Antennas, Spies&Ammo!

PLANO AMATEUR RADIO KLUB

PT

SEPTEMBER WWW.K5PRK.NET 2026

September in Texas

PARK HERE

Officers

(your answers begin here)

President	Mike Tharp KG5TJF	president@k5prk.net
Vice President	Bruce Cameron K6IL	vp@k5prk.net
Secretary	Damon Koch K5OCH	secretary@k5prk.net
Treasurer	B. J. Watkins K5BJW	treasurer@k5prk.net
Activites	Katherine Forson KT5KMF	activities@k5prk.net
Communications	Miranda Schwarck KE5YZP	communications@k5prk.net
Webmaster	James McCormick KG5KBP	webmaster@k5prk.net
Public Relations	Rob Forson K5WFR	pr@k5prk.net
Newsletter	Lonnie Webb KG5WHQ	newsletter@k5prk.net

EXPERIMENT AND HAVE FUN WITH YOUR RADIO

Learn more about the club at https://k5prk.net

Interact with the club at https://www.facebook.com/groups/k5prk

Have a groups.io conversation with the club at https://k5prk.groups.io/g/main

Are you ready to read the content in the newsletter? It's all technician accessible.

YOU HAVE BEEN DEPUTIZED AS ROVING JUNIOR NEWSLETTER REPORTER EXTRAORDINAIRE!

Go photograph, experiment, solder, attempt to antenna your lawn chairs. Just write it all down and send the information to newsletter@k5prk.net

PARK REPEATERS

The Plano Amateur Radio Klub operates five repeaters, which are located in Allen, Texas about 180 feet above ground level. All licensed amateur operators are welcome to join us on the air.

Our repeaters are open.

147.180 MHz + PL 107.2
K5PRK VHF
Voice Repeater

444.250 MHz + PL 79.7
K5PRK UHF
Voice Repeater

441.575 MHz +
DStar UHF
Digital Voice Port B

1295.000 MHz – 20.000
DStar 23cm
Digital Voice Port B

1255.000 MHz
DStar 23cm Digital Data

Broadcastify
K5PRK 444.250
K5PRK 147.18

If you notice problems with any of the club's repeaters, contact communications@k5prk.net via email with a detailed descriptiion of the issue.

CONTACT!

Club Briefs

By Mike Tharp KG5TJF
president@k5prk.netlorg

Let's start with an update on repeaters. We've reached out to Metrocrest to ask if they'd like their repeaters back, and in the meantime we're going to continue working with Medical City Plano.

On the networking side, we're going to take the City of Richardson up on their generous offer to use their Internet connection.

Next, some exciting news on the City of Plano front. The board has put together a steering committee to help facilitate our partnership with the city, and **Katherine Forson KT5KMF** has agreed to chair it. Our first task together will be helping the city test their VHF and UHF radios. We're looking for a couple of volunteers who can head over to the Plano EOC and lend a hand—just note the testing will need to happen during normal business hours, so keep that in mind if you're interested. Let Katherine or me know if you'd like to help out.

One more thing—**if you spot a new face at a meeting**, take a second to say hello. *A quick greeting goes a long way toward making a visitor feel welcome, and it might just be the reason they come back*!

Finally, as the weather starts to cool off, keep an eye out for more club activities in the coming weeks. Please join in as often as you can - these things are always more fun with a good crowd.

Looking forward to seeing everyone for the September meeting!

On the cover:

Park members salute the American flag, an honor we are solemly glad to have.

Post-9/11 we are faced with the realization it is a privilege forces in the world would take from us.

We are granted the use of amateur radio bands by our imperfect, benevolent 250-yr old republic.

Let's keep it that way until somebody has a better idea.

ACTIVITIES

Activities Update

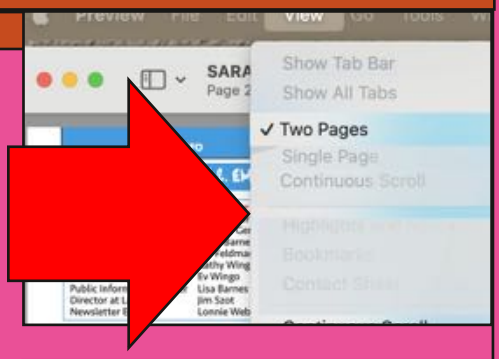
By Katherine Forson KT5KMF
activities@k5prk.net

Howdy everyone!

We have some exciting things coming up for PARK!

First, we have formed a steering committee to coordinate our partnership with the [Plano] EOC! They are very interested in working with us in the future and during my meeting with them a few weeks ago, we discussed a lot of opportunities for collaboration. If you are interested in applying to be on this committee, please reach out to me! More information will be coming at the September general meeting, but if you will not be able to attend, you can contact me at activities@k5prk.net.

Additionally, a fox will be coming to Plano very soon! The first foxhunt will be the weekend of September 26th and will be somewhere within the city limits of Plano. More details will be coming soon as the fox is finalized, but save the date!



HAM TRIVIA

Q. What unique property does the HF frequency 17.31451582 MHz have?

(Look for the answer elsewhere in this issue)

ELECTIONS

Hello PARK Members,

It's an even-numbered year, so it's time to vote on these board positions:

- ***Vice-President***
- ***Secretary***
- ***Web Master***
- ***Public Relations Director***
- ***Communications Director***

If you're interested in running for a position please let a board member know.

Breakfast on Saturday @ 7am

FREE VE Testing: September 21, 2026 @ 6pm

Next Meeting: September 21, 2026 @ 7pm

PARK GENERAL MEETING MINUTES

Plano Amateur Radio Klub
General Meeting Minutes
August 17, 2026

Call to Order at 7:05 p.m.

President Mike Tharp KG5TJF
Opened the business meeting with roll call.
25 present

Vice President Bruce Cameron K6IL
August - Bruce Cameron – Air Force Mars
September - Edison Fong – Triband Antenna Design
October – K5PRK Discord Group Explained – Katherine Forson
November – Nano VNA Antenna Tuning – Ian Duncan
December – Christmas Party

If you would like to present, please email me at VP@k5prk.net

Secretary Damon Koch K5OCH
August board minutes are posted for the newsletter
Club membership update: 91 members.

Treasurer B. J. Watkins K5BJW
Finance report presented.

Communications Director Miranda Schwarck KE5YZP
Work continues at the Prestige site.
The standalone repeater at MCP is now working.

Newsletter Editor Lonnie Webb KG5WHQ
Please submit your ideas, pictures, and articles to the newsletter.

Public Relations Director Rob Forson K5WFR (absent)
Groups.io storage limits: We are now at 85% available for main and 48% available for the board sites. Old email, pictures, and attachments are now archived.

Webmaster James McCormick KG5KBP (absent)
We will not be rehosting. The potential hosting provider stopped offering free web hosting for non-profits. Email forwarding issues persist.

Activities Director Katherine Forson KT5KMF
Tentative RWK balloon launch this Saturday, August 22.
Trivia Net! Saturday, September 5 at 2:00 PM on the PARK repeater
ARRL September VHF Contest September 12-13
Texas QSO Party September 19-20
City-wide foxhunt coming soon

VE Coordinator Daryl Morgeson AF5QJ
No tests tonight.

Field Day Mike Tharp KG5TJF
We totaled 980 points for 2026. A respectable number given the last-minute site challenges (no staying overnight, no masts).

Old Business
None

New Business:
Metrocrest wants their VHF repeaters back from MCP if we can't get everything done soon. We are going to push MCP for a commitment to complete internet connection to the hardware or will have to withdraw from the site. The repeaters are up and running, but are not connected to the Internet.

Break

50/50 Raffle
$20 won by B.J. K5BJW

Program
Air Force MARS by Bruce Cameron K6IL

Adjourn
Motion to adjourn by Nell, second by B.J. Meeting adjourned at 8:38 PM.

Are you a sad ham?

You can tell me!

Who have you complained at today?

Come on! It *has* to be a good one!

PARK BOARD MEETING MINUTES

Plano Amateur Radio Klub Board of Directors Meeting Sptember 9, 2026

Present:
Mike Tharp KG5TJF, President
Bruce Cameron K6IL, Vice President
Damon Koch K5OCH, Secretary
B. J. Watkins K5BJW, Treasurer
Rob Forson K5WFR, Public Relations Director
Katherine Forson KT5KMF Activities Director
Lonnie Webb KG5WHQ, Newsletter Editor
Miranda Schwarck KE5YZP, Communications Director
James McCormick KG5KBP, Webmaster
Tim Johnson K5TCJ, Immediate Past President
Ian Duncan AE5ID

President
Brought meeting to order at 7:00 PM

Vice President
Updated program schedule:
September – Ed Fong and a new tri-band antenna design
October – K5PRK Discord Group Explained – Katherine Forson
November – Nano VNA Antenna Tuning – Ian Duncan
December – club Christmas party

Join us for Forth Thursday Lunch at Poor Richard's Cafe.
Lunch starts at noon!
(pictured here: **George Martindale N5VVL, Johnnie Young KG5CQO, Larry Pollis KI5UXC, KG5WHQ, Ann Fiorda KJ5LWR, and Tony Fiorda WB8ZWI**)

Secretary
August club meeting minutes posted to the board and submitted to the newsletter.

Treasurer
Treasurer report presented via email.
The PO box is up for renewal next month. Rather than pay a full year in advance, we are going to pay 6 months to give us flexibility if we want to shift to a PO box service that gives the club a permanent mailing address. Motion by Bruce, second by Lonnie, approved via unanimous vote.

Public Relations
PR report given.

Communications
Abbreviated report given. The repeaters and WinLink are up. Miranda is working on access to the Prestige tower without having to call maintenance to come out and let us in.

Activities
Katherine will talk with Spring Creek BBQ to reserve the meeting room for the Christmas party.
The Saturday morning trivia net had poor attendance.
As we start the EOC partnership, we need to make sure we reach out to speak with guests and new arrivals.

Website
The club website had multiple outages over the weekend. James is looking at the failures.

Newsletter
Lonnie wants to publish this weekend. Send him your contributions now!

Field Day
N/A

Past President
The SHARES winlink node at the Lucas Fire Station is changing trustees.

Old Business
None

New Business
Microwave link to Richardson We will give Richardson written assurance there will only be amateur traffic across the link. The link setup from our end assures we will have nothing but amateur traffic over the microwave link.
We need to make sure on our end that the old test link to K5GTX from the water tower is completely disabled to keep any possible traffic off the current connection.
Hardware status: our hardware is installed and the link

is established. There will need to be some configuration changes and remote filter update to bring it online.

IP addressing and DNS for the connection are configured and ready to go.

Tim has a Cradlepoint router that we can use if we want. He will bring it to the next meeting. We can also consider 4G LTE for $30/year via one of Miranda's contacts. Miranda will verify and do some investigation for the next meeting.

The board agrees we are ready to proceed. Mike will move forward with a letter to Richardson.

MCP and Metrocrest hardware We need to decide if we are going to keep trying to move forward at MCP or offer Metrocrest the opportunity to get their hardware back.

We don't have 24/7 access to the hospital site, and it isn't feasible that we would ever have 24/7 access. The MOU access guarantees are not something we can fulfill.

Metrocrest board is also meeting to decide the disposition of their hardware at MCP.

Miranda has a Kenwood VHF repeater she will donate to the club if we want to use it at MCP if the opportunity arises.

Motion: Bruce motion, Lonnie second, to go back to Metrocrest and offer to return their hardware.

Further, the board needs to decide if we are going to continue our relationship with MCP. After discussion, we will continue to pursue a relationship with the hospital.

The board agreed that if and when MCP ever comes online, there will never be non-amateur traffic between MCP and Prestige that would interfere with or cause problems with the Internet link to Richardson.

Partnership with the City of Plano. Katherine met with Ashley, Larry, and Lynn along with Carrie Little at the EOC. The EOC asks that we help them with information and storm reporting. For example, storm damage reports from hail events.

Plano asks that we come test their equipment. This would have to be during the week during working hours. They have 3 radios to test. They also asked for some refresher training on the radios.

Ashley is working on CERT events for the next year. She asked if we could speak about the importance of amateur radio. The city is also interested in Technician classes and VE sessions after a class. We could try to schedule a training class the weekend after a CERT training.

The city is open to allowing the club to hold meetings at the EOC.

The EOC team was very positive, and we all see this as an ongoing partnership with plenty of room for opportunities to work with the city.

Mike wants to set up a steering committee to pursue a positive relationship with the city. Small group (3-4), one of which would be Katherine that would come up with ways to accommodate what the city is looking for, i.e. weather incident reports and radio training.

Motion: Mike motioned to create a steering committee specifically to help develop a positive, ongoing relationship with the city. Katherine will head the committee. Miranda second. Unanimous vote.

The club needs a small group of four volunteers after the next general meeting to go to the city EOC and test their radios. They can take the club buddy pole to help with the testing. We will call for volunteers at the meeting. It must be understood that we are there to help, not lecture. Working toward the weeks of September 28 and October 5.

October is election month. Vice-President, Secretary, Web Master, Public Relations Director, and Communications Director are up for election.

Action items from tonight:

Mike will draft the written agreement with the city of Richardson for the microwave link

Metrocrest discussion will happen this week

Steering committee announcement

Announce via HCO and groups.io that the election is in October.

Adjourn

Motioned by Lonnie moved, B.J second. Adjourned at 8:22 PM

DX MARATHON

Luis Soto Neira CA6SNT, DX Marathon Ambassador in Chile, asks that we promote the DX Marathon, as he is trying to bring in hams from every country. Can you join? It's free, and there's no registration anywhere.

Everything happens at entry.dxmarathon.com. You upload an ADIF file from your logging program there. It can be your entire log, all years included: only 2026 QSOs count and including others does no harm, so there's no need to filter it or sort it by country or zone.

The site then asks two or three questions about power and antenna, and those questions are part of the submission: if you only upload the file and stop there, your entry never arrives. Use the standard category—the Challenge is a separate entry that counts your entities and zones band by band, so leave it aside for now.

No confirmation email is sent, so check it yourself at **entry.dxmarathon.com/dxm/entries**, where your callsign appears within a few minutes. Your DXCC entities and zones are shown at entry.dxmarathon.com/leaderboard — the sum of the two is your score.

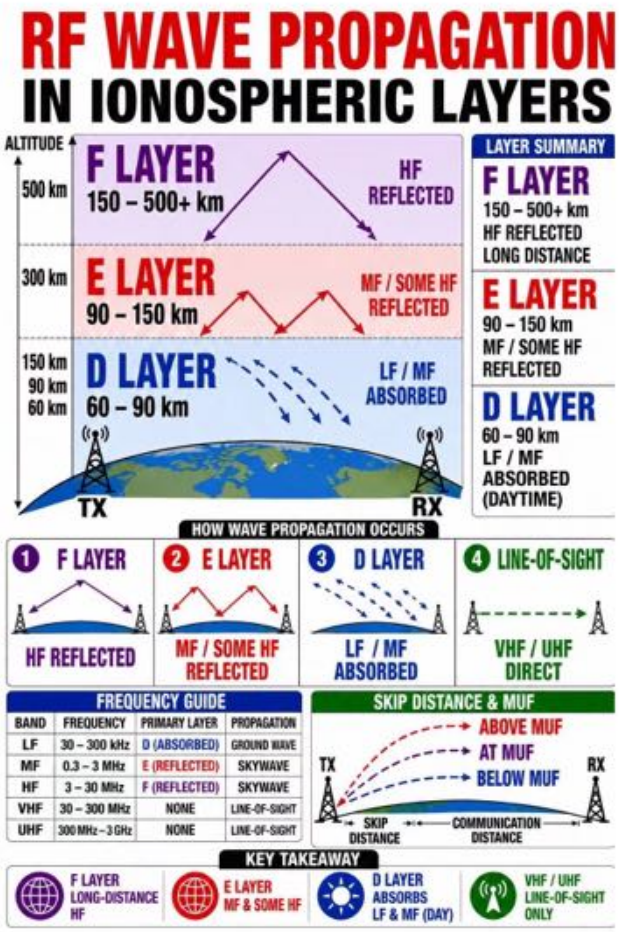
You can upload again as many times as you wish through January 5th, 2027, and only the last submission counts. More details on **www.dxmarathon.com** and on the DX Marathon's QRZ page, W4DXM.

100% of participants get a certificate with their accomplishments.

If you use two callsigns, or if you operate remotely or from more than one location, there are two conditions worth knowing: dxmarathon.com/rules/2026

Thanks, and see you on the bands.

For additional detail, email `6snt@6snt.radio`



Club Member? What was your last pat on the back for volunteering? Please let me know how it went!

LOCAL HAMFESTS

HAM RADIO TAILGATE SALE
OCTOBER 31, 2026

TEXAS BROADCAST MUSEUM

416 EAST MAIN STREET, KILGORE, TX 75662

FROM 9 A.M UNTIL 11 A.M.

THERE WILL BE A HAM RADIO TAILGATE SALE ON SATURDAY, OCTOBER 31ST AT THE TEXAS BROADCAST MUSEUM LOCATED AT 416 EAST MAIN STREET, KILGORE, TX 75662

FROM 9 A.M UNTIL 11 AM

TAILGATE ADMISSION AND TABLE SETUP IS ***FREE*** AND DOOR PRIZES WILL BE DRAWN FROM A SIGN-IN SHEET, ALSO FREE.

MUSUEM ADMISSION HAS BEEN DISCOUNTED TO $5.

REACH OUT TO ***DON KG5CMS*** FOR QUESTIONS
GAMBLEDON@GMAIL.COM (903)235-7042

for more details please contact Don KG5CMS
-73 de Don KG5CMS.

ARRL North Texas Section
Section Manager: Steven L Smith, KG5VK
kg5vk@arrl.org

AntennaSim

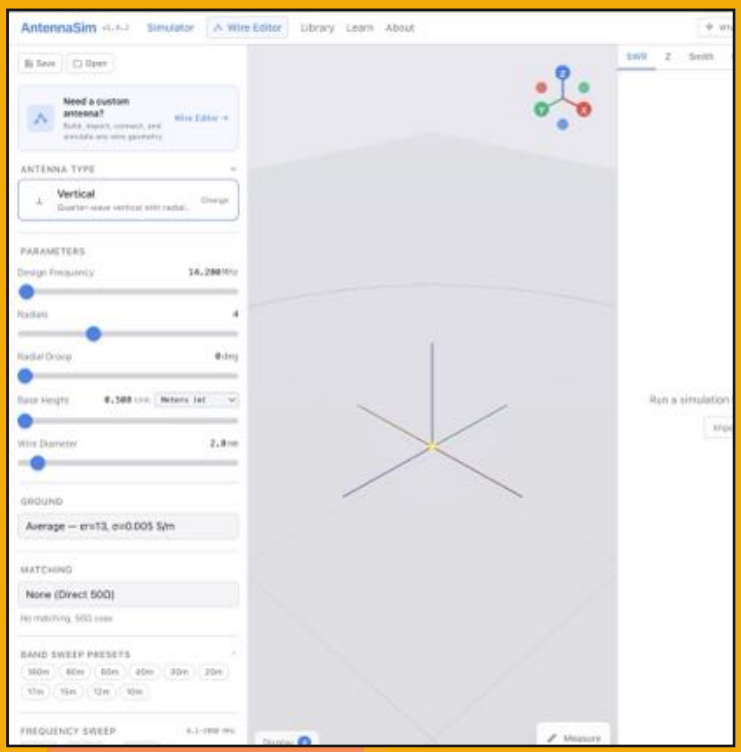
Simulate An Antenna For Free in Your Web Browser

(Not Just For Computer Nerds)

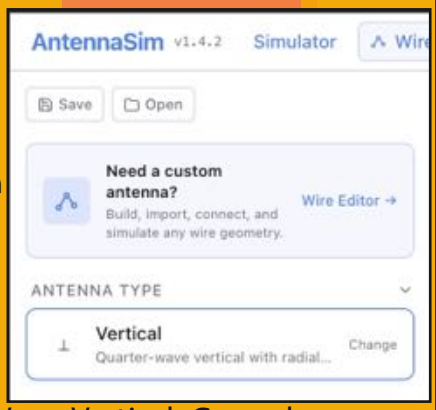
Computers have been able to design antennas ever since the formulas were concieved. But the ability to *model* one had to wait until the highly advanced engineering language known as FORTRAN appeared.

What AntennaSim is

It's a free, browser-based antenna simulator that runs the classic NEC2 engine (the same engine



behind EZNEC, 4nec2, and MMANA-GAL)—no license fee, no Windows-only desktop app, no account needed, and it runs on the same NEC2 engine those older tools use. The version at `https://ea1fuo.github.io/AntennaSim` runs fully in your browser via WebAssembly, so there's no server involved—you just open the page and start designing.



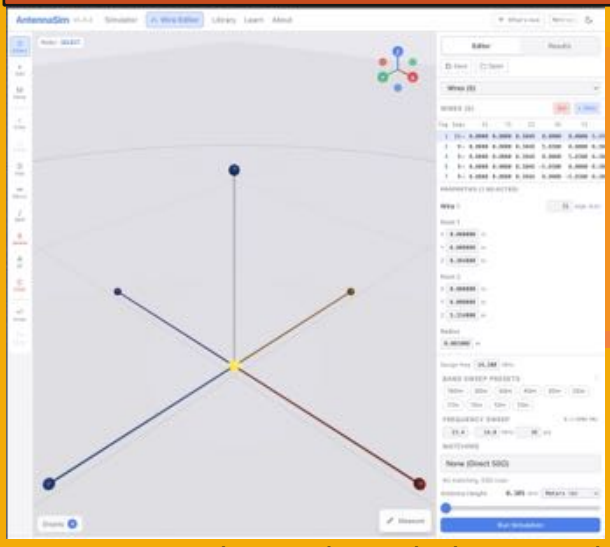
Step 1: After launching it, pick a starting template so that you don't have to build from scratch as a beginner—AntennaSim ships with 17 ready-to-simulate templates organized by category: Wire: Half-Wave Dipole, Inverted V, End-Fed Half-Wave; Vertical: Ground Plane Vertical, J-Pole, Slim Jim; Multiband: Off-Center Fed Dipole, G5RV, Fan Dipole; Loop: Delta Loop, Horizontal Delta Loop, Cubical Quad, Small Magnetic Loop; Directional: Yagi-Uda (2–6 el.), Moxon Rectangle, Hex Beam, Log-Periodic Dipole Array.

A good first choice is the Half-Wave Dipole. It's the simplest, most classic antenna and a great way to learn the interface.

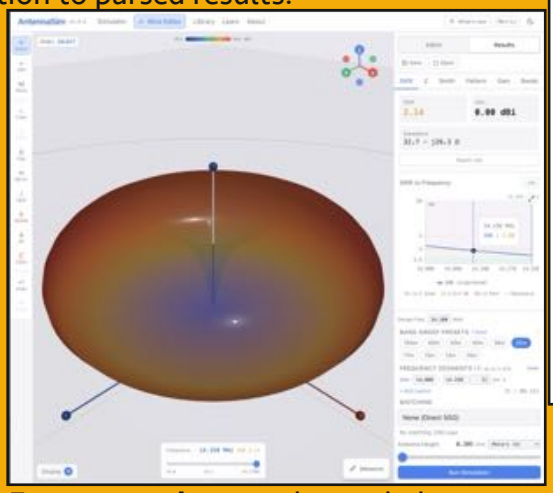
Step 2: Set your parameters as every template includes configurable parameters (frequency, height, element lengths, spacing, wire diameter, etc.) with sensible defaults and validation ranges—so you can just tweak the frequency to your target band (say, 14.2 MHz for 20m) and leave the rest at defaults for your first run. github

You can also set a ground model and probably should. AntennaSim offers 10 ground models: free space, perfect ground, salt water, fresh water, pastoral, average, rocky, city, dry/sandy, and custom. "Average ground" is a reasonable default for most backyard antennas. For North Texas, select "Custom" and punch in your own coefficient of 33.

SIMULATING RADIO

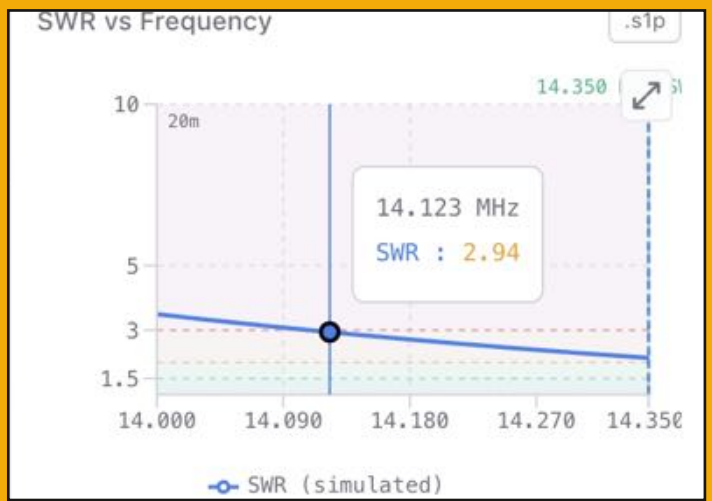


Step 3: Run the simulation by hitting Ctrl + Enter (or the run button)—that's the keyboard shortcut to run a simulation. Behind the scenes, AntennaSim automates the full NEC2 pipeline: geometry definition to card deck generation to nec2c execution to parsed results.

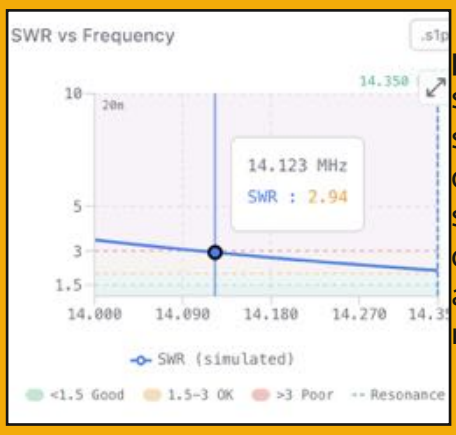


Step 4: Once it runs, you get several views, worth checking in this order as a beginner:

1. SWR vs. Frequency chart—color-coded zones (green/amber/red), ham band markers, and resonance annotation. This tells you instantly whether your antenna is well-matched at your target frequency (green = good, ideally SWR under ~2:1).



2. Impedance (R + jX)—resistance and reactance curves, with resonance crossings shown where jX=0. Resonance is where the reactance crosses zero.



3. 3D radiation pattern—a 3D surface mesh showing gain in dBi, so you can see which direction your antenna actually radiates.

4. Polar pattern—azimuth and elevation cuts with the -3dB beamwidth arc and max gain marker—useful for understanding directionality (very relevant once you try a Yagi).

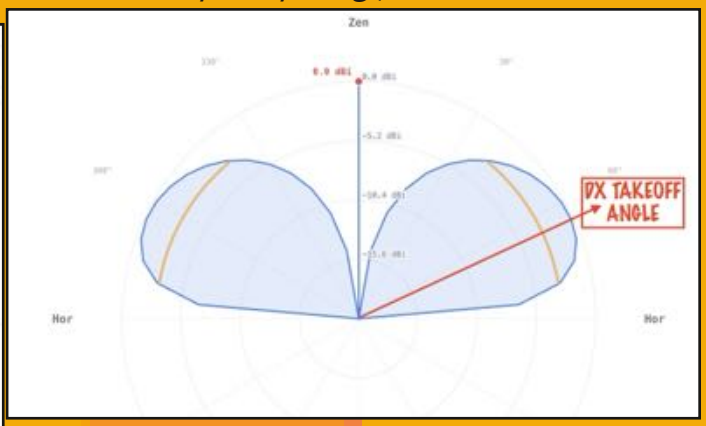


Chart showing the likely DX take-off angle added in by hand.

Every chart also has a legend explaining what you're looking at, and you can click any chart to pop it into a full-screen view for a closer look.

Step 5: Explore the 3D viewport. Drag it to rotate, scroll to zoom, right-drag to pan. Hover over any wire or the pattern mesh to see live measurements (gain, current, field strength). This is genuinely the best way to build intuition—watching how the radiation pattern reshapes as you change antenna height above ground is a classic "aha" moment for beginners.

Step 6: Try tweaking things. Once you're comfortable, change one variable at a time and re-run:

· Move your dipole's height up and down—watch how the radiation pattern angle changes.

· Change frequency slightly—watch the SWR curve shift.

· Switch to a Yagi-Uda template next to see gain and directionality in action.

A few things worth knowing early on

· Press ? anywhere in the app to see the full keyboard shortcuts panel (17 bindings total).

· There's a built-in Learn page—educational content on NEC2, SWR, impedance, radiation patterns, and simulation tips—worth a skim if any of the charts feel unfamiliar.

· There's also a Template Library page to browse and compare all 17 templates by difficulty before diving in.

A practical custom antenna example

Let's walk through simulating a half-wave dipole for the 20-meter band (14.2 MHz)—a great first project since it's simple and every ham knows what to expect from it.

Step-by-step

1. Open the template

Go to the site, open the template library / picker, and select Half-Wave Dipole under the "Wire" category.

2. Set the frequency

In the parameter panel, set the design frequency to 14.2 MHz (middle of the 20m phone band). The tool will auto-calculate a starting element length based on the classic ~468/f(MHz) rule of thumb — you'll see it prefill something close to ~33 ft (16.5 ft per leg).

3. Set the height above ground = 33 ft (about 0.5 wavelength on 20m) as a starting point—a nice middle ground between a low NVIS-style dipole and a high DX-favoring one. You can compare later.

4. Pick a ground model

Leave it on "Average ground" for now—realistic for most home installs without added complexity.

5. Press Ctrl + Enter. AntennaSim generates the NEC2 card deck, runs nec2c, and parses the results —should take a couple seconds.

6. Check SWR first. Look at the SWR vs. Frequency chart:

· If the dip (lowest SWR point) lands right at 14.2 MHz, your length guess was good.

· If the dip is at a lower frequency than 14.2 MHz, your dipole is electrically too long → shorten both legs slightly.

· If the dip is higher than 14.2 MHz, it's too short → lengthen both legs slightly.

This mirrors real-world dipole tuning—cut the wire a bit long, trim to resonance.

7. Check the radiation pattern by switching to the 3D radiation pattern or polar plot. At 0.5 wavelength height, you should see:

· A broadside pattern (peak radiation off the sides of the wire, nulls off the ends)—classic dipole figure-8 shape in azimuth.

· In elevation, a pattern with the peak lobe fairly high in the sky (good for regional/NVIS-ish contacts) rather than a low DX angle.

8. Now, bump height up to 0.75–1 wavelength (~50–66 ft) and rerun. Watch the elevation pattern—the main lobe should drop closer to the horizon, better for DX. This height-vs-takeoff-angle relationship is one of the most useful things to internalize about dipoles.

9. Look at impedance. Check the R + jX chart at resonance—a dipole in free space is theoretically ~72Ω, but near real ground it'll typically show up lower, often in the 30–50Ω range depending on height, which is why so many people run them with 50Ω coax and accept a modest SWR rather than chasing a perfect match.

Want to try this same walkthrough with a different antenna (like a Yagi, so you can see gain and front-to-back ratio in action), or do you want help interpreting a specific result once you've run it?

AntennaSim is real

It's an open-source, NEC2-powered antenna simulator that runs in your browser (no install needed). Live demo: https://ea1fuo.github.io/AntennaSim

It actually ships a Ground Plane Vertical template, so you don't have to build a 20m vertical from raw wire geometry—but I'll walk you through both the fast template route and the from-scratch wire-editor route, since you specifically want the segment/connection mechanics.

Quick numbers for 20m first

Center of 20m (14.0–14.35 MHz) ≈ 14.175 MHz. A

resonant quarter-wave vertical is roughly:

· Physical length ≈ 234 / f(MHz) feet ≈ 16.5 ft ≈ 5.03 m

· Radials: 3–4 at that same length work well as a "ground plane"

From scratch in the Wire Editor (segments & connections)

This is the part that actually shows you the geometry entry.

1. Go to the Editor page (Wire Editor).
2. Press A to enter Add Wire mode.
3. Draw/enter the radiator (vertical element):
   · Wire 1 (tag 1): start point (0, 0, 0) → end point (0, 0, 5.03) — straight up the Z-axis.
   · In the wire properties panel, set segments = 21 (odd count, gives a clean center/end segment structure for NEC).
   · Set radius ≈ 0.001–0.003 m (roughly matches AWG 10–14 wire; use a bit more for aluminum tubing).
4. Add radials (each is its own wire, all sharing the base point so they electrically bond at the feed):
   · Wire 2 (tag 2): (0,0,0) → (5.03, 0, 0)
   · Wire 3 (tag 3): (0,0,0) → (0, 5.03, 0)
   · Wire 4 (tag 4): (0,0,0) → (-5.03, 0, 0)
   · Wire 5 (tag 5): (0,0,0) → (0, -5.03, 0)
   · Segments per radial: 5–9 is usually plenty (radials don't need the resolution the radiator does).
   · All four must share the exact coordinate (0,0,0) with the base of Wire 1—***that shared endpoint is how NEC recognizes them as electrically connected (a "junction")***. No coordinate can be off by even a millimeter or it won't be seen as connected.
5. Press V (Select mode) or M (Move mode) if you need to nudge any endpoint—hold Shift while dragging to constrain movement to vertical only, handy for keeping the radiator perfectly plumb.
6. Set the excitation (feed point):
   · Click on Wire 1, segment 1 (the bottom segment, right at the base junction with the radials).
   · Open the Excitations panel → add a voltage source there, magnitude 1.0 V, phase 0°.
   · Feeding at that bottom segment works here because it's a junction of five wires, not a true dead-end—NEC handles sources at wire junctions fine; it's isolated single-wire end segments you want to avoid for a source.
7. Set the Ground model (Simulator page) to average ground—vertical performance is heavily ground-dependent, so free-space results will be misleading.
8. Set the frequency sweep: start 14.0 MHz, stop 14.35 MHz, ~30 steps, so you get a full SWR curve across the band, not just one point.
9. Press Ctrl + Enter to simulate.
10. Review results:
   · SWR chart—look for the dip; if it's below 14.0 MHz, your radiator is a bit long (shorten slightly); if above 14.35, lengthen it.
   · Impedance chart—expect roughly 30–37 Ω resistive near resonance for a ground-plane vertical with elevated radials (lower than the classic 36 Ω free-space figure if radials droop, ground is lossy, etc.).
   · 3D radiation pattern—you should see the typical omnidirectional donut with a low-angle lobe, good for DX.

Useful editor shortcuts while you're doing this

Key	Action
V	Select mode
A	Add wire mode
M	Move mode
Shift + drag	Constrain movement to vertical only
Ctrl+Z / Ctrl+Shift+Z	Undo / Redo
Ctrl+A	Select all
Delete	Delete selected wire/segment
Escape	Deselect
Ctrl+Enter	Run simulation
?	Show full shortcut list

Use Export → .nec to save the card deck—that gives you a portable NEC2 file you can also open in 4nec2 or EZNEC later if you want to compare solvers.

How does the model know which wires are connected to the shield and which are connected to the center pin of the feed line?

It doesn't—and that's an important thing to understand about NEC2 (the engine underneath AntennaSim), because it changes what the model

actually represents.

NEC2 has no concept of "shield" and "center conductor." The ***source excitation*** isn't a coax connector modeled in 3D—it's a mathematical EMF (voltage) inserted in series at a single segment of a single wire. Think of it less like "plugging in a feedline" and more like cutting a tiny gap in the wire at that segment and inserting an ideal AC voltage generator into the gap. The solver then computes how current distributes across the whole wire structure given that impressed voltage—no separate conductor for the return path exists in the geometry at all.

So when you set the excitation on segment 1 of the vertical radiator:

· The wire you selected (and specifically that segment) is where the "hot" side effectively is.

· The "ground" or "return" side isn't a separate wire—it's just whatever is electrically continuous with the other end of that segment, determined purely by which wires share that coordinate point (a junction). In our model, that's the vertical's base node, which the four radials also terminate at. NEC computes current flowing from that node out into the radials the same way it computes current flowing up the radiator—via the ***method-of-moments solution***, not because anything was labeled "shield."

A few consequences that follow from this:

1. Polarity comes from wire direction, not a shield/pin label. Each wire has a defined direction (from its start point to its end point). The source's sign convention is referenced to that direction. If you draw the radiator from (0,0,0) to (0,0,5.03), "positive" source polarity pushes current toward the top. ***Draw it backwards and the phase reference flips***—usually harmless for a single-source antenna since only relative phase between multiple sources matters, but worth knowing if you ever add a second feed.

2. The coax cable itself isn't modeled. There's no shield conductor radiating, no braid, no jacket—just the antenna wires. This is a deliberate simplification MoM/NEC tools make. It means the model can't show you common-mode current on your feedline shield (a real and common issue with ground-mounted verticals) unless you explicitly add a wire to represent the feedline route and treat it as part of the structure, or use a choke/balun model. AntennaSim's balun/unun matching feature helps with impedance transformation but doesn't simulate shield radiation.

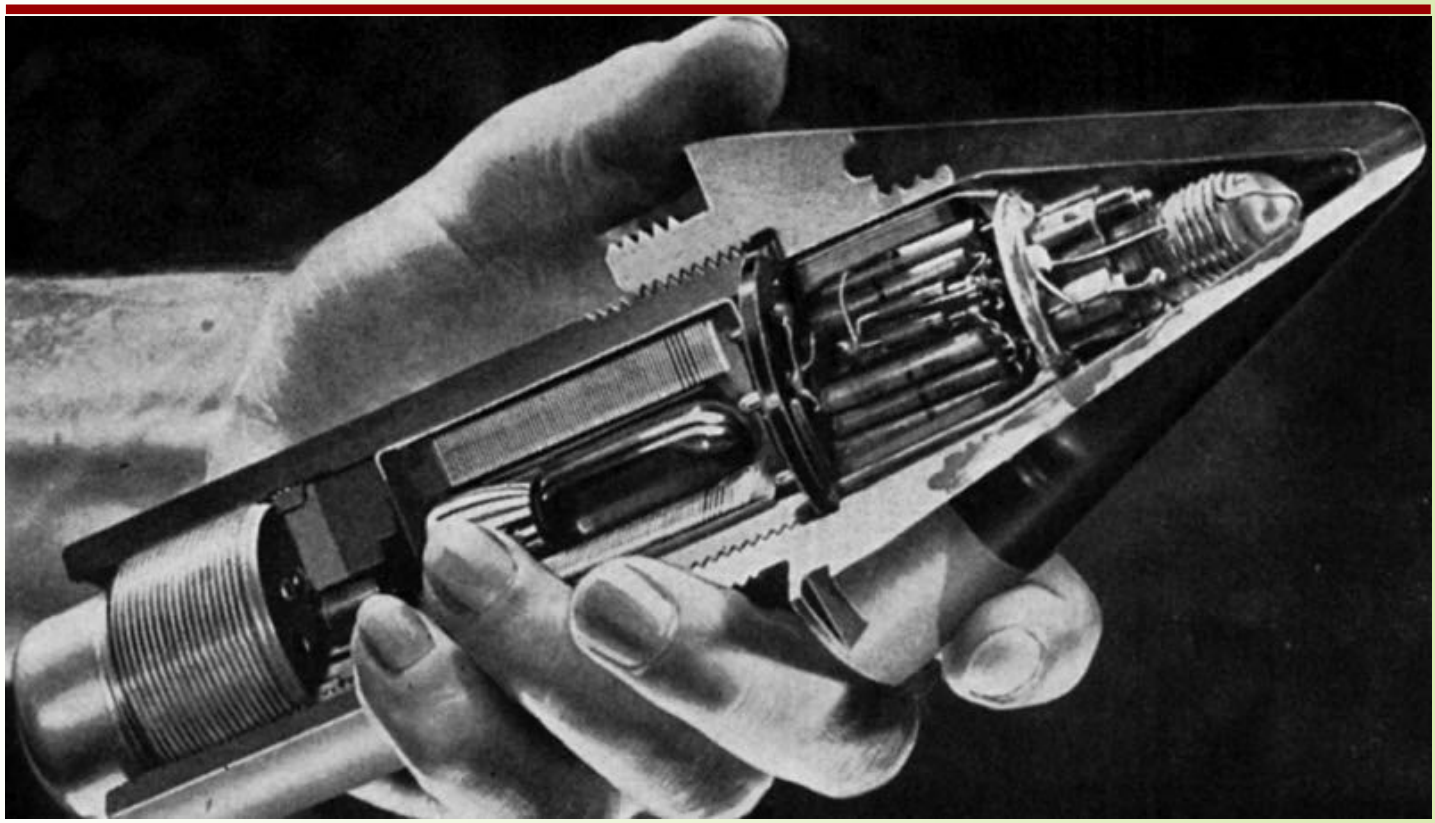
3. The "connection" is ***purely geometric coincidence,*** not an assigned relationship. If your four radial endpoints and the vertical's base aren't at the exact same XYZ coordinate, NEC won't treat them as joined—you'd get a source with only the radiator attached and no ground reference, which usually shows up as a wildly wrong impedance (often something like near-zero or absurdly high resistance) in your results. That's usually the tell that a junction didn't actually connect.

So practically: the "shield vs. center pin" framing from real coax doesn't map onto the model — what matters is (a) which single segment you excite, and (b) which wires physically share that coordinate, since that's what stands in for the return path.

NOTE: The dielectric constant for North Texas soil—classified generally as "pastoral, low hills, rich soil" in the Dallas area—is approximately 20-33, with a conductivity of 0.0303 S/m. This is considered "Very Good" for electrical conductivity compared to rocky or sandy soils. However, this value is not static; it is a function of volumetric water content. The region's Blackland Prairie clay exhibits significant dielectric variability.

Funny Fuze: The Radio Company Fuse that Won The Battle of the Bulge

A brief overview of the VT Proximity Fuze.
By KG5WHQ



General George S. Patton famously credited the weapon with winning the Battle of the Bulge, stating, "The funny fuze won the Battle of the Bulge for us. I think that when all armies get this shell we will have to devise some new method of warfare."

The "funny fuse" was the VT (Variable Time) proximity fuze, a revolutionary World War II invention that detonated artillery shells at a predetermined distance from their target using a miniature radio transmitter and receiver.

KEY DETAILS

Mechanism: The fuze contained a vacuum tube and battery that emitted radio waves; when the signal reflected off a target (like an aircraft or ground) reached a certain intensity, it triggered the explosion. This allowed shells to burst in the air rather than on impact, creating a lethal shrapnel cloud.

Development: Primarily developed by Section T of the National Defense Research Council at Johns Hopkins University's Applied Physics Laboratory, it was considered one of the three most crucial technological developments of the war, alongside the atomic bomb and radar.

Impact: It drastically increased the effectiveness of anti-aircraft fire, shooting down 79% of V-1 flying bombs attacking London and proving three to four times more effective than conventional time fuzes in the Pacific theater.

Over 22 million proximity fuzes were produced and used by Allied forces, remaining a closely

guarded secret until after the war ended.

THE VT PROXIMITY FUZE

The VT proximity fuze was a top-secret World War II weapon that dramatically increased the lethality of anti-aircraft artillery by detonating shells near targets rather than upon direct impact.

The "funny fuse," as it was called, had a two-stage origin:

British origin (the concept)

The idea was conceived in 1940 by British researchers W. A. S. Butement, Edward S. Shire, and Amherst F. H. Thompson at the Air Defence Experimental Establishment in Christchurch, England, with Sir Samuel Curran also involved. They proposed the radio proximity principle in a memo to the British Ministry of Aviation in May 1940. Britain lacked the industrial capacity to miniaturize it for artillery shells, so the design was shared with the US via the Tizard Mission in September 1940.

TIZARD FUZE

The Invention and "Section T"

The concept originated in the United Kingdom, where researchers Sir Samuel Curran, W. A. S. Butement, Edward Shire, and Amherst Thomson proposed a radio frequency proximity fuze in May 1940. Due to Britain's lack of capacity to miniaturize the technology for high-acceleration artillery shells, the design was shared with the United States via the Tizard Mission in late 1940.

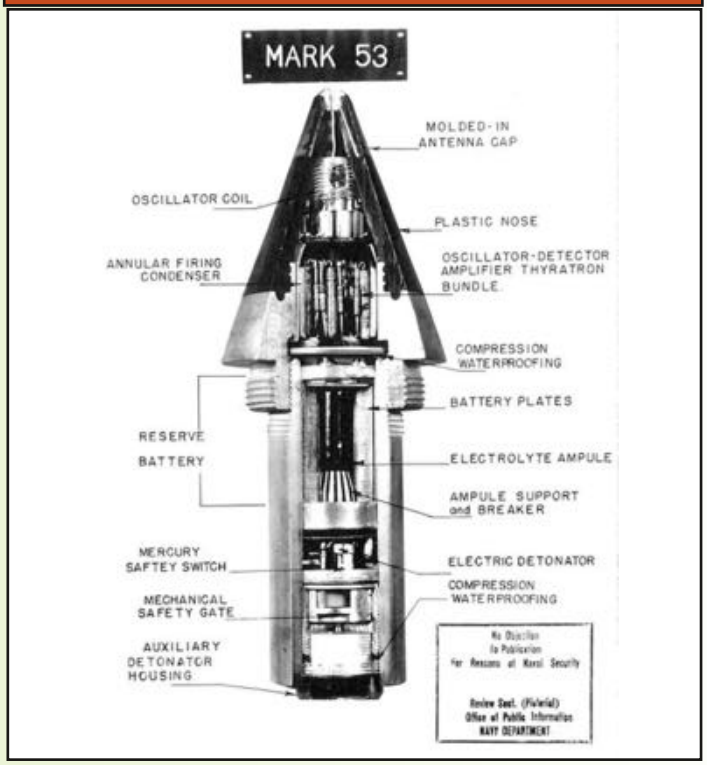
> ***"The funny fuze won the Battle of the Bulge for us. I think that when all armies get this shell we will have to devise some new method of warfare."***

American development (making it work)

Physicist Merle A. Tuve led Section T at the Johns Hopkins University Applied Physics Laboratory, where the fuze was turned into a practical weapon.

Key contributors included Richard B. Roberts, Henry H. Porter, and Robert B. Brode—duplicated and refined the British circuitry.

Lloyd Berkner—devised the improved design using separate transmitter and receiver tubes.



Harry Diamond and Wilbur S. Hinman Jr. (National Bureau of Standards)—worked on fuzes for rockets and bombs.

James Van Allen—solved the critical problem of developing rugged miniaturized vacuum tubes that could survive ~20,000 g of acceleration when fired from a gun.

In the U.S., the project was assigned to "Section T" of the National Defense Research Committee (NDRC), led by physicist Merle A. Tuve at the Carnegie Institution and later the Johns Hopkins University Applied Physics Laboratory (APL). The team, which included Richard B. Roberts, Henry H. Porter, and Robert B. Brode, successfully duplicated and improved the British circuitry. A key innovation by Lloyd Berkner involved using separate vacuum tubes for transmission and reception, allowing for a more powerful transmitter and adjustable receiver.

The Challenge of Miniaturization

The primary engineering hurdle was creating a device small enough to fit in a shell nose, rugged enough to survive the 20,000 Gs of acceleration from an anti-aircraft gun, and reliable enough for

mass production. Physicist James Van Allen joined APL in 1942 to develop the necessary rugged, miniaturized glass vacuum tubes. The fuze operated as a tiny radar, using the shell body as an antenna to emit radio waves; when the reflected signal indicated proximity to a target, it triggered a thyratron switch to detonate the explosive train.

Manufacture

The VT fuze was a massive industrial effort involving 112 companies across the US, but five firms (mostly radio companies) handled final assembly:

Company	Location
Crosley Corporation	Cincinnati, OH
Lead contractor; first into production (Sept 1942); built ~5.2 million fuzes (24% of total).	
Sylvania Electric Products	Ipswich, MA (among others)
Produced the most of any single location (~5.7 million); also made the critical miniature vacuum tubes (400,000/day at peak).	
RCA (Radio Corp. of America)	Bloomington, IN & Camden, NJ
Two dedicated plants.	
Eastman Kodak	Rochester, NY
Only company that continued building VT fuzes after the war.	
McQuay-Norris	St. Louis, MO
An auto parts maker—the only automotive company in the program.	

The 1968 US Patent (No. 3,369,487) was officially granted to Butement, Shire, and Thompson as the original inventors, with Tuve and his team credited for reducing the invention to practice.

Key component suppliers included Hoover Company (batteries, 23,000/day at peak), Jefferson Electric (mercury safety switches), General Electric, Raytheon, and Wurlitzer (which handled early production from its barrel-organ factory in North Tonawanda, NY).

Mass Production and Cost

After successful test firings in 1942, mass production began in September 1942. The project mobilized over 100 American companies, with five primary final assembly contractors:

Crosley Corporation (Cincinnati, Ohio): The lead contractor, producing over 5.2 million fuzes.
Sylvania Electric Products (Ipswich, MA and Mill Hall, PA): Produced the most fuzes of any single location (over 5.6 million) and supplied the critical miniature tubes.
RCA (Bloomington, IN and Camden, NJ)
Eastman Kodak (Rochester, NY)
McQuay-Norris (St. Louis, MO)
The cost per fuze dropped dramatically due to economies of scale, from $732 in 1942 to $18 by 1945. By the end of the war, approximately 22 million VT fuzes had been produced.

COMBAT IMPACT

The first combat use occurred on January 5, 1943, when the USS Helena used VT-fuzed 5-inch shells to down a Japanese dive bomber near Guadalcanal. The technology proved so effective that in 1943, VT-fuzed anti-aircraft fire was credited with downing more than half of all Japanese aircraft encountered. The fuzes were also used effectively against V-1 "buzz bombs" in Europe and in the Battle of the

Bulge, where General George S. Patton credited the "funny fuze" with saving Liège.

HOW MUCH DID THE SHELL COST THAT UTILIZED THE "FUNNY FUSE"?

The shell itself was the same standard high-explosive projectile used with any fuze type—the VT fuze simply screwed into the nose in place of a cheaper time or impact fuze. The projectile cost was a fixed, relatively modest amount; the fuze was the dominant cost driver.

The shell was a commodity item; the VT fuze was the premium component, and its cost dropped by a factor of ~40 over the war.

Over 22 million fuzes were produced in total,

with unit cost dropping from $732 in 1942 to $18 by 1945 as mass-production techniques matured. Crosley famously employed women in the Ipswitch area to work in the proximity fuze factories.

Sources:

The Fuse: The Smithsonian National Air and Space Museum holds a "Fuze, Proximity, Cutaway" (Object ID: nasm_A19940233000) manufactured by the Crosley Corporation.

The Lab: The Carnegie Institution and Johns Hopkins APL archives contain historical photos of Section T, https://archivesspace.carnegiescience.edu/repositories/3/resources/32

The Factory Line: The "Historic Ipswich" website and the "Crosley Auto Club" site reference production lines and workers, including specific photos of the Ipswich Mills electrical department, https://historicipswich.net/2024/11/03/proximity-fuze/

The Final Shell: Various military history sites, such as Naval Gazing and WW2DB, reference test firings of 5-inch/38 caliber shells with VT fuzes.

Hackaday.com, Dan Malony, https://hackaday.com/2023/06/09/retrotechtacular-a-closer-look-at-the-vt-proximity-fuze/

Feds Hunting for German Spy Found a 12-Year-Old Radio Genius Instead

Artist recalls her father, Francis "Frank" Ryder, whose remarkable talent for radio led federal agents to his Brooklyn home during World War I before he went on to found the Suffolk County Radio Club.

By Robert Chartuk

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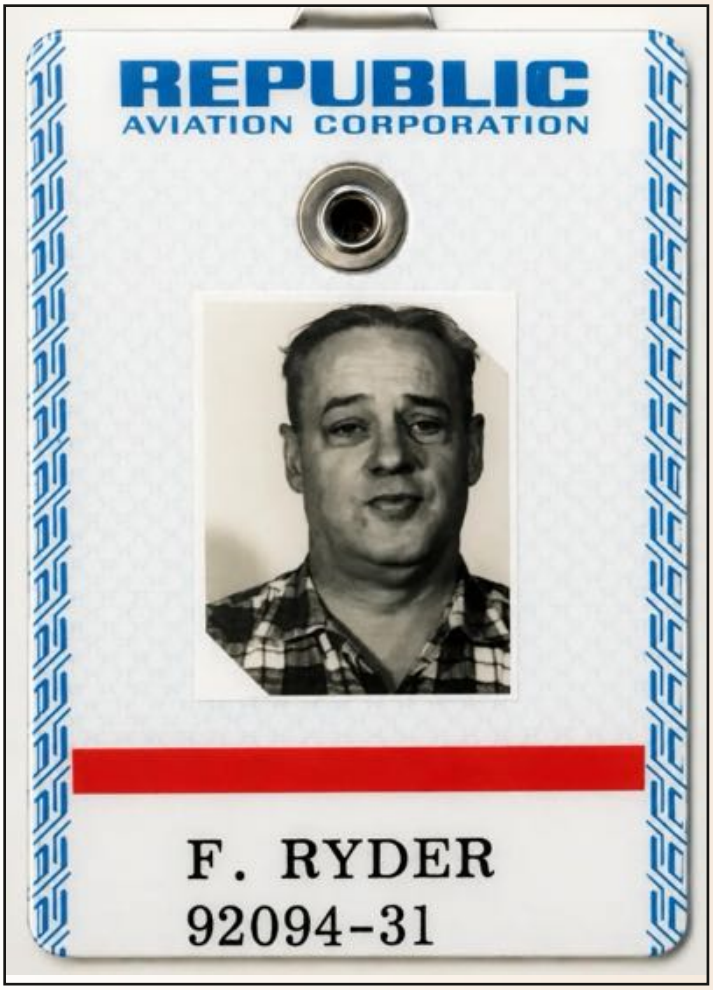
Federal agents arrived at a Brooklyn brownstone during World War I believing they were closing in on a German spy.

Powerful radio transmissions had been detected coming from a home just across the street from the Brooklyn Navy Yard, one of the nation's most strategically important military facilities. At a time when fears of enemy espionage were running high, authorities suspected German agents were using the radio to gather intelligence on naval operations.

Instead, they found a 12-year-old boy.



"The federal government came to the house to investigate him because they thought he was a German spy," recalled acclaimed Long Island artist Elaine Ryder-Thompson. "They couldn't believe this child had built a sophisticated radio station that was contacting places all over the world."

That boy was Francis "Frank" Ryder, who would later become one of Long Island's amateur radio pioneers and the founding force behind the Suffolk County Radio Club.

According to his daughter, Frank Ryder built his first radio station in 1917 while living with his family at 38 Claremont Ave., only a half-block from the Brooklyn Navy Yard. Although only 12 years old, he successfully passed the communications examination required to receive an amateur radio license—an extraordinary accomplishment for someone his age.

His original call sign was simply 2DQ, issued before the federal government began requiring the "W" prefix for American amateur stations. It later became W2DQ, one of the earliest call signs issued in the United States.

"He built all of his own equipment," Ryder-Thompson said. "He was what they called a radio ham."

The Ryder family eventually left Brooklyn, living briefly in Springfield Gardens before moving to Holbrook during the brutal winter of 1947. What was intended to be a temporary stop became an unforgettable experience when a blizzard stranded the family in a summer bungalow without running water.

"We had a pump in the kitchen and an outhouse," Ryder-Thompson recalled. "We had to eat snow."

A year later, the family purchased a historic 15-

room home in Sayville that had once served as the village's first schoolhouse. In the attic, Frank Ryder built another amateur radio station, continuing the work that had begun in Brooklyn decades earlier.

The house also held a remarkable discovery—an original 1858 map of Suffolk County that had once hung in the schoolhouse. The oversized map remains in the Ryder family today.

Frank Ryder later attended Brooklyn Polytechnic and worked in aviation at Republic Aviation in Farmingdale and at what would eventually become Long Island MacArthur Airport. But amateur radio remained his lifelong passion.

His daughter inherited that same fascination.

At age 12, Elaine built a crystal radio set of her own, winning first prize at her Sayville junior high school's science fair.

Years after her father's death, she unexpectedly rediscovered just how much he was still remembered.

During a public event marking the solar eclipse in Shirley, she learned members of the Suffolk County Radio Club—an organization her father had founded—were providing communications support. Carrying copies of his original QSL cards, she introduced herself.

"I told them I was the daughter of W2DQ," she said. "They all fell on the floor." The club members immediately recognized the legendary call sign.

She shared copies of her father's early radio cards and operating records, documenting a career that stretched back to amateur radio's earliest days. She also learned that at one point the Town of Islip had used W2DQ as an emergency communications call sign when conventional systems were unavailable.

Today, Ryder-Thompson is working with members of the Suffolk County Radio Club on a project commemorating the Big Duck's upcoming anniversary, continuing a family connection that began more than a century ago.

Many of her father's personal possessions have been lost. After her parents died, the old Sayville home was destroyed in an arson fire, taking with it family keepsakes that had survived for decades.

But one story has never faded.

When federal agents arrived at a Brooklyn home searching for a German spy, they discovered instead a curious 12-year-old boy whose passion for radio would help shape amateur communications on Long Island for generations to come.

COLORADO HAM OF THE YEAR

A very deserving ham was presented with the inaugural Colorado Ham of the Year Award—an award we hope to continue celebrating each year.

Pictured are **Wayne Heinen NØPOH**, with **Joan Heinen KD0YRX**, by his side.

Wayne is truly the glue that holds many organizations together in Colorado and beyond. His knowledge of accounting, budgeting, and organizational management helps keep the clubs, committees, and boards around him accountable, responsible, and transparent. It's no wonder he is sometimes affectionately known as the "Godfather."

Wayne's current roles include:

ARDC Board Member

- National Radio Club BOD
- RMHAM BOD
- Colorado Council of Amateur Radio Clubs BOD
- HamCon Colorado BOD
- ARRL Colorado Section Assistant Section Manager / Club Coordinator / Assistant Section Emergency Coordinator

Beyond these roles, Wayne has helped a tremendous number of clubs get started and grow from the ground up.

Colorado's amateur radio community, its clubs, and the Colorado Section would be a fraction of what they are today without Wayne's willingness to dig into the details, keep things on track, and help others succeed.

Congratulations, Wayne, on a well-deserved honor! And a huge thank you to Joan for all of your support along the way!


UNITED STATES AIR FORCE
MILITARY AUXILIARY RADIO SYSTEM (MARS)
MARS
Bruce W Cameron
IS HEREBY GRANTED THIS LICENSE AND CALL SIGN TO OPER E AS AN OFFICIAL
AIR FORCE MARS STATION
AFA6FP
THE LICENSEE HAS AGREED TO OPERATE THEIR STATION IN ACCORDANCE WITH ALL
APPROPRIATE AIR FORCE MARS REGULATIONS AND INSTRUCTIONS. THIS LICENSE SHALL
REMAIN VALID FROM THIS ISSUE DATE UNTIL THE EXPIRATION DATE SHOWN, UNLESS
OTHERWISE MODIFIED OR REVOKED FOR CAUSE.
VALID THIS DAY: 12-February-2026
UNTIL: 12-August-2033
DAVID ANTRY
CHIEF, USAF MARS
US AIR FORCE
MILITARY AUXILIARY RADIO SYSTEM
Bruce W Cameron
AFA6FP
IS A MEMBER IN GOOD STANDING WITH THE USAF MARS
PROGRAM. MEMBER AGREES TO OPERATE THEIR STATION IN
ACCORDANCE WITH ALL APPROPRIATE AIR FORCE
REGULATIONS AND INSTRUCTIONS.
Welcome to the USAF Military Auxiliary Radio System – MARS.
MARS has played a significant role in Air Force communications
support since its inception in 1948.
Prior to that, the Army Amateur Radio Service (AARS), its
predecessor, was in existence since 1925. We are very proud of our
MARS program and of the dedicated members who participate in it.


AIR FORCE MARS
Official Presentation of
United States Air Force MARS
USAF MARS
HEADQUARTERS
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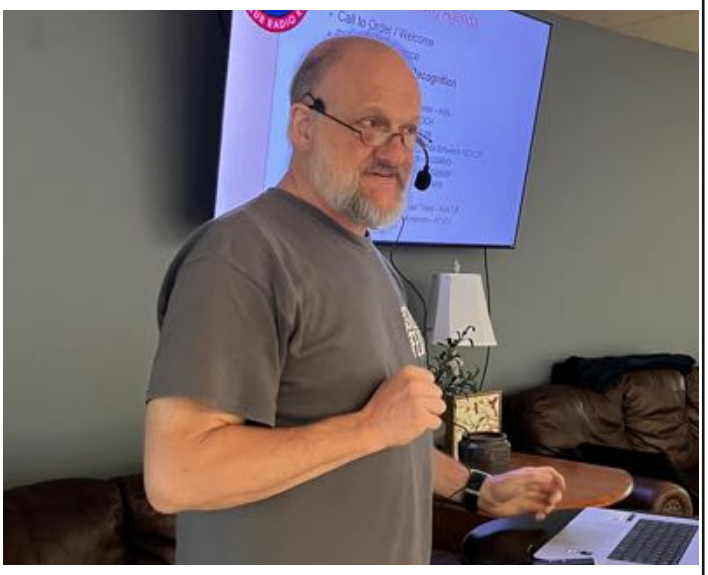
Call to Order / Welcome

JOIN THE ARRL

American Radio Relay League (ARRL) is the leading organization for radio enthusiasts across the United States. The ARRL invites you to join a vibrant community of innovators, communicators, and explorers who connect the world through the airwaves. Whether you're passionate about emergency communications, cutting-edge technology, or simply connecting with fellow hams across the globe, the ARRL offers unparalleled resources, training, and opportunities to fuel your curiosity.

By becoming a member, you'll gain access to exclusive publications like QST, hands-on support for licensing and operating, and a network of over 150,000 members who share your passion.

ARRL has an active lobby in government and aggressively acts for our benefit sharing our voices in Congress.

Additionally, the the ARRL equipment insurance program is quite superior. Investigate it and stor you receipts away in accordance with their requirements. When lightning strikes you will want them.

Join the ARRL today and amplify your voice in a timeless hobby that bridges distances, builds skills, and creates lifelong friendships—your adventure in amateur radio starts here!

MTC RADIO

Main Trading Company in Paris, TX

Richard Lenoir of Main Trading Company sees things developing in the Ham Radio market and wants us to check out his inventory. Give him a call or check his web site.

1875 17th NE
Suite 100
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903-737-0773
`https://www.mtcradio.com`

THANKS FROM DFW EXPO

We can't thank you enough! DFW Ham Expo 2026 was a great success, mostly thanks to you, our 1000+ guests. It's a new milestone for DFW Ham Expo, and it's one that we can't wait to break next year.

We hope you enjoyed our space in the NTX Arena, a huge (literally) improvement from previous years. Lots of tables, lots of space, and lots of air conditioning! We heard lots of positive comments during the show that you really liked this year's experience. We also hope that you enjoyed our forums and expanded amenities as we grow to become the hamfest that North Texas deserves.

If you missed it, we will have a photo gallery and some YouTube tours on our website in a couple of days - just give us a day or two for our feet to recover :)

SEE YOU AT THE K5PRK Regular Meeting On September 21, 7pm

We will be back next year (same weekend - June 11-12, 2027) and we plan to be in the same space where we have plenty of room to grow even more. Mark your calendars, tell your friends, and come back to see us next year!

We look forward to seeing you there!
DFW Ham Expo Inc.
(a 501(c)(3) non-profit corporation)

Ham Trivia:*(Look for the question on page 3)*

A. Its wavelength is 17.31451582 Meters.

Suggested by **Tim Johnson K5TCJ**.

W6NBC, SK John Portune

From No Agenda News

July 6th, 2026—John Portune W6NBC is a Silent Key via Paul Braun WD9GCO, QRZ.COM.

JOHN PORTUNE W6NBC, AUTHOR, ANTENNA INNOVATOR An advisor and mentor to many, and a widely respected expert on antennas, has become a Silent Key.

Many hams who have wanted to get more out of their antennas—or simply learn more about them—no doubt turned to the words and writings of John Portune, W6NBC. The retired KNBC TV broadcast engineer, an experimenter and an innovator, was always generous with his time and wisdom on the subject.

John became a Silent Key on the 6th of July. Born in 1938, he had been a ham since 1965.

The Los Angeles, California native was a frequent presence—either via Zoom or in person—at club meetings and ham expos needing his expertise on everything from mag loop antennas to stealth antennas that went undetected by homeowner associations.

He was a prolific writer, with bylines in QST and On the Air magazine to his credit. He was also the author of a number of books, including "Slot Antennas for Ham Radio: the Forgotten Antenna." Many hams turned to John for his advice on how to get on the air from homes in communities governed by home owner associations' antenna restrictions. He was also known for hosting informal Monday morning chats on Zoom, open sessions where friends gathered to compare notes and, of course, ask questions. Or, as John wrote on his website: "Just fun."

John was 88.

(W6NBC.COM WEBSITE, QRZ.COM)