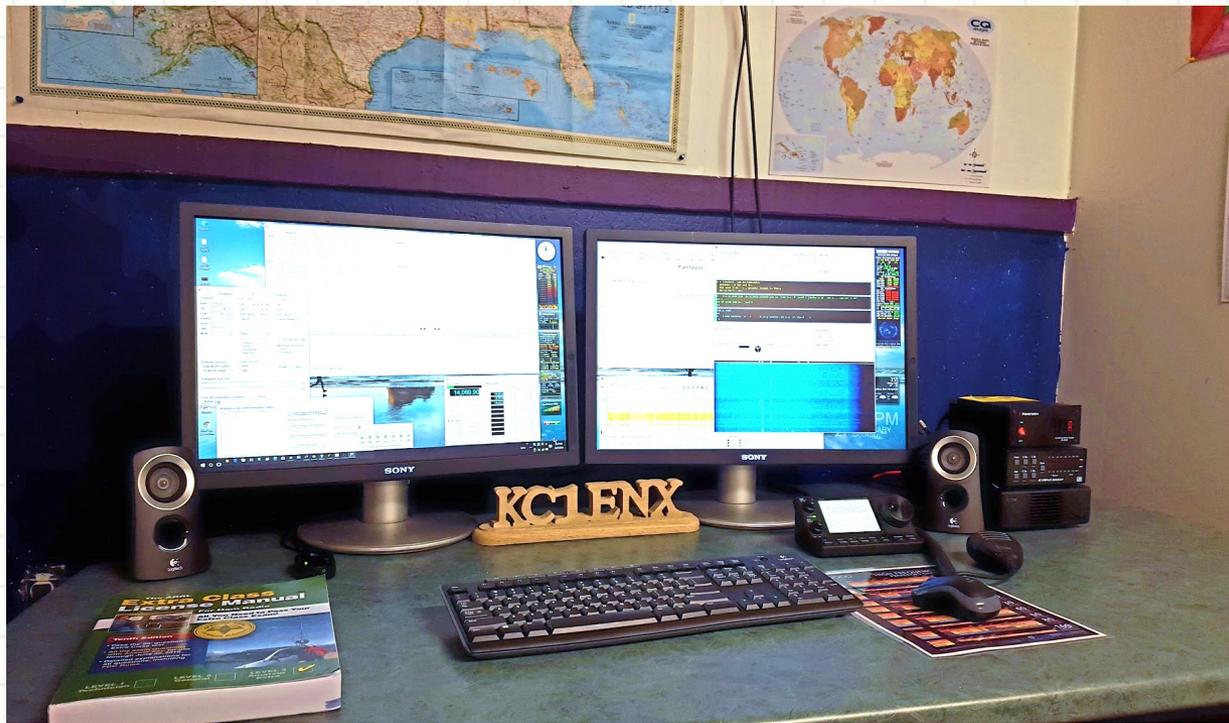


Note: We will be recording all Bootcamp Sessions. Anyone not wishing to be recorded should mute their video or disconnect.



# PUTTING TOGETHER AN HF STATION

Ham Bootcamp

Fall 2022

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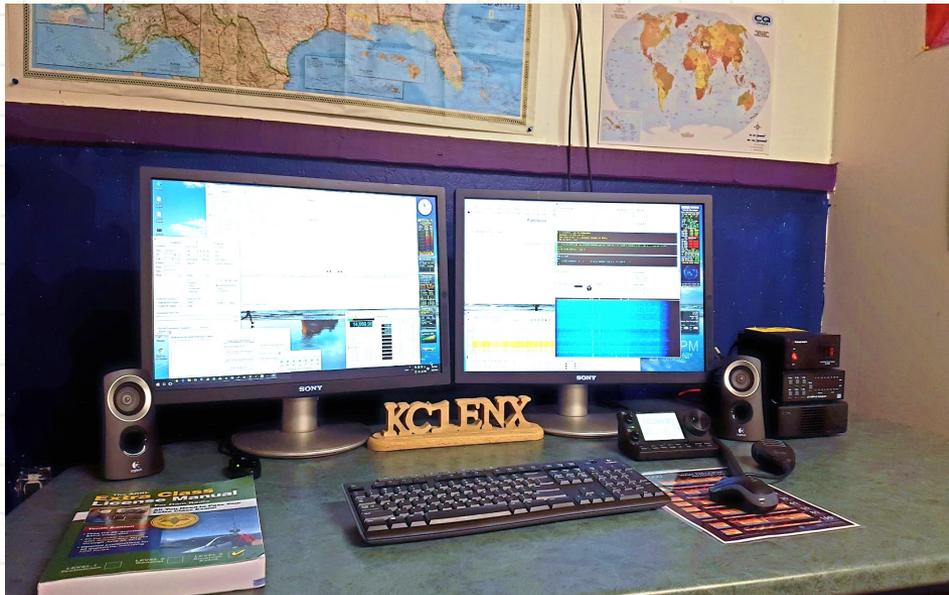
# Your First HF Station

Your First HF Radio – Where to Begin?

How will you mainly use your station?

Base, portable, mobile

- Now
- 1-2 years from now
- Long term goals



\$\$\$ What is your budget?

- Don't forget costs of antenna, coax, power supply, grounding, tuner, sound card for digital
- Consider what is already built into the radio

# Your First HF Station

## Choosing a Radio

- Start with a 100W Transceiver (avoid QRP)
- Some Good Choices
  - HF plus 6m (ex. Icom IC-7300)
  - All Band – HF, 6m, 2m, 70cm (ex. Icom IC-7100, Yaesu FT-991A)



- Avoid complex or very expensive Transceivers to start
  - Keep it simple until you build some experience and learn what you really want to do
- Usability of Transceiver
  - Is it easy to navigate?
  - Can you read the display/menu?
- Probably Best to Stay Away from Used Equipment when starting out

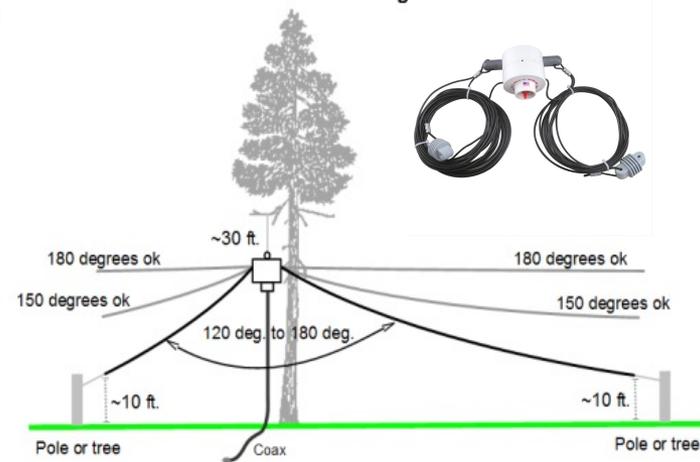


# Your First HF Station

## The Most Important Part – The Antenna System

- Most important bands for a first HF station
  - 20m and 40m
- Some good antenna choices
  - Single band dipoles
  - Off-Center Fed (OCF) Dipole
- Coax choices
  - RG-8X is good for runs less than 100 ft on HF bands at 100 watts
  - LMR-400 if 1) run exceeds 100 ft or 2) you want to run 500 watt+ power
- Entry into the Shack

Buckmaster OCF Antenna Suggested Configuration



**XYL  
Friendly**



**...not so much**

# Your First HF Station

## Antenna Switching and Grounding

### Single-point ground block

- Connected to station ground rod via a short-braided strap

### Single point-to-point ground connections

- One for each item in you station
- Use tinned copper flat cable for ground connections
- Keep connections short as possible
- Don't daisy-chain grounds
- Transceiver, Computer, Antenna Switches, RF Accessories

### Antenna Switches should have a ground position

- Alpha-Delta is a good choice
- Connect them to your single-point ground



# Your First HF Station

## Power and Fusing

### 13.8 Vdc Power System for a 100W Transceiver

- 30A DC Switching Power Supply
  - Astron is a good choice
- RIGrunner DC Outlet Panels – Handles Distribution and Fusing
  - ***ALWAYS FUSE ALL POWER CABLES!***
- Anderson Powerpole Connectors, 14-16 ga. Power Cable, and Crimp Tool
  - Make your cables to length



# Your First HF Station

## Headset and PTT



### Headset with a Boom Microphone

- Enables you to hear weak signals
- Keeps you in front of a quality mic
- Choose ones that are comfortable to wear for a period of time
- Good choice to avoid disturbing family members and picking up background noise
- Heil Sound is a good source for these

### PTT Pedal or Trigger Switch

- Can free your hands to use your computer when operating

### Adapter to connect these to your Transceiver

# Your First HF Station

## CW Gear



## Key or Paddles

- Paddles are usually best to begin with
- Kent and Bencher make some inexpensive models that are good for the beginner
- Take the time to properly adjust your key
- Setup your Radio's Keyer or a WinKeyer for speed and commonly sent items

## WinKeyer

- Enables sending CW via your computer – Important if you are going to do CW in contests or at Field Day
- Interfaces to your computer via a USB cable
- Radio keyers generally do not interface well with computer loggers

# Your First HF Station

## Other Accessories

### External Wattmeter

- Displays power out and SWR as you transmit
- Install at output of your Transceiver
- Choose a direct reading model with high SWR trip capability
- Choose one with a good selection of sensors including high-power ones
- Choose one that supports at least two sensors
- Elecraft and WaveNode are good choices here

### 50-ohm Air-Cooled Dummy Load

- For testing and adjusting your Transceiver
- One rated for 100 w for 2 minutes or more

### Antenna Tuners

- Most modern radios have a built-in tuner that can handle moderate mismatches
- Best to avoid the tuner and spend that \$ on building resonant antennas



# Your First HF Station Software

Do I Need a Computer? - YES

- Logging, Digital Modes, QSL'ing

Windows is going to be the best platform

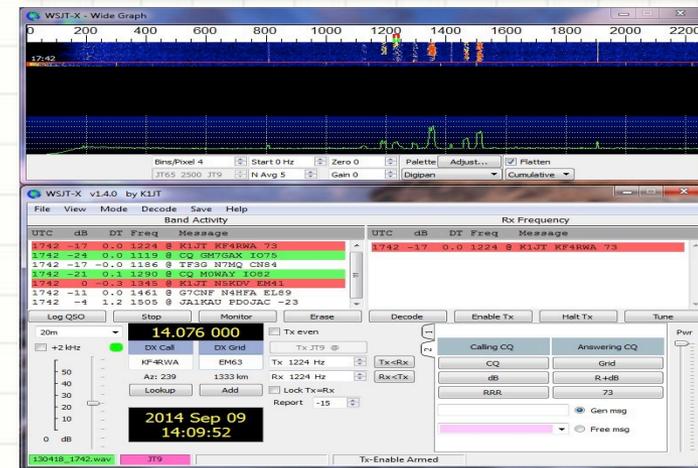
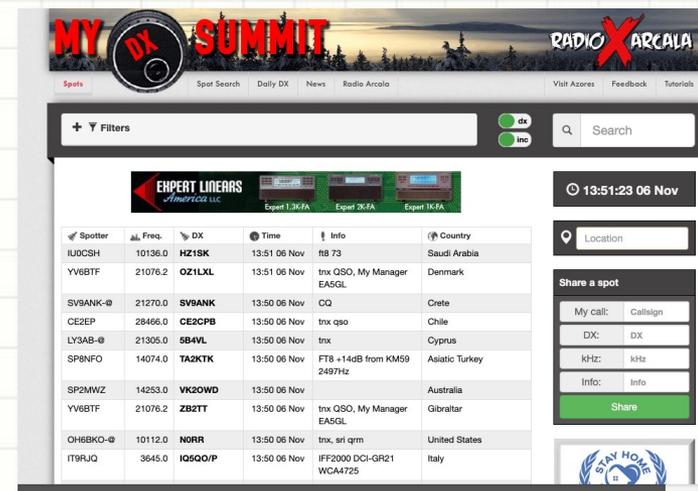
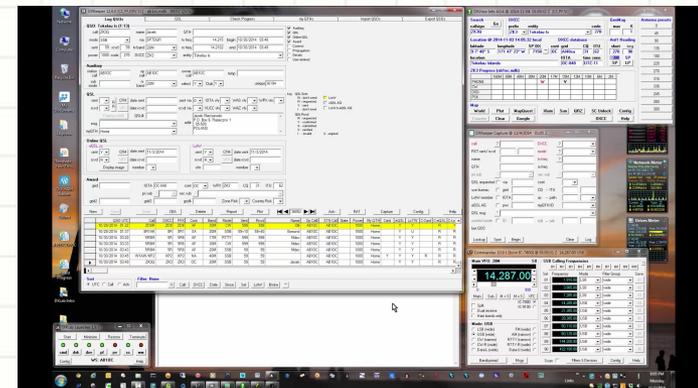
- Any reasonably current PC will work fine
- Many more programs work with Windows than Mac

Logging Suite

- Popular choices are DXLab and Ham Radio Deluxe (\$)
- Interface to radio via CAT
- Digital modes via sound card interface
- Award tracking and QSL'ing
- Internet access for call sign look-up, spotting cluster access and QSL'ing

Some useful add-on programs

- WSJT-X (FT-8 and FT-4 digital modes)
- Dimension 4 (to set PC clock for WSJT-X)
- FLdigi – alternative digital mode program



# Your First HF Station

## Connecting Transceivers to Computers

### Modern Radios with a USB Interface (ex. IC-7300)

- Sound-card function is built in
- USB PnP - COM port for CAT control/sound card for digital
- Painless



### Transceivers without USB

- Proprietary USB cable for CAT
- External soundcard and audio cables - Signalink
- Not painless but Signalink makes kits for popular Transceivers



### Older Transceivers that can only use Microphone and Speaker connections

- Beginners best avoid these



# Your First HF Station

## Arranging for Usability

### Layout Your Station for Usability

- Radios and frequently used controls within easy reach

### Computer Use

- Keyboard and mouse at comfortable height & low-stress
- Setup so you can make contacts while keeping your hands on the keyboard and mouse

### Headset and Footswitch

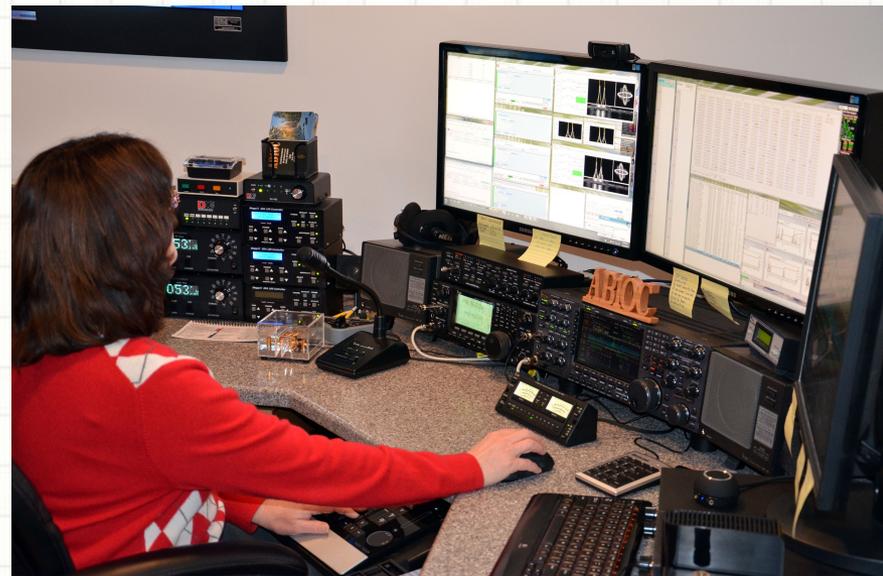
- Comfortable headset that enables you to move around
- Footswitch on a small board so it stays in place

### Dual-Monitors are very useful – especially for contesting and Digital operating

- You can never have enough screen space...

### Choose your Desk and Chair carefully

- Proper height and back support



# Your First HF Station

## AC1DC's Shopping List...

### A Really Nice First HF Station:

- IC-7300 Transceiver
- Buckmaster OCF Dipole – 5 Band, 3000 watts
- LMR-400uF Coax – 100'
- RIRunner Power Strip
- Astron 30 Amp Power Supply
- Heil Headset and radio adapter
- DXE Heavy Duty Foot Switch
- Tuner - not needed for IC-7300
- Window Feedthrough Panel
- 8' Ground Rod, Bus Bar, Static Suppressor, Z-Bracket, and Grounding Straps

### Optional:

- Elecraft W2 Wattmeter
- Dummy Load & Antenna Switch(es)

### SHOPPING LIST:



- \_\_\_\_\_
- dreamtime \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



# Questions?

## To Learn More:

Check out the Nashua Area Radio Society's Tech Night Program at:

[n1fd.org/tech-night](http://n1fd.org/tech-night)

Become an Internet Subscriber (or members of NARS):

[n1fd.org/join-us](http://n1fd.org/join-us)

Much more information, pictures and video are available on our Blog at:

[stationproject.blog](http://stationproject.blog)

