# SUGGESTIONS FOR RADIO VOLUNTEER GROWTH

My opinions, anyway!
G. Gibby KX4Z   Nov. 2021

| No. | SKILL, ASSET, STRATEGY AREA | | | | |
|-----|------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| | Power Systems, Electronics | Antennas, Transmission lines | Modulation skills | Integration grasp | Radio Assets |
| | | | | | |
| 1. | Backup battery or storage battery (lead acid, or preferably LifePo4) | Make your own VHF or HF antenna.[1] [2] [3] | Obtain sound card interface (build or buy) and learn how to use on AX.25 or HF broadcast or ARQ waveform [4] [5] [6] [7] | Complete the basic 100 / 200 / 700 / 800 level courses[8]  Obtain a Florida SERTRAC login and begin storing your certificates there.  Become completely capable of handling simple ARRL Radiograms and inserting ICS forms into them. | Obtain suitable radios for your license level that can put out 20+ watts power.   On VHF/UHF use FM; on HF have the ability to do SSB including data techniques. |

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1   http://www.arrl.org/files/media/Group/antenna_myths.pdf
2   https://qsl.net/nf4rc/2021/BeginnersCorner-Antennas.pdf
3   http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=0700-0799/0720/Sections/0720.304.html
4   AX.25 is the granddaddy of all amateur radio data protocols.   It includes listen-before-transmit, ARQ as well as non error corrected modes, multiple simultaneous users of a frequency, allows for multiple possible bandwidths, and provides the possibility of error free communications.   Every serious volunteer communicator should have a working understanding of these concepts.   Reading the entire protocol is instructive even if you don't understand all of it.
5   https://qsl.net/nf4rc/2021/TechNiteDataModes.pdf
6   https://qsl.net/nf4rc/2021/TechNightWiredSound.pdf
7   https://qsl.net/kx4z/DigitalConnections.pdf
8   https://training.fema.gov/is/

| 2 | Obtain solar or generator and be able to hook it up and get it going. [9] | Obtain SWR measurement gear and learn how to use. Before you're finished, be able to handle HF and VHF/UHF. Inexpensive directional coupler-based systems are readily available.[10] | Gain expertise at either AX.25 (keyboard to keyboard QSO) or FLDGI (keyboard to keyboard) | Take ICS 300. This is a three-day in person course and will really advance your understanding. | Make your radio into a portable asset with a simple go-box of wood or purchased; add antenna tuner (either manual or automatic) |
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| 3 | Build *some* kind of kit and learn how to use voltmeter and possibly oscilloscope | Obtain antenna analyzer, become proficient. | Learn how to do WINLINK ARQ transmissions on BOTH vhf (ax.25) and HF (ardop/vara)<br><br>If you are planning on participating in leadership, it is very important that you begin to understand protocols. Study the AX.25 protocol[11] and begin to understand the handshakes of the Winlink protocol.[12] | Take ICS 400 | Make your portable computer somewhat hardened and able to be used on alternate power supplies (dealing with RFI)[13] |
| 4 | Learn enough to design a simple common emitter audio amplifier; build one. [14] | Become able to make ANY and ALL of the following for any desired band:<br>a) center fed dipole<br>b) end-fed | Become skilled at both peer to peer and RMS-based WINLINK on both HF and VHF and capable of radio-only connections as well. | Complete the Professional Development series. Complete Level III of the Florida ARES® Taskbook. | Create, get authorized if need be, and install and maintain your own Winlink RMS or JS8 Cache station. [21] |

9   https://qsl.net/nf4rc/2021/SolarPowerEducationalModule.pdf
10  https://qsl.net/nf4rc/2021/SWRAndTheRadioAmateur.pdf
11  AX.25 version 2.2 protocol: http://www.tapr.org/pdf/AX25.2.2.pdf
12  Winlink B2F protocol: https://www.winlink.org/B2F
13  https://qsl.net/nf4rc/2019/InverterGeneratorSolutions.pdf
14  https://qsl.net/nf4rc/2019/TransistorAmplifiers1.0.pdf  https://qsl.net/nf4rc/2019/TransistorAmplifiers2.0.pdf
    https://qsl.net/nf4rc/2019/TransistorBiasing1.pdf

| | | halfwave using either balun or tapped stub (Slim Jim type) [15] [16] [17] [18] | Develop skill at basic packet using Easyterm.<br><br>Gain JS8 / FT8 skills [19] | Understand the importance of communications in disaster response. [20] | |
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| 5 | Be able to mentor others in building and repairing kits.<br><br>It is recommended that leadership learn how to design and have printed circuit boards fabricated. | Be able to create and install and analyze both HF and VHF/UHF antennas to assist others. | Be able to teach volunteers how to use ANY of the HF or VHF broadcast or ARQ modes that are in common usage. | Become an evaluator for the ARES® Taskbook. | Be able to deploy on a few hours' notice for hundreds of miles and set up for both amateur and SHARES communications or assist any governmental or NGO group that requests your assistance; have credentials and certifications available for inspection on deployment. |
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15  https://qsl.net/kx4z/TwoMeterHomeMadeSlimJim.pdf
21  https://winlink.org/content/join_gateway_sysop_team_sysop_guidelines
20  https://www.qsl.net/nf4rc/KatrinaComms.pdf
16  https://www.qsl.net/nf4rc/BalunHowTo.pdf
17  https://www.qsl.net/nf4rc/BalunPart1.pdf
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19  https://qsl.net/nf4rc/2021/JS8FT8Talk.pdf