



The POTA Operators Guide

How to Activate
Anywhere—Anytime

Preview Sample



**Don Dickey
WV1W**

**Handbook of Solutions
for POTA Enthusiasts**

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This book is dedicated to
Sara “Bean” Lefebvre
KC1MEB, silent key

The author would also like to thank
the trusted friends who helped with
tips and suggestions to improve the
book during its creation and evolution.

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Cover Photo
WV1W Portable Station

Yaesu FT-891
U1 Garden Tractor Battery
Hamstick Antenna
3 Radials on the Grass

Introduction

I have been a licensed amateur radio aka “ham” operator since 1975. Likely with many others, hobbies ebb and flow. During the summer of 2019, I had just gotten back into operating after a 14-year hiatus when I purchased a Yaesu FT-891 on a whim.

My original intent was to operate from the picnic table on our deck whenever the weather was nice enough to get out of the shack. A 12-volt battery borrowed from my weed whacker ran the FT-891 at 20 watts, just enough to have some outdoor fun.

A month later, I ran into Patrick Gearty (W0YES) on 20m SSB. He said he was doing something called POTA, and I asked, “What’s that?” I had never heard of POTA, and Pat gave me a brief description and suggested I check it out on the web. The rest, as they say, is history.

TIP: If you are brand new to POTA, begin with my first book *Successful POTA* which explains what POTA is about, guides you through many rig and antenna options, and shows you how to get started. It also covers spotting and logging. This book pays for itself by saving you LOTS of time and \$\$\$.

The POTA Operators Guide is my third book in the WV1W series and helps you get the most out of POTA by showing how to solve the problems unique to each section. I demonstrate by example how to convert issues into opportunities for both fun and furthering your knowledge of amateur radio.

I share my experiences from over 580 activations and 55,000 QSOs to help you operate in a variety of settings from simple pastures to waterfront properties with spectacular views.

It is more conversational (less geeky) than my other books with some personal stories many readers will find interesting. Come along, we’re going on an adventure. It’s time to POTA, anywhere—anytime!

POTA at the Beach

New England is fortunate to have some absolutely gorgeous beaches. While a few dozen miles of very expensive oceanfront property referred to as the “Gold Coast” is under the private ownership of some of the richest people in our country, many of the best beaches are open to public access. Connecticut has a dedicated fee added to motor vehicle registrations that pays for our state parks. Non-residents are charged but residents have already paid for access, so they only pay for extra services like camping and special activities.

One such park worth visiting is Silver Sands in Milford, CT. It has a wonderful view of Long Island Sound and even some nice hexagonal shaded picnic tables near the pavilion where visitors can enjoy their lunch and do some POTA. The tables have a built-in hole for an umbrella, but that’s also perfect for an antenna mast. In the picture below, I used my Pole Pruner Vertical to activate on a picture-perfect day at the beach.



Silver Sands State Park (K-1716)

Beaches can present real challenges to operators. The sandy soil isn't great for anchoring antennas, there's often a stiff breeze at the shore when non exists a few miles inland, but the biggest problems can be electrical. Beach-front pavilions can produce ridiculous HF interference, probably from noisy compressors in refrigeration equipment. The biggest problems have to do with ground conductivity or a lack thereof.



Antennas that worked perfectly at other parks amazingly show elevated SWR at the beach. One quick fix is to pull out the tuner. That's what I did here, and you can see an FC-50 auto-tuner under my FT-891 in the close-up above. It saved the day.



Marconi Beach - National Seashore (K-0672)

Guglielmo Marconi used kerosene-burning engines with alternators producing 2,200 volts to power his 30,000 watt station. Even with that enormous “juice” he had lots of trouble getting signals from Cape Cod in Massachusetts to receiving stations in Europe on the other side of the Atlantic Ocean.

Once again, this time in MA instead of CT, I had a high SWR at the beach and, like before, my tuner saved the day. With a modern HF rig running only 100 watts into an 8-foot hamstick and powered by a battery, I had no trouble replicating what Marconi did, but this time using voice instead of Morse code.



Marconi Station circa 2023

There are other possibly more efficient solutions like a different antenna. With the exception of some half-wave designs and familiar J-pole antennas, most verticals rely on a counterpoise system external to the radiating element to function properly. This is usually in the form of radials, a set of wires deployed below the base of the main element.

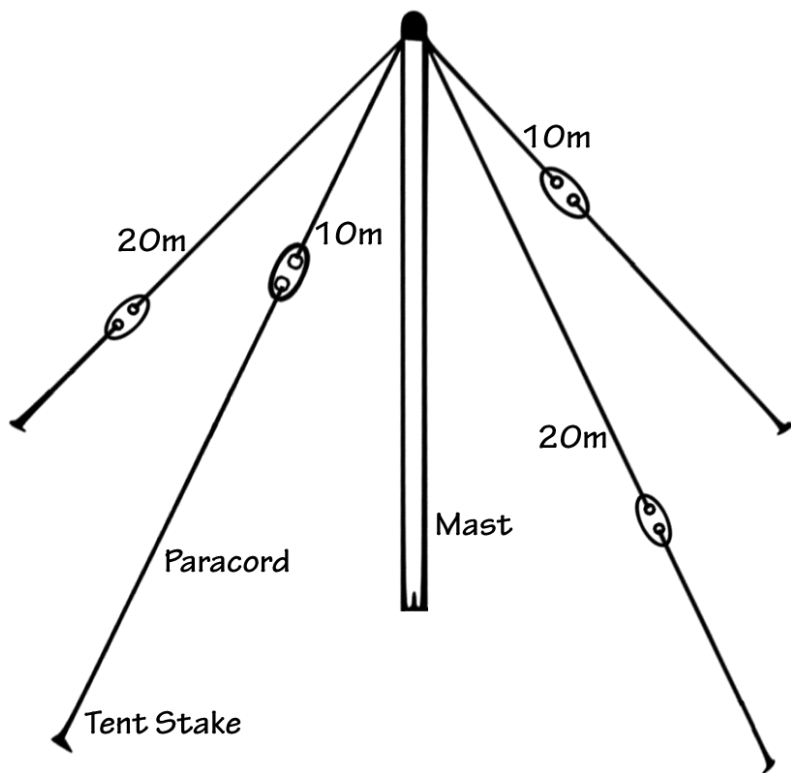
Normally, radials laying directly on the ground can couple with the earth. They don't need to be carefully tuned for this to work. That's why my kit of four 16 to 18-foot radials can successfully make contacts on 40m. They are relying on electrical conductivity in the soil for this to happen. Unfortunately, sandy soil found at or near the beach lacks enough of this conductivity.

One solution is to raise the antenna base up a few feet and use elevated radials. This requires them to be tuned, and usually be about the same or slightly longer length as the radiating element. Tuned radials can be just as fussy as the antenna. That's why I usually prefer to lay them on the ground, but this doesn't work so well at the beach.

There is another solution: use an antenna design that doesn't rely on a separate counterpoise but, instead, has one of its own. The simple dipole and its close relative the inverted V are self-contained antennas and do not need any separate radial system. While possibly more challenging to set up, these designs can offer the best solutions for beach-front POTA.

The trouble with most beaches is an absence of trees from which to hang antennas. Dipoles usually need two for the ends, and inverted V configurations need one in the center, but sometimes even that's a bridge too far when all you have is tall grass. Even that's off-limits, barely hanging on for its own survival, and probably infested with ticks! TIP: Stay out of beach grass.

One solution for a beach activation might be my crossed fan antenna. This design doesn't need a counterpoise, it's self-supporting, and its construction is particularly likely to survive the stiff breeze you're likely to find at the beach.



20/10m Crossed Fan Inverted V

The mast can be a sturdy commercial model or one you make yourself using off-the-shelf PVC pipe from your local Home Depot or plumbing supply. It should be 17~18 feet high.

All four elements should terminate with insulators and a length of paracord. Stakes should be the type with a broad flat side to hold in sand. With a 17-foot mast, you need 50 feet of paracord with 9 feet for each 20m leg and 16 feet for each 10m leg. A taller mast will require more cord to maintain a minimum 45 degree angle between the elements and mast.

The “hot” sides on both bands are connected to the coax center conductor, and the opposite sides are connected to the braid.

You don't need a balun, but you could use a 1:1 voltage balun if you have one and are so inclined. None of my antennas include a balun, and they work just fine with thousands of QSOs proving one isn't required for success and fun on the air.

You need 47 feet of wire to make the 20/10m crossed fan. You could buy 25 feet of speaker wire or zip cord and split it down the middle and have more than enough to make all 4 elements.

Element lengths for SSB or CW/digital frequencies should be about the same as for an inverted-V listed in the table on the previous page. For SSB frequencies, 20m elements should be 15 ft 7 in long and 10m elements should be 7 ft 10 in long. CW/digital operators should add a couple inches to each wire.

Expect some interaction between the two bands, and experimentation with trimming may be required.

Some readers may wonder just how a fan dipole works. The answer is simple. Those elements whose resonant frequency matches that being either received or transmitted absorb or transfer most of the energy. The non-resonant wires are basically ignored. This is a good example of the magic of resonance and why it is so important to antenna design.

TIP: You could make a 40/20m crossed fan instead. This design is included in *The POTA Antenna Book*. It would take up much more room and result in very different propagation with close-in NVIS contacts on 40m but also omnidirectional long distance contacts on 20m.

This is because the 40m elements are only a small fraction of a wavelength above the ground. The 40/20m hybrid design can work for both POTA and EmComm.

Meet the Author

Hello! I'm Don, WV1W, author of this book. I've been a ham since 1975, first as WN1VDD and then as WA1VDD.

In my first career, I was a mechanical design engineer and worked on “macro” projects including large printing presses for Harris Corp and later “micro” projects including a pager watch for Timex when I was awarded a patent for the antenna.

Later, I followed my passion for baking and cooking and became the culinary professor for a state community college. I taught exclusively low-income inner city kids professional kitchen skills so they could get jobs in the culinary field.

I currently live in CT and am married to N1GDW. We have one daughter who is a successful fashion designer in NYC.



WV1W POTA Station at K-0882

Sample POTA Checklist

Transceiver
Transceiver Power Cord with Powerpoles®
Transceiver Hand Mic
Antenna Tuner with data and RF cables
Antenna Analyzer, charged
Morse Key
Headphones
Laptop or Tablet with updated log
Clipboard with:
 FCC License
 Blank Log Sheets
 ARRL Band Chart
Pencils & Pen
POTA Sign with holder
12v Battery, charged, with Powerpoles® Pigtail
Battery Clips to Powerpoles® Pigtail
Linked Vertical Wire Antenna
Arborist Throw Line with Weight
Tent Pole Antenna with Loading Coil & Jumper
40m & 20m Hamsticks with long and short stingers
Counterpoise Wire Sets x2
Tripod with Mount
Jaw Clamp Mount
Pedestal or Spike Ground Mount
25-foot Coax Cable x2 with Barrel Connector
Mallet
Leatherman Multi-Tool
Spares: antenna wire, crimp connectors, paracord
Electrical Tape
Folding Chair & Folding Table
Thermos (with hot coffee) & Cup
Water Bottle (with fresh water)
Hat & Sunscreen
Bug Repellent



Parks On The Air activations will challenge your ability to cope with a variety of issues on-the-fly. The examples shared in this book offer concepts to help you solve problems and have fun in the outdoors. It's time to POTA, anywhere—anytime!