Necomers and Elmers Net: Getting Ready For Field Day
By Robert Gulley AK3Q 6/1/14

Amateur Radio has developed a lot of traditions in the last 100 years(!), and one of the best involves working stations without the benefit of continuous AC current, or operating "in the field."
-- Emergency operation has been a mainstay of amateur radio virtually from the beginning, and indeed part of the reason we as individuals have a license is because we help out our communities in times of natural or man-made disasters.

A news item on the ARRL website is a typical example of what amateur radio operators do during a disaster, in this case Japan:

> Amateur Radio operators became involved in the rescue effort soon after the March 11 8.9 earthquake and devastating tsunami that hit northern Japan, and that effort continues nearly two weeks later. "In the early stage following the earthquake and tsunami, several radio amateurs were able to activate their stations with car batteries or small engine generators, despite the electric power outages," IARU Region 3 Secretary Ken Yamamoto, JA1CJP, told the ARRL. "They transmitted rescue requests and information on the disaster situation -- including refugee centers and their needs -- and the availability of basic infrastructures, such as electricity, water and gas supplies." After the earthquake and tsunami, there was no electricity, water or gas service in many of the affected areas.

Field Day
"Field Day" is an event sponsored by the ARRL designed to put our skills to the test each year, as well as make a public statement about our radio capabilities.
-- While not everyone can participate in a group field day event, many folks find ways to take their station "on the road" and operate away from home.
-- If you have never done this before you owe it to yourself to do it this year, as well as to have a radio "survival" kit ready to go at a moment's notice.
-- If you never have to use it for a real emergency, so much the better; but if it's needed, you will be prepared.

Field day is held the last full weekend of June each year, and it is an event where you can participate as much or as little as you like.

-- I have had field days where I could only spend an hour or two with our local club, to times where I pulled all-nighters working stations on 20 meters throughout the night.
-- Field day is about using the bare essentials to get the job done. A radio, a tuner (if needed), some wire and some means for power is about all one needs.
-- (Of course you may want to have some food and drink with you if you plan on staying a long time!)
-- Field day is an excellent time to work QRP (low power), especially since whatever you use for power must be carried along with you.

Higher power output means higher source power, so plan accordingly. One of the nice things about working field day with a club is that there is usually one or more generators from which to power your equipment, but keep in mind you will also need to bring your power supply along with you to convert AC power to DC current.

Portable power can also include gel cell batteries or deep cycle marine batteries, but unless you are using QRP power levels even a large battery will run out of steam long before field day is over.
-- The good news is that field day does not require a lot of power since there are so many people on the air throughout the event.
-- Keep in mind the purpose of field day is to help you get experienced at working under non-typical conditions—it really is not about the number of contacts you make.
-- Unfortunately far too many operators only see field day as another contesting event, and this is missing the point entirely
-- There are many, many contesting events each year in which folks can show off their radio prowess.
-- The emphasis here should be on good operating techniques and creative, inventive ways to get your signal on the air.

Field day is a great place for beginners to try out antenna designs to see what works for them.
-- There is just something really special about planning for your trip, assembling the needed materials, and then setting up camp with the least amount of creature comforts with which to operate.
-- Of course, you can bring anything you like—as long as you are working off the mains (batteries, generators, solar power etc.), you are accomplishing what is intended for the event.
-- The more bare-bones your system however, the closer you'll be to operating in what might be real emergency conditions sometime in the future.

-- The ability to string up a wire quickly and get your equipment on the air might someday mean the difference between life and death. Really.
-- The experiences you gain through field day will serve you well in all your radio endeavors.
-- Knowledge has a way of building on itself and multiplying at the same time. The more you learn today, the more you'll learn tomorrow.

The Basics
Field day begins with the basics: a radio, a power source, and an antenna. Your antenna choices will be determined by the band(s) you wish to work, and power requirements will be determined by how much power you intend to use and/or how long you intend to operate.
-- I would highly recommend going to the ARRL website (www.arrl.org) to learn more about operating equipment from the field, or doing a Google search for tips on equipment needs, especially power requirements.

Like the old real estate adage, setting up your antenna is about location, location, location. Keep in mind, of course, you may operate right in your own back yard as long as your power source is off the grid.
-- But a lot of the fun of field day is that it is an excuse to try out someplace new. (I do recommend finding a place where you can operate in the shade, however! Field day sunburns can be a real drag!)

Find a location where there are plenty of natural supports, or where you can easily put up as many supports as you will need.
-- Scout out some places and find one which has the features you need for your particular setup.
-- Of course, if you belong to a club, or can join one in your area which participates in field day, so much the better.
-- They will have likely scouted out a good location already, and there will likely be some creature comforts as well (grill-outs, bathroom facilities in the park, etc.).
-- If you are going to work with a club, make sure you are part of the setup process so as to learn what goes on at these events.
-- No doubt you will learn things for your own portable use, as well as being a helpful member of the club.
-- If going out on your own, keep in mind you need to find a location which will work for you for the length of time you wish to operate.
-- Of course, having more than one person at a field day site has a lot of advantages, not the least of which is safety and security.
-- If supplies are needed one can stay and one can go, and setting up antennas is always better with at least one extra set of hands.

Whether you intend to operate on a single band or on multiple bands, wire antennas are definitely the way to go for an outing like this.
-- A dipole (or multi-band dipole) will give you the greatest bang for your buck, and the ease of setup is a major advantage. Vertical antennas can work well, of course, but they usually require more in the way of setup, including numerous radials for the ground plane/counterpoise.
-- Unless you are using a mono-band vertical, there is also the issue of assembly to consider, and you will definitely need more people to help.
-- With a basic dipole or G5RV-type antenna, often one mast can be used to hold the center up, while several trees can hold the ends.
-- Since this is a portable setup, use a light gauge wire, insulated or not, such as 22 or 18 ga. wire wrapped around a spool for ease of transport.
-- If this is your first time using a portable antenna like this you will need to decide whether or not to pre-assemble the antenna before field day itself—there are pros and cons to this depending on your capabilities.
-- The operating rules of field day assume some time for setup since the event begins in the afternoon and carries over until the next day, so the morning of the event may be all you need to put the antenna together.
-- Being a firm believer in Murphy's Law (whatever can go wrong will go wrong), I prefer to make up my antenna ahead of time and to test the equipment setup before field day comes around, but that's just me.

Because this is a portable station, I would recommend using ladder-line for the feed wire if possible—this will keep things lighter and more flexible, and since you are outdoors anyway, you can choose a location where the feedline will be free from contact with metal.
-- You will also want to avoid any sharp bends in the feedline as this will act as a terminating point for the antenna.
-- The advantage to using ladder-line radio-wise is much lower linefeed loss, and matching the antenna to the transceiver is a snap.
-- You can of course make the last few feet of the feedline run coax to make things easier to connect to the radio—just use a balun to convert the 450 Ohm line to the 50 Ohm coax.

Masts
There are a number of options for masts, but the fewer the materials you have to carry on field day the better.
-- As mentioned above, trees make great supports for wire antennas, particularly for the ends. If you are using a standard dipole fed in the center, sometimes it is easier just to use a mast you bring from home to support the weight in the center.
-- Even when using ladder-line there is sometimes enough weight present to make hanging it in a tree difficult, but certainly not impossible. By assembling the antenna on the ground and then having some means of

launching one end of the antenna over a tree branch, you can usually pull up the center to the point you want and just tie off the ends.
-- Make sure you have insulators and rope for tying off the ends of the dipole; the antenna wires should not be in contact with the trees without being electrically terminated since trees do have moisture in them and thus can be a conductive material.

If you decide to take a mast with you (or several), there are a number of slip-together options which can work well.
-- There are many places which sell surplus military gear masts made from fiberglass and designed to mate together in four-foot sections.
-- While these can be a bit heavy to tote around, they are very effective and definitely a tried-and-true solution.
-- Plan on guying these masts unless there is something to strap them onto, and have a tripod or long stake to drive into the ground as a support.
-- Fifteen to thirty feet should be sufficient height for 40 meters less, so make it as easy on yourself as possible.
-- Don't go for the greatest height possible during field day operations—the goal is to keep this as close to emergency operating conditions as possible, ideally something you could keep in your car and setup in a few minutes time.

Other mast options include Jackite or "Squid" poles which are collapsible masts, usually made out of fiberglass, and easily portable.
-- Common extension heights are around 30', but they do not have to be fully extended.
-- One advantage to these poles is that they are easily handled and transported, and when used with wire antennas they can readily support the weight of a typical dipole.
-- They will need to be guyed or else they will flex a great deal near the top. This is not a problem unless windy conditions exist, but most people are a little unnerved by seeing the large amount of bowing at the top of the antenna.

Operating daylight hours only means you can easily work 20 meters. As mentioned above activity usually continues throughout the night on 20 meters, so you may just want to operate on this band alone.
-- Keep in mind the goal of field day is practice the ability to contact stations as if there were an emergency, so being able to reach people within a few hundred miles is more important than reaching across the country.
-- If you have the means and space to set up for 40 meters, by all means do so—this will give you the opportunity to work locally out to several thousand miles (particularly at night), as well as gain useful emergency communications experience.

If you are really adventurous try setting up a multi-band station which includes 80 meters; this will allow you the widest range of experience
-- While this may require a bit more scouting effort to find a locale which can support your 80 meter antenna, the effort will be well worth it.
-- But it really doesn't matter how many bands you can work; the main thing is to get on the air and do it without the normal creature comforts of home!

Antenna Designs
As for the antenna itself, a center-fed dipole like the one already mentioned works well, but so will OCF (off-center fed) dipoles and inverted "V" or inverted "L" antennas.
-- Your location and available supports will be the biggest determining factor as to which antenna(s) you use, as well as how much preparation and cleanup work you want to do.
-- Each of the antennas mentioned will work great for field day, and as your experience grows you will find which systems work best for your particular needs.
-- Your goal should be to find a good system which can be used portable and assembled in the least amount of time.
-- If the antenna and mounting hardware can be stowed in the car, so much the better. Not only will this prove useful in an emergency, but you will likely be able to have your own "field day" trips throughout the year.
-- There's nothing like working from a lot of different locations to keep the ol' operating interest high!

I hope you will give field day a try this year, whether individually or with a club.
-- A club outing has a lot of benefits such as multiple transmitting stations, camaraderie, and opportunities to learn from a whole lot of people.
-- Going out on your own with one or two other people has its benefits as well, such as less emphasis on the contest side of things and greater freedom to experiment.
-- There is also the greater satisfaction in knowing whatever gets accomplished is because of you and your friends, and that is something you're not likely to forget for a long time.