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# Contesting with a Pea-Shooter Station

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# What's all this contesting stuff anyhow?

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- People like to race or compete *everything*, so why not radios?
- In *Radiosport*, you work as many stations as you can in a specified period of time

**WRTC**  
**2014**

World Radiosport Team Championship

The olympics  
of radiosport!



# When and where are contests held?

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- Where? Nearly every band and mode
  - Mostly HF, but also VHF/UHF/Microwave
- When? Mostly on weekends
- How often? About 500 contests per year
- How long? From 30 min to a whole year
- Contest calendar:  
<http://www.hornucopia.com/contestcal/>

# How does a contest work?

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- Objective is simple: Work as many stations as possible in the allotted time
- Score multipliers for different countries, states, zones, etc.

Score = contacts X multipliers

- Somebody calls CQ (the running station)
- Others find them (search and pounce)

# Why join a contest?

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- Quick way to score countries (DXCC), states, counties, band-modes, etc.
- Challenge yourself, or compete with others
- Become a better operator
- Test new equipment or techniques
- Most of all, have fun!

# Contest stations come in all sizes. Here is *Big Gun* NR4M (Virginia)

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**Holy smokes! 10 operators!**

# **Big Guns have huge antennas, multiple towers, covering acres of property**

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N6RO, Knightsen



- A few hundred of these, worldwide
- A few in California

K3LR, Pennsylvania



# More common is the *Little Pistol*

- Tower or mast, tribander and wires
- Thousands of these in the U.S. alone
- About 6 in Livermore (1% of our hams)

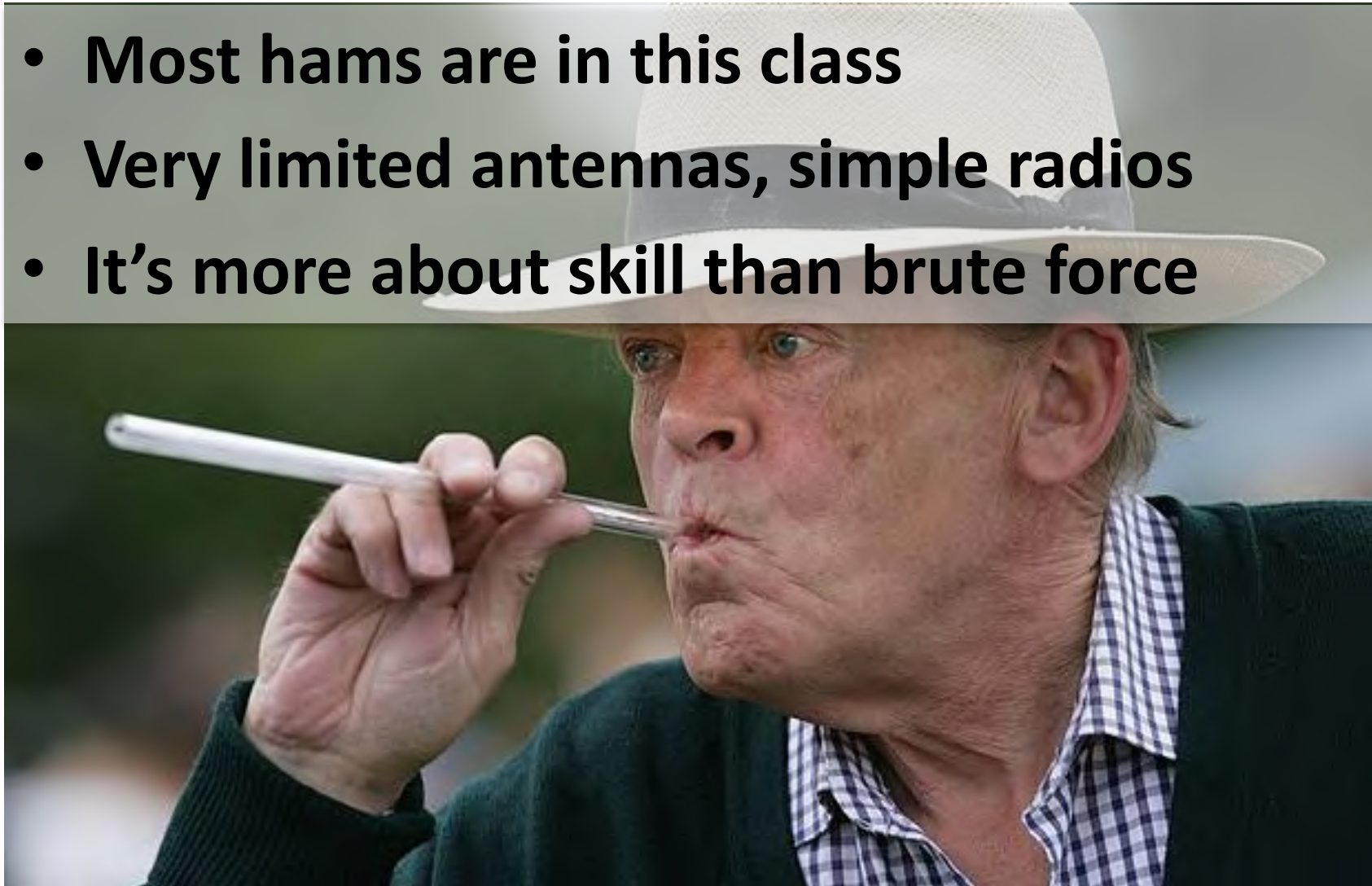




# And then there's the rest of us: *The Pea-Shooters*

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- Most hams are in this class
- Very limited antennas, simple radios
- It's more about skill than brute force



## But are little guys and newbies like me welcome in contests?

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- Absolutely!! There simply are not enough Big Guns, or even Little Pistols, to keep contesting vigorous and exciting
- They NEED your QSOs
- They WANT you to join in, have fun, and be successful
- They will HELP you learn what to do

# But a pea-shooter can't actually WIN anything... ...Right?

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**Nonsense!**

I won these major contests from my little station

Now let's look at Pea-Shooter stations and operating techniques

# Some antennas for small stations:

## 1. Dipoles of all kinds

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- Single-band or multi-band
- Fan (parallel), or off-center fed
- ALWAYS use a common-mode choke (balun)
- Hang it as high as you can
- Bend it, load it, make it invisible, as needed!

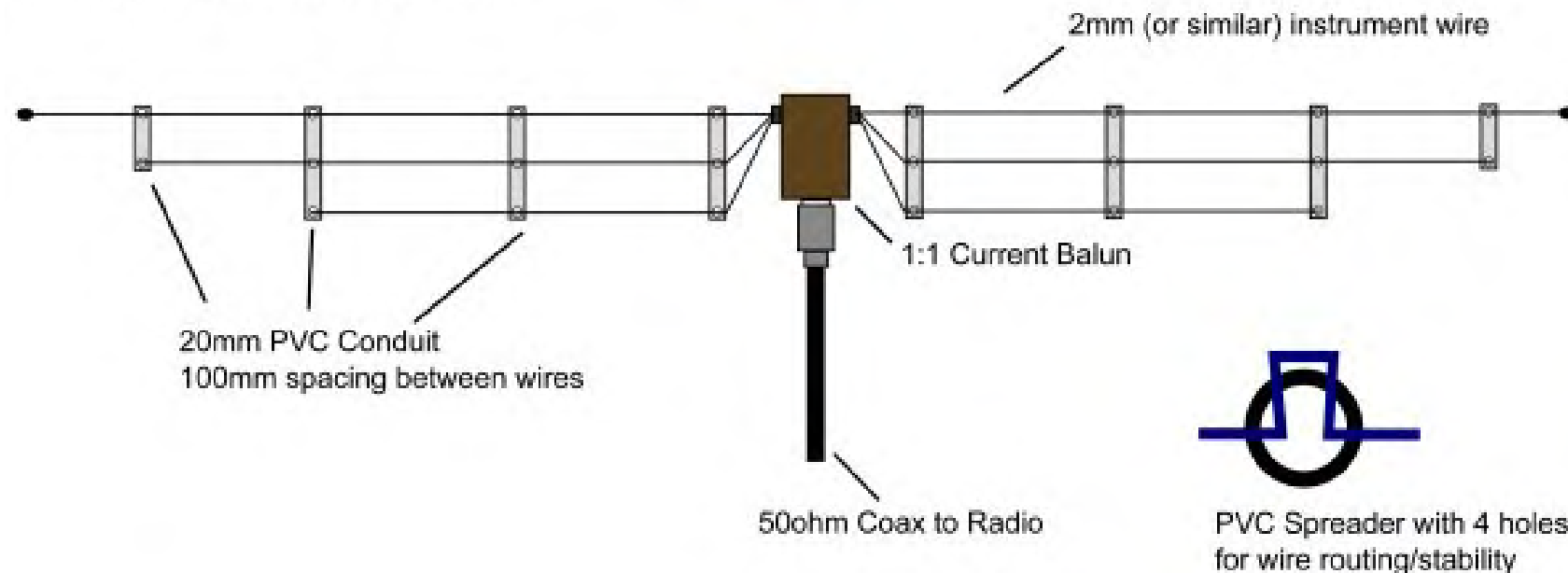
**No significant disadvantages! Make this your first choice if you can't put up a tower and Yagi**

# Multiband dipole examples

## 20m, 15m, 10m Fan Dipole

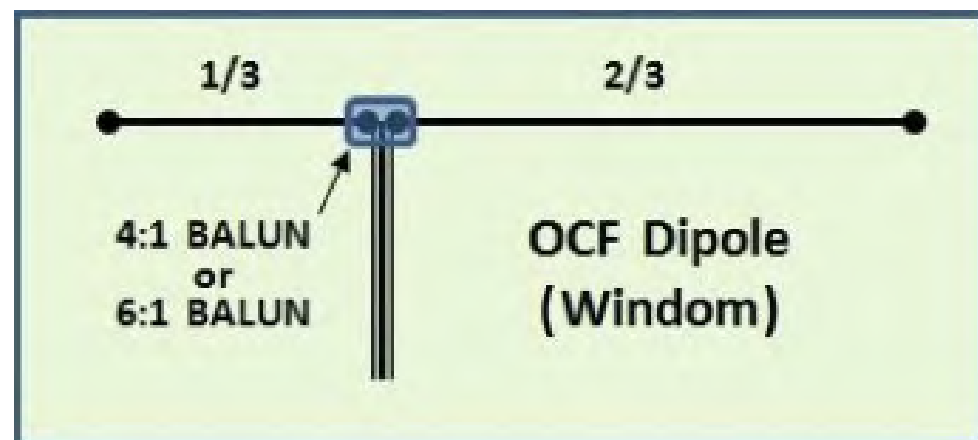
Resonant on 14MHz, 21MHz and 28MHz with a single coax-feed

Wires approx: 5.2m , 3.6m , 2.6m each



## Off-center fed

(See KQ6DI talk in February 2016 LARK newsletter)



## 2. All-band verticals (OCF vertical dipole)

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- No radials required
- Lightweight
- Small footprint
- Cushcraft R8, R6000
- Hy-Gain AV-640
- N6BT Bravo series

### Drawbacks:

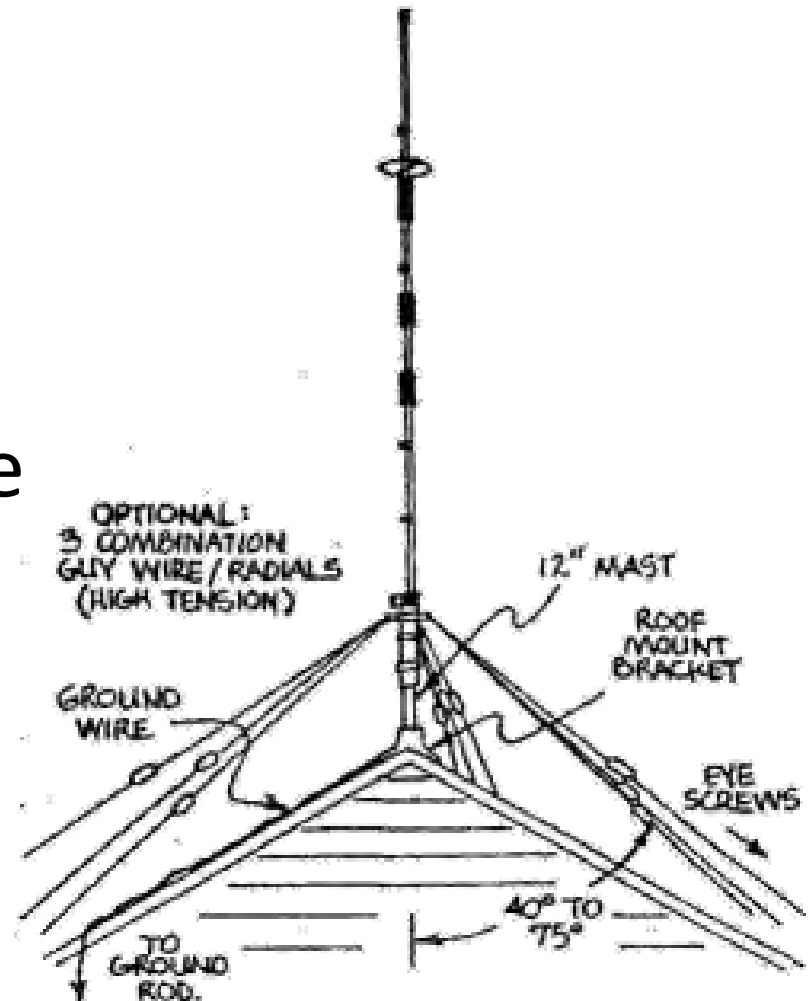
- Noise pickup
- Minimal gain



### 3. Verticals with radials; Inverted L

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- Requires some real-estate for radials
  - 1/4 wavelength or more; as many as you can
- Put it on the roof, and pave with radials
- A great all-band vertical: SteppIR



# Antennas at NA6O (CC&R violator!)



R6000 vertical,  
jammed in next to  
neighbor's tree

Balun for  
fan dipole



# Dealing with RF interference (RFI)

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- Close proximity to many houses means many sources of RFI
  - You can't work 'em if you can't hear 'em
- Fix your own house, then work with neighbors
- See *ARRL RFI Handbook*
- Every club should have an RFI team to help with these issues



# Low-noise receiving loop rejects local RFI

- Covers all HF bands
- No tuning required
- Orient to null out QRM
- Some makers:
  - Wellbrook
  - Pixel Technologies

**Note very elaborate mount**



# Radios for contesting

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- Modern HF rigs with excellent receiver performance are a huge advantage
- CAT control for automation and logging



TS-590SG  
FTDX-10  
IC-7300



An amplifier is nice, too, if you can afford it (\$2000/S-unit)

# The NA6O station... and I'm a pretty serious contester!

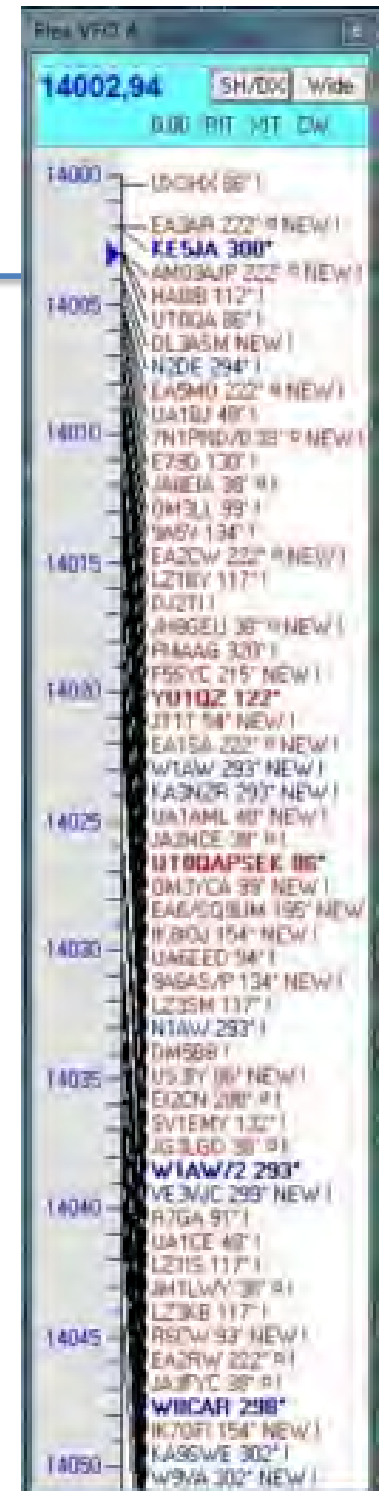
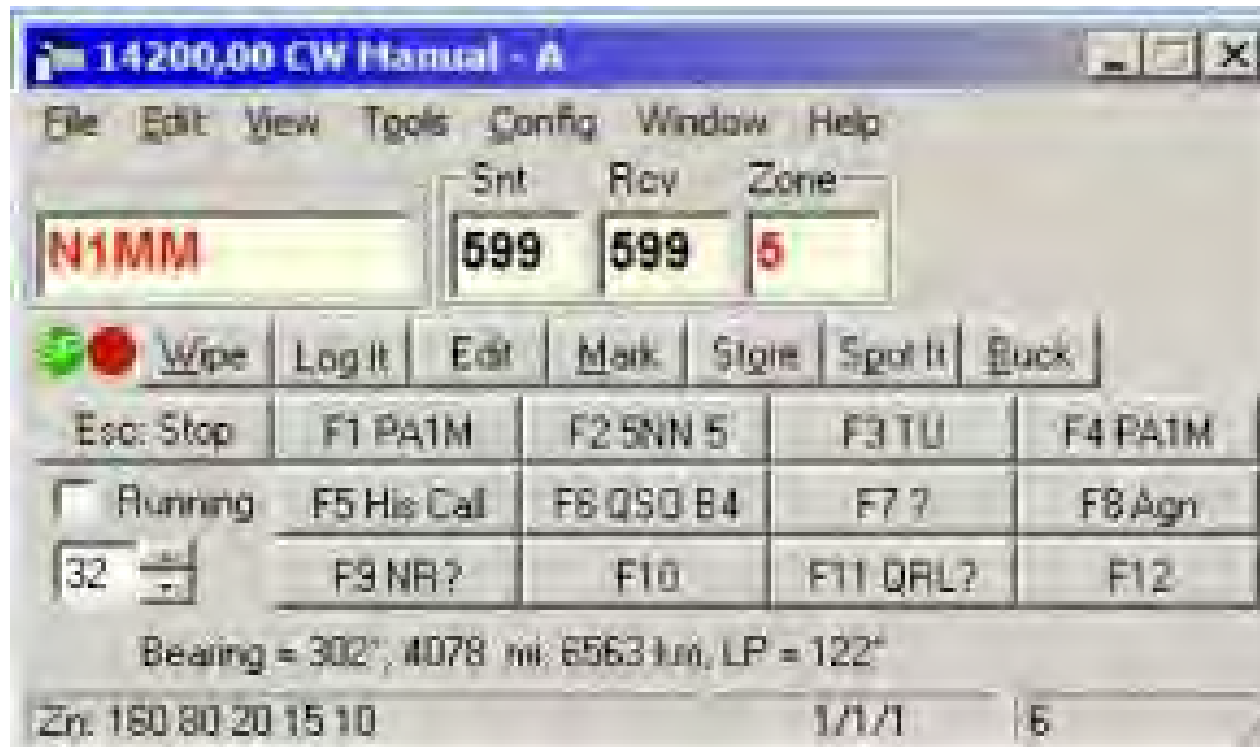
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Kenwood TS-590s  
Elecraft KPA500  
Heil Proset  
Palstar tuner  
K1EL WinKeyer  
SoftRock SDR  
Rackmount PC  
Lots of CW keys!  
  
(And test eqpt...)



# Software for contesting makes you very efficient

- Automates sending, logging, scoring, spotting, and more
- Examples: N1MM, Writelog



# Getting started in your first contest

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- Read and follow the contest rules
- *Listen* and see how the exchange sounds
- Start out by answering stations that are calling “CQ contest”
  - This is called Search and Pounce (S&P)
- After some practice, you call CQ
  - This is called Running

# Typical contest exchange

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Running station

S&P station

CQ TEST K3LR K3LR

NA60

NA60 599 PA

TU 599 CA

TU K3LR TEST

*...over and over, often many times per minute*

# The key to contesting success is your operating skill, as much as your station

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- Pick a contest that looks fun to you
  - Easy state QSO party vs. hectic DX contest
- Set goals
  - Just looking for countries, or trying to win?
  - Pick a category you may be able to win
- Plan ahead
  - Test out your station and software
  - Allocate time (*butt in chair* time, we call it)



# Operating tips...

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- Which mode?
  - CW and RTTY favor the small station vs. SSB
  - Digital modes (FT8, FT4) are *really good!*
- Which bands? Use your best antennas
- What times? Study propagation
- Practice: Participate as often as you can
- No substitute for BIC (butt-in-chair) time
- Join a contest club like NCCC and learn from the experts

**And finally, here is the state-of-the-art  
weapon for pea-shooters...**

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**Yes, it has a laser sight!**

# Resources

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- Northern California Contest Club  
<https://nccc.cc>
- Contesting FAQ  
[https://www.qsl.net/zs1an/contesting\\_faq.html](https://www.qsl.net/zs1an/contesting_faq.html)
- Contest University  
<https://www.contestuniversity.com>
- Jim Brown, K9YC: the very best info on RFI, baluns, and also antennas  
<http://k9yc.com/publish.htm>