

**MARCH
IS THE
MONTH
OF THE
GRAYS!**

NEWSLETTER

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Mercury Amateur Radio Association - MARA - North America - North East

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OTHER STUFF

E-mail your comments, ideas, or submissions to marane@mara.net

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VIEW FROM THE TOWER



SUGGESTED AMATEUR RADIO EQUIPMENT FOR BASIC EMERGENCY COMMUNICATIONS

by COLLIN W9UPK

My stake president wanted a list of basic equipment for emergency radio communications. I finally sat down and prepared a list and some guidelines.

We suggest mobile equipment, meaning equipment that can be mounted in a car.

1. It can run off the car battery and doesn't require a separate power supply. All present day amateur radio equipment uses 12 volts D.C. (direct current). Household electricity is usually at 117 volts A.C. (alternating current).
2. A mobile set up is cheaper. As mentioned, an additional power supply is not needed, and the antennas can be relative inexpensive.
3. Mobility allows for the assessment of damage in communities and neighborhoods.
4. Mobile equipment is adaptable. For example, it can be used in a car or taken into the house or chapel and used as a base station (providing that a power supply and a transmission line to an outside antenna are available).
5. There are excellent VHF (Very High Frequency) handheld transceivers (combination receiver and transmitter) that are suitable for pedestrian operations. They have their place, but they are limited in power (5-7 watts max. vs. 50 or 65 watts max. for a mobile unit), and they are basically limited to repeater operations. If simplex (radio to radio direct) has to be used, their range will be limited.

6. A dual band transceiver (VHF/UHF - Ultra High Frequency) is nice but one using just 2-meters (VHF) will suffice and will be less expensive.

7. There are various available antennas and ways to mount them to a car. The easiest (no holes) is a magnetic mount to which the antenna is connected using an NMO connector. Usually the mag mount will have a 12' to 16' RG58 coaxial cable from the antenna base to the transceiver in the car.

8. The taller the antenna the better, but one has to consider height of garage entrance or parking ramp. Most antennas have some flexible bend or a spring at the base, but if bent too far the mag mount will pull loose and tip on edge.

Editor's Note: There is always the question of whether to use a quarter wave (19 inches high) or the five-eighths wave (51 inches high) antenna because of the possible gain of the latter, theoretically doubling the transceiver's effective output power. In comparative tests between the two that I have done, there is a slight advantage in using the 5/8 wave - if you are stationary. If you are moving and the longer antenna is bent out of the vertical position from the wind, that advantage may be lost.

9. If possible, it's well to look at how others have mounted their antennas and what they are using. If you have the money, there are even antenna mounts that can be rotated up and down, or they can attach to the lip of the trunk and be concealed in the car trunk until needed.

10. The best antenna location, however, is with the antenna located mid-way atop the car roof. The car top acts as a ground plane. If the car top is a non-metal surface, find an antenna that has its own ground plane or mount it where you do have a metal surface for proper operation.

SUGGESTED EQUIPMENT

Transceiver: ICOM IC-2200H, 2-meter FM mobile, rugged design, amber or green LCD display with four levels of brightness, backlit keys and large oversized tuning knob. It covers 144-148 MHz transmit with 118-174 MHz receive for AM aircraft and weather channels with weather alert. Power levels: 65, 25, 10 or 5 watts, 207 memory channels, memory scan and 50 programmable CTCSS/PL tones. The unit comes with DC power cable, remote control mic, mobile mounting bracket and mic hanger. Dim: 5.5" width,



1.56" height, 5.25" deep and 2.75 lbs. Current price \$169.99.

Transceiver: Kenwood TM271A, 2-meter FM transceiver, 60 watt output, multiple scan functions and memory names. It covers 144-148 MHz transmit and 136-174



MHz receive. NOAA Weather band reception with alert tone, 200 memories, illuminated keys and large LCD with adjustable green backlighting, CTCSS, DCS and 1750 Hz

tone burst, forward facing speaker, auto repeater offset. Dim: not verifiable, (similar to others listed but wider because of the forward facing speaker). Current Price \$169.99.

Transceiver: Yaesu FT-1802M, 2-meter FM mobile, extended receive 136-174 MHz, and 144-148 MHz transmit

(includes the 10 channel NOAA weather bank), power 50/25/10/5 watts, 221 memory channels with 8 banks, Morse



Code trainer, auto power shut-off, illuminated front panel keys, includes backlit mic, dim 5.6" w, 1.6" high and 5.8" deep, 2.6 lbs. Price \$139.99. Verify if power cable and mounting bracket are included (can't tell from available literature).

Transceiver: Yaesu FT-2800M, 2-meter FM mobile, covers 148-144 MHz transmit and 137-174 MHz receive, includes weather channels and weather alert, 221 memory channels, power 65/25/10/5 watts, alphanumeric display, MIL-spec design, dim 6.3" w, 2.0" h, 7.3" deep and 4 lbs. It utilizes an ultra-high dissipation heat sink design



that eliminates the need for an internal cooling fan (nice but no big deal!). Price \$149.99. It's assumed that the package includes a power cable and mounting bracket.

Note: The transceivers listed above will basically have similar features. Many of the bells and whistles on more expensive transceivers are not needed for basic emergency communications. Upgrade to the more expensive models when you better know what you want. Alinco has a model similar to those mentioned above, the DR-135TMKIII, and listed at \$189.99.

Antenna: Larsen, NMOMMR Motorola-style round magnetic mount, with 12' of RG-58/U coax cable and a PL-259 connector. Price \$36.99. NMO150B (Black)

antenna. Freq. 144-174, 3dBd of gain, type 5/8 wave, 51.5" height, whip W490. This is also available in chrome: NMO150C. Price \$36.99. If the 51.5" is too high to mount on your car roof, then there are shorter models: NMO2/70SH: it's dual band (no problem) and 19" tall, price \$52.99. NMO2/70B:



it's also dual band (no problem), 36.75" and price \$70.00. NMO-QSPEC, 1/4 wave, unity gain, 200 watts, 22", price \$12.99. All of them mount to the NMO antenna mentioned above. Prices vary with suppliers.

Editor's Note: You likely will require a coaxial adapter to mate with the supplied connector if you are using a handheld transceiver unit.

BASE STATION USE

If you plan to use the transceiver in the house as a base station or want that additional flexibility, obtain a good 12 volt DC marine battery. They have better longevity than car batteries (more information on this at www.batteryfaq.org). You will need a battery charger; one that will trickle charge, keeping the battery constantly at peak voltage. Battery Tender is recommended, which costs \$35-45 depending on the source. Know the precautions for using any deep cycle battery in the house.

If you don't want to use a battery in the house, you can purchase the Astron RS-20A power supply, price \$99.99. Astron power supplies are reliable and capable.



Finally, an antenna will be needed for base operation. The magnet mounted antenna for your car can be used if it has a suitable ground plane, such as big cookie sheet, a large metal filing cabinet, or other suitable large metal surface. The better situation, however, is to have an

START WITH A BASIC TWO METER MOBILE THEN UPGRADE TO A MORE EXPENSIVE MODEL WHEN YOU BETTER KNOW WHAT YOU WANT.

antenna mounted above your roof line. Such antennas can be built or purchased. You will need some 50 ohm coax cable (RG58, RG8x, etc.), to go from your transceiver to the antenna. A 2-meter vertical antenna does not have much wind surface area and can be mounted

atop a 10-20' 2" PVC that is bracketed to the house. 2-meter antennas can be purchased or can be built. The copper tube cactus J-pole is easy to build and works well.

Editor's Note: If you install an antenna outside with more than 20 feet of cable between your radio and the antenna, it is strongly recommended that you upgrade from RG58 coaxial cable. See the following for common cable losses.

Table 1 - Coaxial cable efficiencies (losses) at 146MHz and various lengths

RG58

15' 82.6% efficiency
20' 77.5% efficiency
30' 68.2% efficiency
50' 52.5% efficiency
100' 27.9% efficiency

RG8X

15' 85.7% efficiency
20' 81.4% efficiency
30' 73.4% efficiency
50' 59.7% efficiency
100' 35.7% efficiency

RG213

15' 91.8% efficiency
20' 89.2% efficiency
30' 84.2% efficiency
50' 75.1% efficiency
100' 56.3% efficiency

If your transmitter has a 50 watt output, then with fifty feet of RG58 between the transceiver and the antenna, you have 26.25 watts to radiate. If you used RG213 instead, there will be 37.55 watts available. Remember that the cable loss works both ways; you also lose received signal at the same percentage.

Each has its place. RG58 is smaller in diameter and more flexible than the others and therefore better suited for mobile use. There is a trade-off of size vs. loss vs. flexibility. RG213 with an outside diameter of over 4/10 inches is not suitable for mobile installations but has lower loss for outside antenna installations.

An on-line calculator for coaxial cable losses may be found at <http://www.timesmicrowave.com/cgi-bin/calculate.pl>

SOURCES OF INFORMATION AND PURCHASING

1. Amateur Electronic Supply or AES (www.aesham.com), 1-800-558-0411. The main location is in Milwaukee, Wisconsin with other stores in Cleveland, Ohio; Orlando, Florida; and Las Vegas, Nevada.
2. Ham Radio Outlet or HRO (www.hamradio.com), 800-858-6046. They have locations in Anaheim, Oakland, Burbank, San Diego, and Sunnyvale, California; New Castle, Delaware; Portland, Oregon; Denver, Colorado; Phoenix, Arizona; Atlanta, Georgia; Woodbridge, Virginia, and Salem, New Hampshire.
3. If you go online, you can locate other amateur radio suppliers, such as R&L in Ohio, Texas Towers, etc. Shop around and compare prices.
4. The American Radio Relay League is a professional organization representing the interests of amateur radio operators. Their website is <http://www.arrl.org> and the telephone is 860-594-0200. Annual membership is \$39 and includes the monthly publication QST.
5. CQ Amateur Radio (<http://www.cq-amateur-radio.com/>) is another fine publication for amateur radio operators. Copies can be obtained by subscription or from the magazine racks in better bookstores.
6. Amateur radio operators are quick to help. If you know one, don't hesitate to ask for assistance. Every new amateur radio operator (also known as a ham) needs an Elmer (mentor), one who will willfully provide advice and assistance. Most larger cities will also have an amateur radio club where you can find assistance.

This document was prepared by:
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CULTURED CORNER by ANØNMS

POEM FOR MARCH

*The wind blows hard when it is March
And mostly it is cold
Too cold to put antennas up
Unless exceeding bold*

*The wind blows hard when it is March
Things will not take solder*

No matter how much heat we bring
To bear on yonder wire

The wind blows hard when it is March
Makes hanging wire hard
Tangling in tree limbs it does
Eat copper by the yard

The wind blows hard when it is March
But that is fine with me
Because I know Spring soon will come
And with it warming breeze

GRANDMA MARA'S CORNER

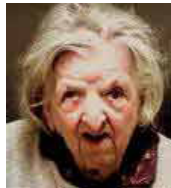
RECOVERING FROM MY ADDICTIONS

Finally, the effects of over eating at Christmas, New Years, and Valentines day are fading. Grandma is gradually (ever so slowly) shedding those pesky pounds. Why is it so easy to put on weight and so hard to take it off? Seems to me that it should require the same effort!

A friend tells me that food which is 'bad' for you always tastes better than food which is 'good'. Some things just aren't fair. Must be a briars and noxious weeds kind of thing.

When my doctor suggested I lose twenty-five pounds I asked him about a 25-lb pill. He looked blank so I told him I was waiting for the pharmaceutical industry to invent a series of weight loss pills - a 5-lb pill would make you lose five pounds, a 10-lb pill would make you lose ten pounds, and so on. He said it sounded like a good idea to him, but not to hold my breath. Instead I should be prepared to cut back on my food intake and get more exercise. So much for modern medicine! Don't they teach these young doctors anything in medical school?

Some of you have written to ask Grandma to post a picture. Here's one from a family reunion a couple of years ago. It was a surprise shot taken right after I took off my motorcycle helmet. Aren't you sorry you asked?



Grandma Mara

TECH STUFF

by VE1VQ

USE ANTENNA MODELLING SOFTWARE TO PLAN NVIS

Hopefully last month's articles on NVIS made you think a little bit more about antennas in general and net/emergency communications in particular. Few of us have the luxury of strategically placed store-bought towers; most of us make do with hanging our antennas from whatever tree or building that happens to be more or less conveniently located.

If you've downloaded the demo version of EZNEC from <http://www.eznec.com/demoinfo.htm> and plugged in the measurements of your own antenna setup, you can see how good (or not) your installation works in NVIS mode. It then becomes a simple job to raise or lower your virtual antenna to see what height is the most effective. With a little more effort, you can then adjust the real one to test out the theory.

When you think about it, there is nothing more complicated about building and installing an NVIS antenna than an ordinary dipole, inverted V, or end fed. In fact it's even easier as it doesn't have to be so high up.

ONE WAY TO SUPPORT AN ANTENNA

Figure 1 shows one way of providing adjustment for an antenna suspension point. It also allows for wind movement of the antenna wire and protection against wire stretch/work hardening and resulting breakage. To raise

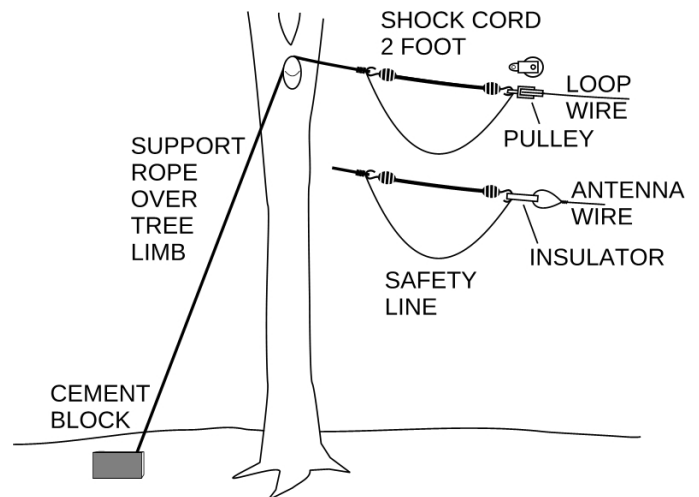


Figure 1 - A way of supporting a wire antenna. Make the safety line to be slightly shorter (75-85%) than the fully stretched shock cord.

or lower the antenna, simply untie the restraining knot at the concrete block and decrease or increase the length of rope between the block and the shock cord. If the weight of the antenna is insufficient, you may have to manually pull the antenna down to overcome the friction of the rope over the tree limb.

In years past, I used to lower my antenna whenever I thought the wind was or might become too strong and

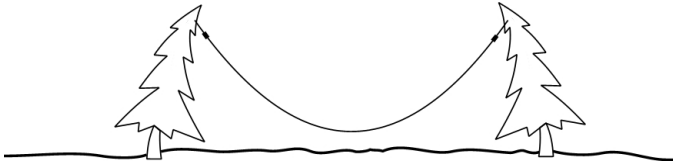


Figure 2 - Wind blowing trees supporting antenna to move closer together, causing wire to dip towards ground.

damage was likely to happen. Now with shock cord/safety line combinations in place at every tree support point, I leave it at its operating height all of the time. I find that

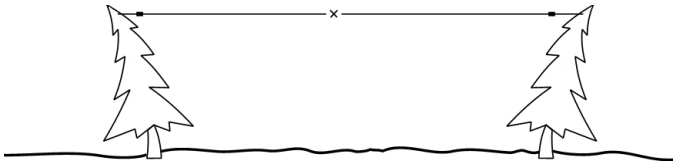
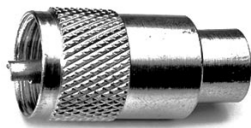


Figure 3 - Wind blowing trees supporting antenna to suddenly whip further apart, causing wire to snap tight. Breakages usually occur at an insulator (where wire is bent) or where wire has been nicked.

I have less damage now than before; probably because of less overall wire movement (wire is kept under a minimum shock cord tension). Keeping the antenna wire under tension, without some sort of shock relief, leads to wire stretch and the inevitable breakage caused in large part when the wind blows the supporting trees in opposite or conflicting directions (see Figs. 2 & 3). Another failure mode is the wear and eventual breakage of the support lines from the rubbing against tree limbs.

FIXING ONE OF LIFE'S FRUSTRATIONS

If one of your life's frustrations happens to be the assembling of PL259 connectors and coaxial cable, then you need to read W8WWV's web page for a thorough description of preparation, soldering, and testing.



<http://www.sanantoniohams.org/antennas/soldering.htm>

IN APRIL'S NEWSLETTER...

At this point, we're not sure except that we will come up with something. And that's no APRIL FOOL'S joke!

SWAP SHOP

DELL 3000cn printer - if anyone can use the toner cartridges or any parts from this printer you're welcome to them. It stops part way through its startup sequence, and is headed for the recycling depot. I also have a 'new-in-box' Cyan cartridge that someone can have. **VE1VQ**

MARK IT ON YOUR CALENDARS



May 30th 2009 for the MARA NorthEast Annual Meeting at Nazareth Ward, Scranton PA Stake

**NOTE
THE CHANGE
OF
DATE
FROM THE
2ND OF MAY!**

DI-DAH-DI-DAH-DIT

As I write this, it's mid February and I'm out in western Canada (Alberta) for the blessing of my oldest daughter's twins, and visiting other family members. Seeing these two little guys in the beginning stages of their lives makes me more aware of where I am in my own.

I was also looking at the [history page](#) on the MARA NE site one evening. What came to mind were the many changes since that preliminary meeting in October of 1995. There were the obvious ones of different people in positions, choices of meeting locations, and people moving away, but what stood out most noticeably to me are the people no longer with us – Art W1OND, Dick NG2R, Chic WA2USI/W2CAN, and Bill W7RVY – all active on-the-air members. I'm sure there are others not so active who have dropped out and/or passed on without our even being aware of it happening.

I'm not having any premonitions for myself or anyone else! The two unconnected events, one of my grandsons' blessings and the other looking at the group's history, just led to some thoughts about the relatively short and unknown length of time we have here, and what we are doing with it.

Maybe it's also the mid winter blahs, the lack of sunlight, shortness of daylight, or the ice and snow leading to a case of mild seasonal depression. Whatever the reason might be, it doesn't hurt any of us to take a moment to think about where we've been, where we are now, and where we might be heading.

And after we've done that, let's bring on Spring and the sunshine!

Until next month,
VE1VQ