could operate at 3.5 WPM, about what mechanical receivers could support at the time. So the 1858 cable design was not fatally flawed, it was just inadequate for supporting telegraphy over 3200 km.

The exact value of RC for the 1858 cable is not readily available. A value of $RC = 0.009 \text{ mSec/km}^2$ was found to give a reasonably good characterization of the performance consistent with the historical record. Whatever the exact value of RC was, the effects of dispersion and inter-symbol interference are revealed by Thomson's theory.

References

1. [The First Transatlantic Telegraph Cable ...](#), IEEE Spectrum, 2019
2. [History of the Atlantic Cable – Index](#), links to papers on the 1855-1866 cables.
3. History of the first [Transatlantic Telegraph Cable](#), Wikipedia.
4. [Electrical Telegraph](#) history on Wikipedia.
5. [THE ATLANTIC TELEGRAPH: FAILURE \(1857-58\)](#), *The Life of William Thomson*, Volume 1, Chapter VIII. Pages 325 to 396.
6. [Brief story of the first transatlantic cable](#), Mathematical history by Alex Eremenko, 2021.
7. [On the Theory of the Electric Telegraph](#), William Thomson, May 3 1855.