



Squelch Tales



Newsletter from the Merrymeeting Amateur Radio Association for September 2013



Taking a dose of my own medicine

By KB6NU

Last week, I wrote a blog post on preventive maintenance for one of my writing clients.

Afterwards, I decided to take a dose of my own medicine and do a little preventive maintenance around the shack. I started with the Astron RS-35M, which provides the DC power that runs HF transceiver and my VHF/UHF transceiver in my shack. I had started noticing a few little things, such as the voltage adjustment being a little fussy, that I wanted to correct before the supply failed on me.

After removing the cover, I vacuumed all the dust out of the supply. The RS-35M wasn't very dirty, but even so, getting the dirt out of a piece of equipment is probably the first thing you'll want to do when performing preventive maintenance. Dirt impedes air flow. That can lead to higher operating temperatures, and as the lab manager that I interviewed for my blog post said, "Heat kills."

Not only should you vacuum any dust out of a cabinet, you should also clean the fan filters, if your gear has them. Dusty filters prevent air from flowing smoothly through equipment, and that means the fans don't cool as well as they should.

Once that was done, I did a visual inspection. One thing that you want to look for are components that look like they're getting too hot. Another thing to look for is evidence of arcing. Whatever is causing the

overheating or arcing will eventually cause a unit to fail. Fortunately, I found neither.

Next, I checked to see that the components mounted to the enclosure were securely screwed down. In the RS-35M, the transformer, the bridge rectifier, and an electrolytic are mounted to the enclosure. Oddly enough, the bridge rectifier was quite loose, so I tightened it down. Also loose were the output terminals. I tightened these down as well.

Finally, I squirted a little cleaner and lube into the voltage adjustment pot and worked it back and forth. That seemed to do the job. That pot now works smoothly and cleanly.

I put the cover back on, reconnected the power cable, and got back to making QSOs. It should be good for another couple of years.

73, Dan, KB6NU



Maine QSO Party

From the Wireless Society of Southern Maine

The September 29th Maine QSO Party is designed to encourage Maine stations to expand their knowledge of DX propagation on the HF and MF bands, improve their operating skills, and improve station capability by creating a competition in which W/VE, and DX stations have the incentive to work Maine. For more information log on to, http://www.qsl.net/ws1sm/Maine_QSO_Party.ht



Tour de Merrymeeting Bay, another success story for the MARA



MARA members tumbled out of bed early Saturday morning on August 3rd to head to the Recreation Field in Topsham to assist the organizers of the Tour de Merrymeeting Bay bicycle ride event by providing communications across the entire route around Merrymeeting Bay.

The ride started at the Topsham recreation facility and wound its way up the west side of Merrymeeting Bay through Bowdoinham, Richmond, then crossed the Kennebec River to Dresden Mills and down the east side of the bay through Dresden and Woolwich; back across the Kennebec to Bath, West Bath and the bike path in Brunswick and across the Androscoggin river to the starting point in Topsham. The total ride was a bit over 50-miles.

MARA volunteers were stationed at the four rest-stops and strategic spots along

the way to assist the bike riders with route information and relay information back to Topsham and KS1R event net control.



As the bulk of the early riders were approaching the Richmond Bridge area, Bruce, W1ZE, who was manning the cross roads in Dresden Mills reported to Net Control that there was ambulance traffic heading in the direction of the bridge. A few minutes later Net Control and W1ZE were advised that one of the bikers had taken a spill on the bridge and had injured himself. By this time Dresden first responders were streaming to the bridge. KS1R Net Control, Harry (N1TTT) re-directed Jim McIrvin (N1IPA), the SAG unit, to the bridge to collect the injured riders bike and bring it back to the starting point.

Thanks to the MARA team of Harry (N1TTT), Jim (N1IPA), Marjorie (KX1I), Fran (K1BBJ), Dan (N5AGG), Bruce (W1ZE), Steve (AA4AK) and Tom (N7CHG) the event was another success.



Antenna Gain for public service events

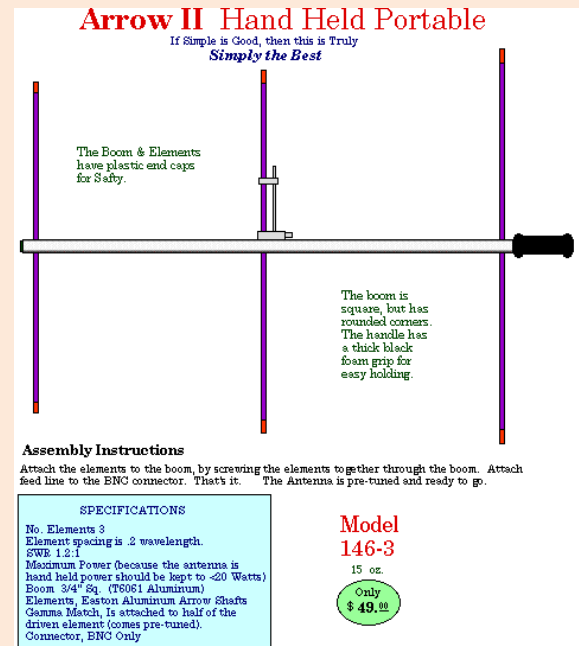
By Bruce Randall, W1ZE

Sometimes we need a little help when it comes to being a volunteer communicator for community events and public service. We may find ourselves assigned to a rest stop or other location where communications with net control or others stations is marginal at best.

Say you don't have a 50-watt mobile radio in your car or your assigned spot is a place your car will not go and that fancy new Chinese dual-band handheld rice box that you purchased for under \$60, that delivers a whopping 4 watts into a rubber-ducky antenna, that at best is only 3db stronger than a dummy load, just isn't getting the job done. The problem, to make is simple, is ERP (Effective Radiated Power). ERP is the radiated power needed to establish Q-5 communications whither it be 1 watt to 1000 watts.

OK, so you scrapped the rubber ducky and put on one of that fancy 15-inch dual-band rubber covered buggy HT whips with an SMA

connector and your signal only improved slightly. You are getting there but not quite yet. An improvement of 2.5 to 3 dB is not enough.



Arrow II Hand Held Portable
If Simple is Good, then this is Truly
Simply the Best

The Boom & Elements have plastic end caps for Safety.

The boom is square, but has rounded corners. The handle has a thick black foam grip for easy holding.

Assembly Instructions
Attach the elements to the boom, by screwing the elements together through the boom. Attach feed line to the BNC connector. That's it. The Antenna is pre-tuned and ready to go.

SPECIFICATIONS
No. Elements 3
Element spacing is .2 wavelength.
SWR 1.2:1
Maximum Power (because the antenna is hand held power should be kept to <20 Watts)
Boom 3/4" Sq. (76061 Aluminum)
Elements, Easton Aluminum Arrow Shafts
Gamma Match, is attached to half of the driven element (comes pre-tuned).
Connector, BNC Only

Model 146-3
15 oz.
Only \$49.99

What you need is directional gain antenna like a three or four element Yagi. Yes folks they are available from just about everyone. Here a few examples:

- Arrow 146-3 & 146-4 portable 3 or 4-element Yagi
<http://www.arrowantennas.com>
- Arrow 146-45 4-element solid element Yagi
<http://www.arrowantennas.com>
- Cushcraft A124WB 4-element 2-meter Yagi
<http://www.chq-inc.com/cush/124WB.html>

- MFJ-1763 3-element Yagi
<http://www.mfjenterprises.com>
- MFJ-1760 Dual-Band Yagi
<http://www.mfjenterprises.com>

All these commercially available Yagis will provide directional gain for under \$100 and several for under \$50.

Now you are saying, “Heck, I only spent \$60 for my HT.” OK cheap-skate; why not build one from parts available at your local hardware store for about \$10.

The following sites that provide details on how to build an effective 2 Meter and/or 440 MHz Yagi from common available parts with simple instructions:

<http://www.repeater-builder.com/antenna/pdf/cheap-yagi.html>

<http://www.w5vjb.com/yagi-pdf/cheapvagi.pdf>

<http://makezine.com/projects/homemade-yagi-antenna/>

<http://www.hamuniverse.com/wb0cmt2m3elementyagi.html>

http://www.amateurradio.bz/2m_yagi.html

<http://www.youtube.com/watch?v=fLOvSLXDudU>

<http://www.qsl.net/w6dps/?simpleYagi.html>

<http://rksvyturys.blogspot.com/2013/08/compact-and-effective-2m70cm-dual-band.html>

If you purchase or build a small beam antenna you may want to engineer a portable support mast or tripod of some kind so you don't have to hold your Yagi in your hand all day.

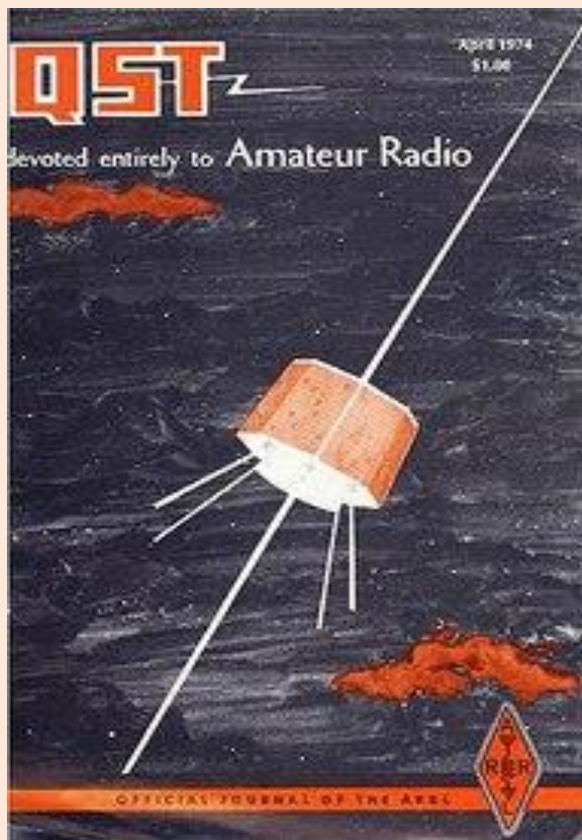
Remember, we hams volunteer show the public our ability to provide quality and accurate communications. For that reason, maybe a directional beam antenna should be part of your GO KIT. 73, *WIZE*



Ham Radio in Space: AO-7 "Zombie" Satellite Again Enjoying Its Time in the Sun It's Baaaaack

Launched November 15, 1974 as the second AMSAT Phase 2 ham satellite, AO-7 may be the zombie of the Amateur Radio satellite world, having returned from the dead more than a decade ago, then periodically re-emerging. Next year, it will be 40 years old, ancient in satellite years. After its batteries succumbed to old age, AO-7 went silent in 1981, only to

spring back to life in 2002, although some believe it may have resurrected itself as much as a year earlier. AMSAT describes the Mode A/B bird as "semi-operational" and "almost certainly" running solely from its solar panels. The ham satellite organization theorizes that AO-7's batteries shorted when they failed, but the short circuit subsequently opened, allowing the satellite to return to life. This means AO-7 only works when it's receiving direct sunlight and shuts down when in eclipse. Since the satellite became undead, terrestrial users have enjoyed numerous contacts via AO-7.



"AO-7 is alive and doing okay," satellite observer Frank Griffin, K4FEG, reported this week. "This season's eclipse cycle has ended." Griffin explained that the eclipse period, during which AO-7 falls silent, lasts about 9 weeks, from mid-spring to mid-summer. According to its operating

plan, AO-7 switches to Mode B (70 centimeters up/2 meters down) at 0000 UTC.

"The satellite has started its mode switches, but it has not quite settled back down yet," Griffin told ARRL. For example, he said, AO-7 was in Mode A at 1230 UTC on August 5, but had been reported in Mode B earlier. He suspects that even though the satellite is now in sunlight, its orientation to the sun may still affect electrical power onboard the satellite "until it gets a little further into the full illumination." This, in turn, could degrade the transponder performance.

AO-7 has beacons on 29.502 MHz (used in conjunction with Mode A) and 145.972 MHz (used in conjunction with Mode B and Mode C -- low power Mode B). The 435.100 MHz beacon has an intermittent problem, switching between 400 mW and 10 mW.

Potential AO-7 users are advised that due to changes in Amateur Service and Amateur Satellite Service rules, the legality of transmitting to AO-7 on its Mode B uplink is questionable, since that frequency no longer falls within an Amateur Satellite Service allocation. §97.207(c)(2) and §97.209(b)(2) of the FCC rules authorize space station and earth station operation only in the 435-438 MHz segment, and it's unclear whether a 1974 FCC waiver might still cover operation on the original Mode B uplink frequency. -- *Thanks to Frank Griffin, K4FEG; AMSAT News Service; AMSAT*



Screwdriver Antenna tuning vs. Icom Rigs

By Bruce Randall, W1ZE

As Many of you know I have a Icom IC-706MKIIG in my truck and use it with a Little Tarheel II screwdriver antenna for HF. The venerable 706MK2 and the newer IC-7000 and IC-7100 are excellent mobile multi-mode HF plus VHF/ UHF transceivers and with my Tarheel, and the previous DK3, screwdriver antenna proved to be a pretty good HF mobile performer.

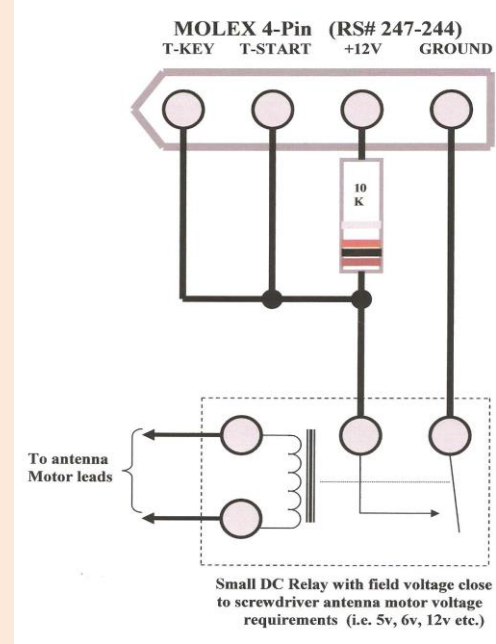
When I first installed the IC-706 and screwdriver antenna I had to use a CW key and lower the power to 10-watt mode and key the rig so I could tune the antenna for low SWR. Without a key I had to go into the AM mode, again reset my power output level to about 10 watts, key the microphone and tune the antenna. After the antenna was tuned I have to reset the 706 for full power output and switch back to SSB. Tuning a screwdriver to resonance on the fly while driving down rural roads in Maine is not something you or I you should be doing. You may find you're the low SWR spot on the antenna and in addition a ditch on the side of the road.

There is at least one commercial source and several articles on the Internet on how to make up an interface module that plugs into the 4-pin Molex jack on the rear apron of Icom radios. These circuit designs require you to push the tune button on the rig or have an external tune switch. These devices fool the rig into thinking it is connected to an Icom AH-series tuner. These plug-in circuits work well enough but I didn't like having to push a button and run the antenna up/down switch at the same time.

Here is what I did to make tuning my screwdriver a simple one function process: I looked through the manuals for the IC 706, 703, 746PRO and 7000 and noted their

external antenna tuner control circuits were all the same. They all use a Molex 4-pin jack. So out came the pencil and paper and I started to sketch-up a keying device for my setup that would not need a telegraph key, external switch or the need to push the rigs tune button.

Almost all the screwdriver antennas control their up/down tuning with a center-off, momentary DPDT switch. This switch provided and flips polarity DC voltage to the screwdriver antenna motor to run it up and down. I use the output voltage from the toggle switch to key a small SPST relay and in turn keys the transceiver and delivers 10-watt CW to the antenna. When I release the antenna tuning toggle switch the transceiver returns to full power SSB, or whatever mode I am in at the time. This makes the tuning while mobile easy and less distracting.



This interface should work well with most Icom transceivers with an external antenna tuner jack. It should also work well with most all motor tuned mobile antennas like the Hi-Q, DK3, Little Tarheel II, MFJ, etc.. Most antenna motor operate on or around 12 volts so any relay that has a field coil for 12-volts should do just fine. For screwdriver

antennas that use lower voltages, I recommend a 5 to 6 volt relay. These relays and the other parts are available at Radio Shack.

I assembled my module right on the Molex plug itself. Only a few parts are required:

- 1ea. 4-Pin Molex plug (male) RS# 247-244
- 1ea. 10K carbon resistor (1/4-watt) RS# 271-1335
- 1 ea. small 12-volt Micro relay RS# 275-241

After assembly, I covered the exposed wiring and solder connections with clear RTV which acts as an insulator and stiffens up the module around the small relay. 73, WIZE



ORDER MARA BALL CAPS AT THE CLUB MEETING



George Szadis, K1GDI will be taking orders for MARA ball caps at the next Association meeting at the American Red Cross building. The cost of the caps are \$15 paid up front at the meeting. You can have your call sign embroidered on the back of the cap.



What is

“Backscatter”

By WIZE

During the meteor shower event of August 12th, 13th and 14th I was keep keeping an eye on the Telnet DX spotting system to see if there were any meteor shower activity on 10 and 6 meters. On the morning of the 13th I noted that K1SIX the big six-meter gun in New Hampshire was on 50.125 working backscatter into the Midwest states and down into 4 and 5 land. I tuned to 50.125 and there was Bob calling, “CQ BACKSCATTER”. For a long time I did not hear any of the stations he was working but then all of a sudden I could hear short bursts of stations calling him.

You may be asking, “what is backscatter?” Well here is a description from an article written in December 1998 QST by Emil Pocock, W3EP:

Backscatter propagation often provides warning that the MUF is approaching 50 MHz. Backscatter signals have a distinctive hollow sort of sound and are not usually very strong. Typically, stations along the East Coast may hear each other calling CQ or chatting early in the morning on 50 MHz, when all have their antennas pointed eastward. On many mornings when backscatter is evident, the band may open soon after to Europe or Africa. Backscatter propagation may continue even after the band opens. At other times, backscattered signals may persist for an hour or two, and even get quite strong, but without a subsequent opening.

Similar backscatter circuits are also common from the US directly south toward South America and west over the Pacific. Possibly related sidescatter paths make it possible to make much longer contacts when the apparent MUF is still under 50 MHz. US stations can sometimes find Europeans early in the morning with antennas pointed due east toward west Africa. In that case, Europeans direct their antennas south toward a common scattering region off the west coast of Africa. Signals are usually weak and have a raspy note. Similar side-scatter paths have also been noticed over the Pacific.

Similar backscatter circuits are also common from the US directly south toward South America and west over the Pacific. Possibly related sidescatter paths make it possible to make much longer contacts when the apparent MUF is still under 50 MHz. US stations can sometimes find Europeans early in the morning with antennas pointed due east toward west Africa. In that case, Europeans direct their antennas south toward a common scattering region off the west coast of Africa. Signals are usually weak and have a raspy note. Similar side-scatter paths have also been noticed over the Pacific.

For Meteor Scatter propagation description, check out the online article by VE6BPR:

<http://www.qsl.net/ve6bpr/page5.htm>

Hopefully this gives you newer hams a little understanding of propagation in the upper HF and six-meter bands.
73, Bruce W1ZE



Is using a DV dongle really ham radio?

By Steve Kerchel, AA4AK



Absolutely!

Background: A DV dongle is a device that you plug into a computer, and via the Internet, it lets you communicate (voice, data, or both at once) through a D-STAR repeater or gateway just as if you're using a D-STAR radio.

My first impression of the DV dongle a few years back was, "This is cool, but it is not really ham radio." For the reasons that follow, I now believe that impression was too hasty. The DV dongle has some very important uses in and for ham radio.

Real Ham Radio is any Legal Transmission by Licensed Hams

The argument that, just because some old timers do not do it, this or that activity is not really ham radio, goes back a hundred years (e.g., If it is not spark, it is not real ham radio. The rising popularity of CW is proof positive of the impending demise of ham radio). The argument is just as silly now as it was back in the day. Each of us has our own interests, and our own disinterests. That does not diminish the value of what other people are contributing to ham radio.

Before you can use a dongle you are required to register on a D-STAR gateway with a legal ham call. The reason is simple. Even if you are talking on a computer at your end, your signal does eventually find its way to a ham transmitter, and that is real ham radio, even if it is not your radio.

Use It or Lose It

The ham radio spectrum is like sex after sixty; use it or lose it. The Amateur service is sitting on an enormous expanse of mostly unused spectrum worth billions of dollars. The problem is that it is slipping away from us. This is happening two ways. First is by straightforward legal taking; just this year, the licensing authority in Australia took away one of the microwave bands from Australian hams and handed it over to commercial interests. Second is by benign neglect; electronic widget manufacturers make all sorts of stuff that operates blatantly illegally in the 70 cm band, and the FCC stands idly by.

The argument against us is the same in both cases. There is not enough ham activity on UHF and microwave for us to make a compelling argument to keep it. There is only one solution, and that is to create an explosion of ham operation on these frequencies. Any legal operation by a licensed ham on any ham frequency is real ham radio, and more importantly, is indispensable if we are to hang on to what we have.

Growing but Aging

People are keen to point out that there are currently more licensed hams than ever before. This is true. However, while ham radio may be growing, it is also aging. We attract lots of new licensees, but even the new recruits are coming in older and older.

If we are to attract a broader population, we cannot limit our focus to a boutique niche of analog communications.

The emerging technology is not merely digital. It seamlessly integrates data and digitized voice in the same stream, and seamlessly integrates the Web with other technologies. If we are to attract a broader (and younger) population, we must be able to present them with a contemporary technology, and show how the ham radio connection adds functionality to it.

The one accessible ham technology that offers anything like that is D-STAR, and by far, the least expensive way to get a foot in the door with D-STAR is by using a DV dongle

Who Can Do It?

Unlike the HF bands, there are no license class limitations on D-STAR frequencies or functions. You must have a valid ham license in order to actuate a repeater transmitter. However, if you have a valid ham license of any class, you are ready. No exams, no upgrades, just do it!

I Hear It Is Expensive

There is one inconvenient reality about D-STAR. The radios are much more expensive than FM transceivers. Of course, there is a remarkably slick work-around. **You do not need a radio!**

As already noted, a DV dongle is a device that plugs into an existing computer, and puts the entire world-wide D-STAR infrastructure at your beck and call. The dongle costs a bit less than \$200 and is available with free next-day shipping to Maine from HRO. All the necessary software is readily downloadable from the Web at no charge.

In fact, even if you do spring for the mobile and/or handheld D-STAR radios for field use, it makes far more sense to use a \$200 dongle for base station operating than to buy \$2000 worth of fixed radio, antenna and feedline to do nothing more than hit the local repeater. For the foreseeable future, KS1R is literally the only game in town. If you want to hit any other D-STAR repeater using a radio from the Brunswick area, be prepared to invest in a very fancy antenna system.

How Do I Get Started?

It is important to keep in mind that while D-STAR is highly effective for voice communications around town, that it the *least* of its capabilities. More critically, regardless of function, the technology is radically different from anything else in ham radio. While there is no exam, there is a learning curve.

If you want a good picture of what you can do with D-STAR and how to do it, the indispensable reference is *Nifty E-Z Guide to D-STAR Operation* by Bernie Lafreniere, N6FN. It is available on Amazon for \$12.56, and is easy to find at most hamfests. Although it is slightly out of date, the information is very good, and it is the only comprehensive D-STAR reference available. If you do not have this book, you will be calling Donnie (WD1F) a lot.

For a dongle, you will need a computer with at least a 2 GHz processor and USB 2.0 port. Fortunately, most computers that people have on hand these days have that much capability. You also need a reasonably fast Internet connection. Dial-up is too slow; DSL is unlikely to work. Cable TV internet is adequate. Satellite-based Internet will work if you get the highest speed. You will also need a microphone and headphones to

access the computer audio. A headset such as is widely used for VoIP is (barely) adequate. A Heil headset with 1/8" plugs works admirably, but is a bit high-end. There is lots of stuff in between.

Dongle Pitfalls

Dedicate a USB port to the dongle. Do not plug the dongle into other ports, and do not plug other USB devices into the dongle port. Plugging and unplugging USB/serial devices willy-nilly on a Windows-based system will cause drivers to get over-written, and lead to hours of frustration.

Use a unique COM port for the dongle. As with many other serial devices, the dongle uses the USB port to create a simulated COM port. If you have other serial interfaces, for rig control, keyers, TNCs, RTTY interfaces, *et cetera*, find out what COM ports your other serial devices are using, and be sure the dongle uses a different one. Failure to observe this precaution will lead to bizarre hardware behavior and further hours of frustration.

The dongle package includes an instruction card. The instructions are woefully out of date. Do not follow them. Also, do not download the operating software from the dongle manufacturers Web site; it is also woefully out of date. That way lies madness. Instead, follow the instructions on page 126 of the N6FN book, especially if you are using a Windows platform.

Usually, when you plug in the dongle for the first time ever, the operating system will find the driver and install it automatically, or it will call up a driver installation wizard whose operation is fairly straightforward. If none of these things happens, then call Donnie.

When the driver is installed, a green LED inside the transparent case of the dongle will slowly pulse off and on. If your computer says the driver installation is complete, and you do not see the green light, turn the dongle over. You're probably looking at the wrong side. (Guess how I learned this trick.)

Appreciation

Several people have gone to a whole lot of trouble to get a D-STAR repeater in our area. We owe them a great deal of appreciation. The best way to show our appreciation is by spinning up a lot of activity on the repeater. 73, AA4AK

Note: You may want to visit the following websites for more info on the DV Dongle:

www.dvdongle.com/

www.eham.net/reviews/detail/8411

www.dvapidongle.com/

www.youtube.com/watch?v=EJjIBb8Oi2o



Were you a licensed Ham prior to September of 1988? If so, you should join the **Quarter Century Wireless Association, QCWA.**

For more information about this special Amateur Radio organization, go to, <http://www.qcwa.org/> or contact the following MARA & QCWA members:

Steve Kercel, AA4AK George Szadis, K1GDI or Bruce Randall, W1ZE

Donation request to help upgrade N1TRC

Steve Kercel, AA4AK and the MARA & CERT/ARES folks that maintain and operate the American Red Cross radio station, N1TRC are planning to upgrade the stations digital capabilities to support D-Star and D-Rats. In support of this effort Steve put out the following memo to be published in this newsletter:

"We are seeking the donation of one or two used laptops for club data communications. The computers need to have at least 2 GHz processing speed, 512 MB RAM and two USB 2.0 (or higher) ports. If you have one you're not using, we can put it to good use.

73,AA4AK"

If you have an old working laptop that fits their needs and is just gathering dust in your closet, maybe you could put it to use at the N1TRC station.



AARA WINDSOR HAMFEST

The Windsor Hamfest will be Saturday, September 7, at the Windsor Fairgrounds on Ridge Road (Route 32), Windsor. Gates open at 8:00 a.m.. There will be overnight camping available Friday, beginning at noon. Admission is \$5.00. ARRL VE testing is scheduled for 10:30 a.m. Door prizes include at 5-watt 2-meter/440 MHz HT, an Autek RF-1 antenna analyzer, and various other prizes, all to be drawn at noon. Breakfast and light lunches will be available on site from the Whitefield Lions Club. Sponsor is the Augusta Amateur Radio Association.