

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 2026

Volume 59 No. 10

Regular Meetings

**Second & Fourth Mondays
at Salt Brook School**

Oct 12 - Project Diana EME - AC2ZU

Oct 26 - Operating an EME station - KB2FCV

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 2026

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
908-403-0877
Activities: KC2OSR, Sam Sealy
973-462-2014

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

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Contributing Editors:
WB2QOQ Rick Anderson

Climatological Data for New Providence - August 2026

The following information is provided by Rick, WB2QOQ,
who has been recording daily weather events at his station
for the past 45 years.

TEMPERATURE -

Maximum temp. this August, 92 F (August 7)
Last August(2025) maximum was 91 F.
Average Maximum temp this August, 81.9 F

Minimum temp this August, 60 F (August 25)
Last August(2025) minimum was 51 F.
Average Minimum temp this August, 66.5 F

Minimum diurnal temp range, 8 F (87 – 69F)8/1
Maximum diurnal temp range, 22 F(84 - 62 F)8/4

Average temp this August, 74.2 F
Average temp last August, 70.7 F

PRECIPITATION -

Total precipitation this August – 6.5” rain
Total precipitation last August – 4.06” rain

Maximum one day precip. event August 20, 2.46” rain
Measurable rain fell on 15 days this August
5 days last August.

YTD Precipitation – 30.44” rain/snow melt

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Rick Anderson 9/20/2026
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 President's Report

Membership and Officer Elections

For any club to grow and to thrive it needs continual contributions from existing members and an influx of new members.

We were pleased to welcome several new members to NPARC this year. Thanks to the recruiting efforts of Marilyn Sealy (XYL of Sam, KC2OSR) we signed up 6 new members at the Auction. We also welcome recent new members Sean, KE2BSQ, Frank, K2FRG, Art, KA1KSX and a welcome back to Mukul, AC2MP. We look forward to their contributing to NPARC's growth.

And a reminder, we are approaching election time for Club officers for 2027.

Please consider volunteering to serve as an officer. Elections will be held at our Annual Business Meeting in November.

Upcoming Activities

Yes, Summer has just turned over to Fall, but it's not too early to mark your calendars for some big upcoming events.

The Annual NPARC Holiday and Awards Luncheon is on Saturday, December 12 at the Vintage Tavern in Gillette. Look for details and updates on the Reflector from Dave, K2YG

We have also reserved the Salt Brook School cafeteria on Saturday, January 23 for "Winter Field Day". We will stay cozy and warm inside while utilizing the Club's Yaesu FT-710 radios.

And mark your calendars for our Annual Auction on Saturday, February 27. It is probably our biggest Club event after June Field Day. Take this opportunity to thin out the unused items in your shack.

So, enjoy the Fall. Get those antennas tuned before the snow flies and we will see you on the NPARC nets and on the air.

73,

AL - K2AL
President

Popular Contests in October

Dave Barr – K2YG

Contest Name*	Dates (EDT)	Modes	Exchange	Notes & Websites
Oceania DX SSB	10/3 Sat 2am – 10/4 Sun 2am	SSB	RS/Serial Number	LP/HP Bands:160-10m See oceaniadxcontest.com
California QSO Party	10/3 Sat Noon- 10/4 Sun 6pm	CW Phone	CA: Serial # + County Non: Serial # + state/ prov	qrp/LP/HP Bands: 160-10m Rules at cqg.org
Makrothen RTTY	10/9 Fri 8pm – 4am 10/10 Sat noon-10pm 10/11 Sun 4am-noon	RTTY	4 Character Grid Square	LP/HP 80-10m. Note 8hr on /off cycle See pl259.org/makrothen
Nevada QSO Party	No NVQP in 2026. Returns In 2027			See: nvqso.com
Oceania DX CW	10/10 Sat 2am – 10/11 Sun 2am	CW	RST/Serial Number	qrp/LP/HP Bands 160-10m See oceaniadxcontest.com
Arizona QSO Party	10/10 Sat 11am- 10/11 Sun 1am	CW Phone	AZ: rs(t) + county Non: rs(t) + state	qrp/LP/HP Bands:160-10m See azqp.org
Pennsylvania QSO Party	10/10 Sat noon-to- midnight 10/11 Sun 9am-6pm	CW Phone	PA: Serial # + county Non: Serial #+ARRL sect.	qrp/LP/HP All Bands See paqso.org
S Dakota QSO Party	10/10 Sat 2 pm- 10/11 Sun 2 pm	CW Phone	SD: rs(t) + county Non: rs(t) + state	qrp/LP/HP Bands:160 – 2m See sdqsoparty
JARL WW RTTY	10/16 Fri 8pm- 10/18 Sun 8pm	RTTY	rst + Operator's Age	LP/HP Bands: 80-10m See jarts.jp
New York QSO Party	10/17 Sat 10am to 10pm	CW SSB Digital	NY: rs(t) + county Non: rs(t) + state	qrp/LP/HP All Bands See nyqp.org
Stew Perry Topband Challenge	10/17 Sat 11am- 10/18 Sun 11am	CW	4 Character Grid Square	qrp/LP/HP Band: 160m See kkn.net
Illinois QSO Party	10/18 Sun 1pm - 9pm	CW SSB Digital	IL: rs(t) + county Non: rs(t) + state	LP/HP (no qrp) Bands: 160 – 2m w9awe.org
CQ World-wide DX SSB	10/23 Fri 8pm – 10/25 Sun 8pm	SSB	RS + CQ Zone	qrp/LP/HP Bands: 160-10m cqww.com

Check www.contestcalendar.com for more contests and information.

* 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.

Iambic Keying - *Jim Stekas - K2UI*

In 1844, Samuel Morse and Alfred Vail demonstrated telegraphy between Baltimore and Washington D.C. The key pictured (right) is believed to have been used for the demonstration. It was a simple lever switch with a bent metal spring to return it to the off position. For the next half century, telegraphers used straight keys such as this. Operators could be identified by their “fists”, the unique weighting they used to send dots and dashes.



A consequence of prolonged use of a straight key was a “glass arm”, what we call “carpal tunnel syndrome” today. To prevent glass arms, straight keys gave way to “cootie keys” that were keyed with a side-to-side motion of a paddle. Contact closure could be made on either the right or left side and the operator controlled the code weighting.

The cootie key improved the ergonomics relative to the straight key, but it did not reduce the number of key-strokes¹ required to send a message. To send all the alphanumeric characters (26 letters and 10 numerals) takes 132 keystrokes with a straight key.

The Vibroplex corporation introduced the “bug” in 1904. It incorporated a vibrating arm to automatically produce a string of dots by pressing and holding the paddle with the thumb. Dashes were made manually by pushing the paddle to the left with an index finger. The bug enabled operators to send at higher speeds with a reduced level of effort. Relative ease of sending dots as compared to dashes resulted in the “Erie swing”, wherein an operator might send dots at 30 WPM and dashes at 10 WPM.



"Original" Vibroplex Bug

The bug was continuously improved over the years. In 1926 the “Lightning Bug” was introduced and it set the standard for speed and functional design. It was manufactured in quantity for the Signal Corps during WW2 under the designation J-36.²

The bug reduced the total number of keystrokes to 87, a saving of 34% over a straight key, a significant improvement. It also produces uniform and properly

weighted dots, albeit with an increased opportunity to drop or add one.

After the war hams began replacing the vibrating arm with electronics. Electronic keyers were homebrew affairs until the introduction of Hallicrafters HA-1 T.O. keyer (designed by W9TO) in 1960. The TO was a single lever keyer that automated both dots and dashes and set the standard for quality. The single lever keyer reduced the number of keystrokes to 73, a 16% improvement over the bug. It allowed operators to send perfectly weighted code with the occasional loss or addition of a dot or dash.

¹ Here a keystroke refers to the closure and opening of a key contact.

² J-36 keys manufactured by the Lionel Corporation are highly sought after, especially if they have an “L” stamped on the bottom. Many survive but their plastic labels have long since disintegrated. Examples generally have new plastic labels and all share the same serial number

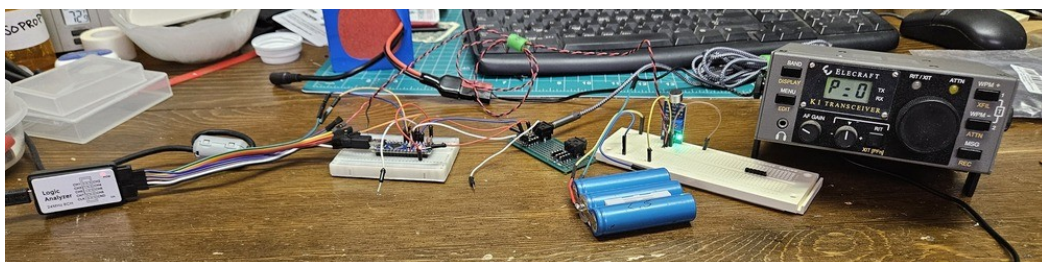
The next big advance was the invention of the Iambic dual-lever keyer by K8OCO in 1967. When both levers were closed it sent an alternating series of dots and dashes. K6KU implemented an Iambic keyer on a tiny CMOS chip, the Curtis 8043. The chip included dot memory increase the tolerance of early dot lever operation. Total keystrokes to send the entire alphanumeric character set dropped to 65, an 11% improvement over the single-lever keyer.

In 1973, the same year as the Curtis 8043 came out, WB4VVF introduced the Accukeyer, an Iambic keyer with dot and dash memories. Users familiar with the 8043 found that the Accukeyer often appended an extra dot or dash to a character. Those accustomed to the Accukeyer find that trailing dots and dashes are often dropped. The two flavors of Iambic keyers were given the designations of Mode A for the 8043 and Mode B for the Accukeyer.

The relative merits of Mode A and B have been endlessly debated. There are some very simple descriptions of both modes on the net, and they go something like this:

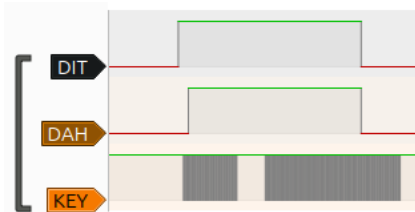
1. When a single lever is pressed, Modes A and B behave like a basic single lever keyer.
2. While both levers are squeezed, Modes A and B alternate dots and dashes.
3. When a squeeze is released:
 - Mode A completes the current element and stops.
 - Mode B completes the current element followed by the other element.

I primarily operate Icom, which makes me a Mode B guy since Icom doesn't support Mode A at all. But my Elecraft K1 supports both modes so I thought that would be a good sandbox for comparing both modes. In casual experiments I found it was rather difficult to find any difference between the two modes. I guess my normal keying habits don't step into the gray area where the two modes differ. To drill down I built a paddle simulator with an Arduino Nano and connected it up to the K1. Since the K1 keyer is internal, I used a sound detector³ to monitor the keyer output (sidetone). Paddle closures and keyer output were monitored with a cheap logic analyzer.

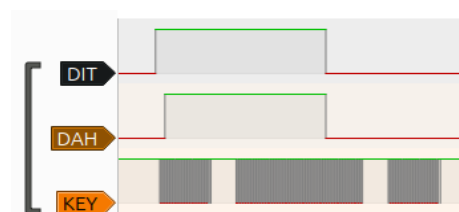


Logic Analyzer Paddle Simulator Sound Detector K1

The captures below show the differences between the two modes with identical paddle input. They follow the rules laid out in item #3 in the list above.

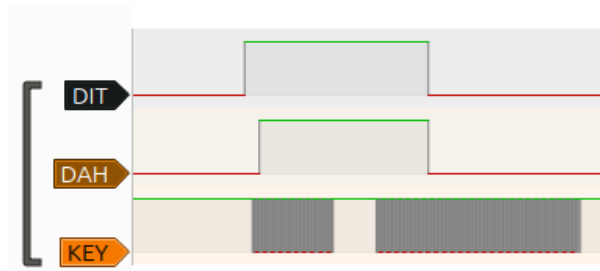


K1 Mode A sends "A"



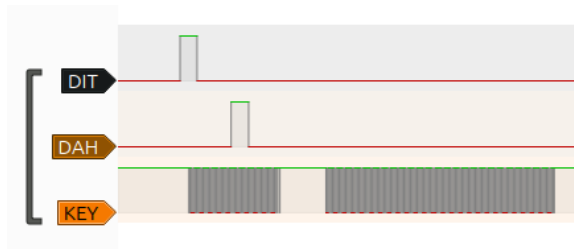
K1 Mode B sends "R"

³ Essentially an electret mic driving a comparator with a TTL output.

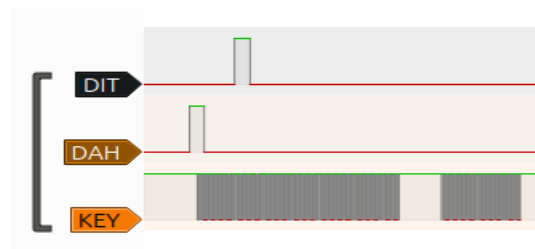


K1 Mode A&B send "A"

The paddle sequence to the left should send an "R" in Mode B as in the previous case. The only difference is that the squeeze is released only a third of the way into the dash. Elecraft has tweaked the Mode B rules to give the operator more timing margin: if the squeeze is released early in an element invoke Mode A, if late in the element invoke Mode B. Tweaking timing windows results in significant overlap between Mode A and B behavior.

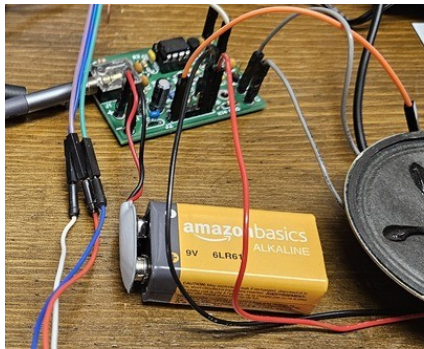


K1 Mode A & B send "A"

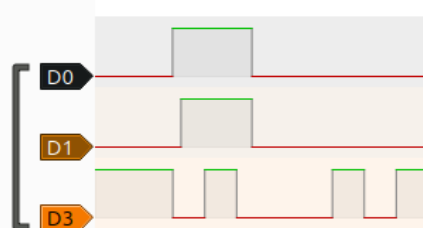


K1 Mode A & B send "N"

The examples above illustrate dot and dash memory which is independent from squeezing. It protects the operator from missing elements because of sending too fast.



K1EL sells a wide range of keyers based on the PIC Microcontroller. At left is an embedded keyer based on K1EL's K14 chip. The K14 implements a hard version of Mode B. With the K14,



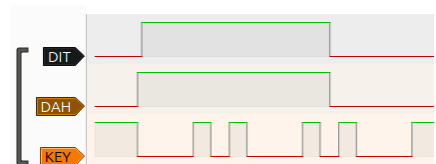
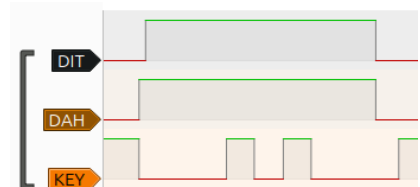
releasing a squeeze in an element, no matter how early, results in appending of the other element. On the K1 in Mode B, this paddle sequence would generate an "A" instead of an "R".

I happened to have another keyer in the drawer, one from a kit that accompanied the *ARRL PIC Programming* book. There is much description of the assembly code but nothing regarding whether the keyer is Mode A or B. Actually, it turns out to be both and neither at the same time. Who knew?



The trace at upper right shows Mode A behavior when the squeeze is released late in the final dash. The dash is allowed to complete and the key is opened.

At lower right the squeeze ends during the last dot but a final dash is sent, which is clear Mode B behavior.



Final Remarks

Most CW today is sent with dual-lever paddles and Iambic keyers. If you are just starting out with Iambic keying remember that the goal is to send good code comfortably. It isn't necessary to squeeze at every opportunity. Every decent keyer has dot/dash memory that allows you to send "A" or "N" as fast as you can and it will come out fine. No squeeze necessary, and no additional keystrokes. There is only an 11% difference in efficiency between maximum squeezing and zero squeezing (single-lever paddle) so there is not much to gain by going "squeeze crazy".

The Curtis chips are long out of production having given way to software implementations on micro-controllers. Developers have added all kind of options to loosen timing constraints and modify weights. You can pretty much set them for Mode A or Mode B or anything in between. Thanks to software, each vendor can add their own unique "improvements". Hence the different implementations of Mode B by K1EL and Elecraft.

After reading many articles on the net, reviewing open software, and conducting reverse engineering experiments I still am unable to provide detailed definitions of Mode A and B. But at the highest level the difference between the two modes can be understood as follows:

- Mode A extends timing tolerances to be forgiving of late paddle operation.
- Mode B extends timing tolerances to be forgiving of early paddle operations.

Mode A users paddle motions will naturally tend to key "behind the beat" while Mode B users will naturally tend to be "ahead of the beat".

Mode B has become the defacto standard for built in keyers by major ham radio manufacturers. Most allow switching to Mode A as an option. (Icom is a notable exception.) So if you are just starting go with Mode B and don't go crazy with squeezing. That will make it easier to operate in Mode A when needed.

References

- [All about squeeze-keying](#) by DJ5IL. An fascinating history of automatic keyers.
- [Squeeze-Keying Explained](#) by PE1HVVH. Descriptions of different iambic modes with timing diagrams.
- *Keyers: Iambic and Ultimatic* at [Morsecode.world](#) - A decent technical description of of Mode A and B algorithms.
- *Iambic Keying - Debunking the Myth* by N1FN. Great analysis arguing that relative to single paddle keyers, iambic keying is a "BAD IDEA that happened to catch on." (Original site was removed. Read it at www.yumpu.com)