

The NEWSLETTER

JUNE 2015 VOLUME 15, No. 6

Mercury Amateur Radio Association - MARA

North America - North East



SEE PAGE 5 FOR DATES AND TIMES

Find a
FIELD,
bring a
RADIO,
and
ENJOY
the DAY!

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*Links that will take you to web locations referenced in this newsletter are shown in **BOLD blue text**.*

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Past issues of The NEWSLETTER may be viewed at <http://ne.mara.net/newsletters.htm>

FEATURE ARTICLE

DAVE - VE1VQ/VA6NS

Mercury Amateur Radio - Western Style

On Saturday, May 9th, I had the opportunity to attend the annual general meeting of **MARA Alberta**. The meeting was held in the town of Magrath at the Magrath Stake Campground.

Southern Alberta is known for its odd weather patterns. For example, snow fall has been recorded in all twelve months of the year. Fortunately, May 9th was not one of those times.

From a ham's point of view, every Stake should be so blessed as to have a facility like this one; perfect for a Field Day site!

It was a good thing the day was a sunny one as there is no heat in the main building. A short time into the meeting the decision was made to move outside where it was warmer.

There were the usual reports on the membership and financial pictures.

I can say that they are doing well in both areas. In Alberta and the lower east part of British Columbia they have several hundred LDS radio amateurs that they know of (not all of which are active). They have reached these numbers because the

Bishops and Stake Presidents have actually given assignments to individuals to get their amateur radio licences! They have an intensive two day course (Friday night/all day Saturday) followed by the testing. The majority of students pass and receive their BASIC or BASIC with HONOURS ticket. See the sidebar for more detail.



All pictures courtesy of the [Magrath Stake Campground](#) web site.



Exterior of the main building. Most of the meeting was held on the right half of the concrete slab while the meal was being prepared on the left side.



Interior view of the meeting room of the main building.

As part of the assignment they make a commitment to purchase VHF equipment and get on the air, once they pass.

In some areas where these assignments have been made, they have had a class size of one hundred prospective hams.

The next part of the meeting was about message originating and handling, using both the **ARRL Radiogram** form and the **ICS-213 form**.

Lunch was part of the activity and was created outdoors over charcoal cookers. Beef and vegetable stew and white bean chilli.

The desserts, a pineapple upside down cake and a lemon cake (with blueberry sauce) were also baked over charcoal.

Following lunch, there was a two-meter fox hunt for those who were interested (the rest sat around and socialized). And, to round off the meeting, a presentation about digital modes using FLDIGI and a TIGERTRONICS Signalink USB modem.

One of the members had an HF station set up outside the main building, on a picnic table. Using that table and a second one, he had unrolled two flexible solar panels and connected a charge controller to a twelve volt battery to power the rig on twenty meters. For an antenna, he had a three band inverted-vee on a guyed fiberglass pole.

Both the HF and the digital station had their go-kits in nice **Pelican style** weatherproof containers. Go-kits from other members were also on display.

Good company, good food, and ham radio - what more can you ask for on a sunny Saturday in the spring? **AR**

Basic Qualification:

- access all amateur bands above 30 MHz
- use a maximum of 250 watts DC transmitter input power
- build and operate all station equipment, except for "home-made" transmitters.

Basic with honours (80% or above score on test) - access to all amateur bands below 30 MHz.



Kitchen facilities at the campground.

Good company, good food, and ham radio - what more can you ask for on a sunny Saturday in the spring?

Grandma Mara's RAMBLINGS

TECH AND OTHER STUFF

by VE1VQ

Time marches on, or if you have foot troubles, it hobbles instead. Either way, it's getting closer to Field Day. I don't know about you but our group is well into being ready. At one of the planning meetings late last month, we voted Wendy's dad in as the "logistics boss" and turned all of the planning over to him. He was happy to "volunteer" for the post, seeing as that's what he does for his day job. Says this is a lot more fun than his 9 to 5. He nabbed Wendy's boyfriend as his assistant. Between the two of them, spreadsheets have been created, categories charted, and assignments made and confirmed - everything from antennas and baluns to yagis and Z-match tuners (figuratively speaking!). Of course, Walter had most everything hardware wise in place from the last couple of years, making it a lot easier for them.

As I mentioned last month, as a group we've grown considerably in size, what with the hams from the seniors' home. It's kind of hard to say "no" as they are so enthused over being able to participate in their first Field Day.

The other day, I was thinking about how equipment has changed over the years for field days. Used to be, when Grandma was a little younger, equipment consisted of separate receivers and transmitters, and later, transceivers. Those transmitters had tubes. And after all those hours of transmitting with mis-tuned finals, you usually had to replace them when you got home. Now, with transistors for final amplifiers, and a lot of the rigs having built-in automatic tuners, antennas off resonance can largely be ignored.

Even after all of the years I have been participating in Field Day from my early girlhood with my grandfather until the present (the number of which I shall not mention), I still look forward each year to being there and on the air. Walter says he feels the same way. There's just something special about it. Even more so, now that you don't have to worry about your finals!

AR

Even after all of the years I have been participating in Field Day from my early girlhood with my grandfather until the present (the number of which I shall not mention), I still look forward each year to being there and on the air.

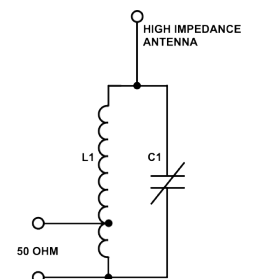
If you follow any of the QRP reflectors, you will no doubt have heard of the EFHWA (End Fed Half Wave Antenna). This antenna is very popular with those operating portable because it is easy to hang, providing you have a convenient tree or some other means of support. Simple to make, it is cut to a half wavelength as determined by the familiar formula

$$\text{LENGTH} = 468/\text{FREQUENCY (MHZ)}$$

As its name indicates, it is fed from one end and not at the center like a conventional half wave dipole. This makes the feed point impedance very high, somewhere in the range of 2000 to 4000 ohms. The actual impedance is much affected by the installation configuration and the proximity to nearby conductive objects. Connecting an antenna with that high an impedance directly to the 50 ohm value of your rig's output connector makes for a not-very-efficient situation. Not to mention the high SWR and its effect on your transmitter's final amplifier!

The answer, of course, is to use a tuner to match the two. Not your rig's built-in tuner which normally only will cover a 3:1 resistive load (17 to 150 ohms) or even your average external tuner which is usually, at best, only capable of handling a 10:1 mismatch (5 to 500 ohms resistive).

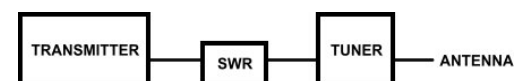
A parallel tuned circuit shown here is one of the simplest and cheapest solutions. It can be built using an air-wound coil, or a iron powder toroid core. For the home station, either one is fine. For portable use, a toroid inductor would be better able to withstand the likely knocks and abuse.



Basic circuit of a high impedance tuner.

The typical station set-up is shown

here. With a normal antenna, which is typically within a few hun-



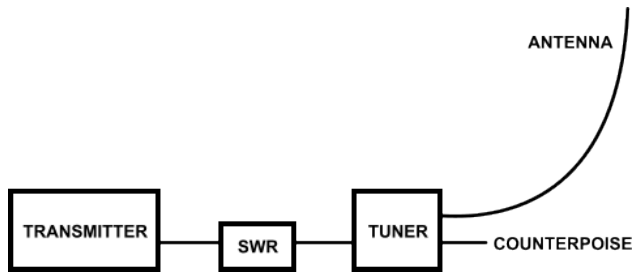
Standard station connection. The box labelled "SWR" is simply a meter or an indicator to show when the tuner is adjusted so the reflected power is at a minimum.

dred ohms of the nominal 50 ohms, there usually isn't any problem with RF around the shack. However, with the high impedance point right at the equipment output terminal there most likely will be some interaction,

ranging from the painful to the benign.

If you hang a half-wave hunk of wire up in the air and things tune nicely, you can consider yourself lucky. In that case, your equipment and interconnecting lengths of coax act as a counterpoise to the radiator.

Most likely you will need a piece of wire connected to the case or the ground connection of the tuner and laid out on the ground. That can be as long as a quarter wavelength or as AA5TB shows on his web page (<http://www.aa5tb.com/efha.html>), as short as 0.05 wavelength. The idea of the counterpoise is to provide



A station set-up with a high impedance tuner and a EFHWA antenna along with a counterpoise to tame the RF at the tuner chassis, and to provide a more resistive load.

a simulated RF ground at the tuner case itself, so that bringing your hand near to adjust the tuner capacitor won't have any effect on the setting, and to offset or cancel the reactance of the antenna wire.

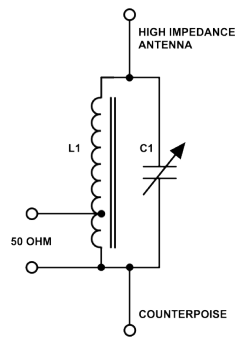
AA5TB did a lot of testing and came up with the counterpoise measurement of 0.05 wavelength as an effective length. Certainly easier deploying the shorter wire.

N2CX suggested cutting the radiator slightly longer than a half wave, as theoretically, the impedance of an end fed half wave would be infinite. He recommended cutting it to 67 feet for forty meters and 47 for thirty, and using counterpoises of 34 and 24.5 feet respectively. This works out closer to the formula below.

$$\text{LENGTH} = 475/\text{FREQUENCY (MHz)}$$

If the tuner is constructed with a toroid, using the yellow T50-6 (or T68-6) mix will cover 40M and higher. Wind twenty-three (23) turns total with the tap at three (3) turns. Remember when the wire passes through the hole of the toroid it counts as one turn.

Capacitor C1, at least for QRP power levels, is usually the polyvaricon type. However, any air variable may be used. Values range from 60 pf to 220pf depending on



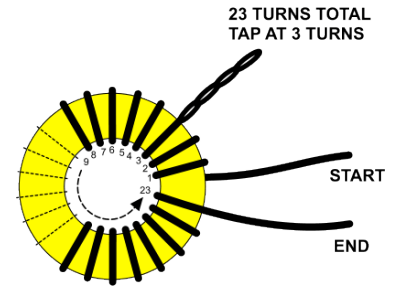
Circuit of a high impedance tuner using a toroid core.

the band or bands of interest.

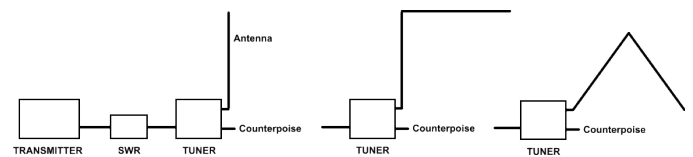
A metal box is preferred to prevent hand effect changes, but plastic or pvc may be used as well. With a metal box space the toroid at least its own thickness away from the metal.

The parts suggested here are suitable for QRP levels. If you want to use this for higher power levels you will have to scale the parts size accordingly.

A way to test the tuner is to use a resistor on the output (to the ground/counterpoise terminal) with an antenna analyzer connected to the input. Use several resistor values from 2.2K to 4.7K and frequencies from 40 meters up to 10 meters. This will give you an idea of the impedance (resistive) and frequency ranges the tuner will handle.



Toroid L1 winding. Use #28 magnet wire. Wind three turns, bring the wire out an inch, double back and twist together, and continue winding the remainder of the turns for a total of 23.



The EFHWA in various forms - vertical, inverted-L, and inverted-V. These are most often determined by the luck of the draw in regards to whatever supports you have available.

Because of the location of the feed point, you can get by with only one support point, whereas with a dipole you need two correctly spaced trees of poles. It can be configured as a vertical, an inverted-L or an inverted-V, or some combination. The thing is, is that it works well. Just ask any serious QRPer.

FALLING FIBERGLASS ANTENNA POLES

I've had the occasional problem with the telescoping fiberglass pole^{1,2} that I use for my squid-pole vertical antenna. It (randomly it seems) decides to collapse. When you extend these poles, the recommendation is to "pull and twist" the sections, and let friction keep things in the air. I don't think it's my pulling and twisting skills that are the reason for failure, as others mention the same thing on several on-line sites I've visited.

Recently, I posted this dilemma to the [QRP-L reflector](#). Replies varied from "never had that problem here!" to actual suggestions for a fix. A few suggested wrapping the joints with electrical tape. I'd already tried that and,

while it worked, I didn't like the sticky residue left behind when the tape was removed after being in the sun for some hours. Some used metal hose clamps. My feeling with those is they might cause damage to the section ends. Some suggested ty-wraps but one said he had trouble with those slipping in the wind. The best idea came from KD6IWD. His solution was to "use zip ties with a piece of inner tube wrapped around each section to be immobilized." I'm thinking I will combine the inner tube with the hose clamp - at least for the lower larger sections.



Stainless steel hose clamp.

Sounds like a plan! While the weather is warming up enough to work outside, I'll scrounge some inner tube material. Take that, you blankety-blank collapsing antenna pole, you!

BATTERY PACK VOLTAGE MONITORING



Last month, I mentioned a [battery status indicator kit](#) for a

QRP battery pack I am constructing. This kit, from QRPKITS.com, uses three light emitting diodes to show the approximate battery voltage level.

Just like walking through a hardware or a home improvement store can give you ideas for radio stuff, looking at e-Bay can do the same. I came across a three digit, [red LED display](#) for monitoring battery voltage. Using only two wires, the device is powered from the battery or voltage source it is measuring. It has a 4.2V to 30V DC range with an accuracy of 0.1V. The LED digits are 0.56 inch in height. The advertising says it will operate in a temperature range of from -10 °c to ~ +65 °c. Certainly those extremes are colder and hotter than I want to be pounding away at the key.

Not to bad for a price of \$6.99 and free shipping from the supplier in China.

¹ JACKITE FIBERGLASS POLES - <https://www.jackite.com/>

² MFJ FIBERGLASS POLES - <http://www.mfjenterprises.com/Product.php?productid=MFJ-1910>

AR

Remember...

We're always looking for articles for the Newsletter.



QUOTE OF THE MONTH

"The only thing I fear of dying is my wife selling my ham gear for what I told her I paid for it."

by K8UV

from the September 2014 "RAG CHEW", the newsletter of the STRAIGHT KEY CENTURY CLUB

ARRL FIELD DAY

Field Day is always the fourth full weekend of June, beginning at 1800 UTC Saturday and running through 2059 UTC Sunday. Field Day 2015 is June 27-28.

No local club to join up with, or they are way too serious and you just want to operate for the fun of it?

Well then, set up by yourself, or find someone of like mind to operate with you!

DI-DAH-DI-DAH

Things have been quiet on the ERC/MARA (Emergency Response Communications/Mercury Amateur Radio Association) front for a good many months now. Nary a disparaging word has been heard on the MARA NE e-mail reflector from either side. Guess that's a good thing as it may mean that no one thinks we're still secretly plotting a take-over. From what I hear, everyone calling into the various MARA and ERC nets, regardless of callings or appointments has been made welcome.

I haven't been able to check in to any of the MARA NE nets for a long time as conditions have not been good RF wise and I haven't been able to hear anything but noise at net times. I live in a rural area with no noise sources nearby but, it seems to me, the noise level has

been steadily increasing over the last couple of years.

At the start of the MARA Alberta annual meeting (see Feature Article on the second page of this newsletter) we were asked to stand and introduce ourselves. A large percentage of those present had ERC assignments.

There was some discussion at the meeting about the reason for MARA AB's existence (*doesn't that sound familiar to those of us who have been to MARA NE meetings in the past?*). The general feeling was that one of their main reasons was to be there to provide training for those who would fill ERC positions.

We haven't officially reached that same conclusion here on the east coast, although it has been mentioned a time or two. One reason is that we are so spread out geographically whereas MARA Alberta is smaller in size with a much larger LDS population.

While their meeting got serious at times, these folks obviously enjoy each other's company. There was a lot of laughter, talk about mutual friends, and of course discussion of equipment and antennas.

Coexistence can and does happen. It's alive and well in Alberta. And that's a very good thing.

Until next month,

VEINQ

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