

Noise Floor

Vol. 6, No. 1

Pacific Northwest VHF Society

Summer 2008

Society conference set for October 3-5, 2008

The 2008 Pacific Northwest VHF Conference will be held at the Best Western Lake Front Hotel and Conference Center in Moses Lake, Washington, on October 3 – 5, 2008. This is the same facility where the society's 2004 conference was held; however, since then, it has changed ownership from Hallmark Inns to Best Western Hotels. It remains the same great facility, however. A special thanks to Lynn Burlingame (N7CFO) for contacting the hotel and negotiating the contract.

Conference registration will begin July 1, 2008. You do not have to be a society member to attend. The registration cost will be the same as last year...\$40 in advance and \$50 at the door. Watch the society e-mail reflector and web site (<http://www.pnwhfs.org>) for additional information. Updates will be posted as they occur.

Join other Pacific Northwest weak signal VHF, UHF and Microwave operators for a fun and interesting weekend of presentations, activities and social events. There will be a full day of technical programs and related activities on Saturday, with no-host social events on Friday and Saturday evenings, and Sunday morning.

It is not too early to start making room reservations at the Best Western Lake Front Hotel. You can call the hotel, toll-free, at (800) 235-4255. The society has negotiated a special \$70 nightly rate for a block of 40



rooms. Be sure to let the hotel know you are with the Pacific Northwest VHF Conference in order to get the special rate.

Kicking things off Friday evening will be the traditional no-host "Pizza Bash." The organizing committee is still pinning down the details on the specific location for this event. This is a great chance to meet old friends and make some new ones too!

Saturday activities begin with a no-host breakfast in the hotel restaurant, followed by a formal program of top-notch speakers and interesting round-table discussions throughout the morning and afternoon. A free buffet lunch is included in the day's activities at no additional cost.

Following a brief society annual meeting late Saturday afternoon, the day's schedule of events concludes with an informal swap meet in the parking lot and a no-host prime rib dinner at the hotel restaurant. The Sunday morning no-host "Farewell Breakfast" will occur in the hotel restaurant.

Check the PNWVHFS website for additional information. Updates will be posted as the registration date approaches.



2008 Pacific Northwest VHF Society officers

*Scott Honaker (N7SS)
PNWVHFS President
Snohomish, Washington (CN87wt)*

Scott says he's "a young'un," having received his amateur radio license in 1991. His original call sign was N7WLO.

He notes that he participated in his first VHF portable operation in the mid 90s. As he describes the experience "It was a miserable, wet, windy and cold experience on Grass Mountain in CN97. Rather than keeping me away; however, that experience inspired me to try some more organized and better equipped efforts in future contests."

"I see VHF+ as the last frontier of amateur radio," he says. We aren't just talking around the world...there are still records being broken, propagation modes to be better understood and utilized, and newer digital modes that are changing the face of VHF+ operations." Scott notes that "the Pacific Northwest VHF Society has made a HUGE difference in the local VHF community and I'm excited to be able to contribute."

Scott is also a charter member of the Microhams (Microsoft Amateur Radio Club) and its current president. He is also charter member #14 of the Pacific Northwest VHF Society. Other interests include flying his own plane, boating and "other fun stuff."



*Kevin Imel (KF7CN)
PNWVHFS Vice President/Webmaster
Palouse, Washington (DN16lv)*

Kevin is one of the society's early charter members, bringing with him the PNWVHF e-mail reflector that he had started some years earlier. It has now become the society reflector and primary means of contact between members. He also manages the society web site.



Kevin and his wife, "Missy," live "over on the dry side"...about 3 miles from the Washington-Idaho border with their "extended family"...seven cats and a dog! He is employed by Washington State University as Information Systems Manager, overseeing the Technical Services and "Help Desk" operations serving approximately 900 workstations and more than 1,000 users.

Continued on Page Three

*Steve Pack (WB7VAS)
PNWVHFS Secretary-Treasurer
Covington, Washington (CN87wi)*



Steve was first exposed to amateur radio back in the early 1970s and was licensed briefly with a N6 call..."that's so long ago, I forgot the actual call letters."

After moving to Bellevue, Washington, in 1976, he took "the famous Harry and Mary Lewis" licensing class at North Seattle Community

College and obtained his current callsign...WB7VAS. He has been active in a number of local amateur radio organizations over the years.

An accountant by training, Steve worked his way up to the position of CEO/General Manager with a local

Continued on Page Three

Noise Floor is the official publication of the Pacific Northwest VHF Society. All opinions expressed herein are those of the individual authors unless specifically stated as being otherwise.

Editor
Jim Aguirre, W7DHC

Submit material to the editor at w7dhc@earthlink.net or via USPS to 6820 Tranquil Ln, Lynden, WA 98264.

New look for VUCC certificate

The ARRL has recently given the VUCC award certificate a facelift. Award requirements remain the same; you can earn it by confirming a specified number of two-way VHF/UHF/Microwave contacts in different 2 x 1 degree grid squares. Complete rules for the VUCC award can be found at <http://www.arrl.org/awards/vucc>.

The awards program staff at ARRL Headquarters worked with the league's in-house graphic designers to create a fresh new look for this traditional award. The new certificate is a full-color 11 x 17 diploma featuring red, white and blue shading over a grid square map with a stylish VUCC logo. Each award is numbered and dated, and bears the signature of ARRL President Joel Harrison, W5ZN.

The newly designed certificate is being issued for all new award applications. Anyone who has previously been issued a VUCC certificate may request one in the new design format for the cost as specified in the program's rules - *ARRL Amateur Radio News*

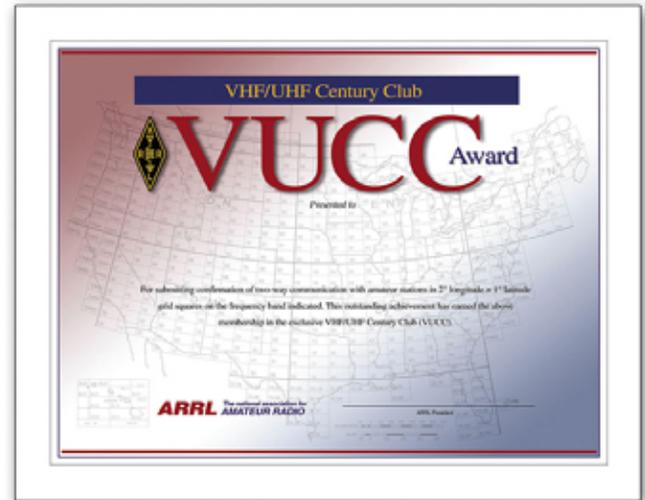
Postage rates go up May 12

Most US postage rates will increase one cent on May 12, 2008. Some mail classes will go up even more!

The price for a domestic one-ounce First-Class stamp will increase from \$.41 to \$.42 cents. The cost of mailing a postcard (QSLs not in an envelope) will increase from \$.26 to \$.27. The cost of sending a one-ounce letter to Canada and Mexico will increase three cents, from \$.69 to \$.72, while the cost of sending a similar one-ounce letter to other countries around the world will increase from \$.90 to \$.94.

There used to be a long-running joke about buying stamps just before a price increase to save money. Now, you can actually do that with the new "Forever" stamps! Once purchased at the current price, they are good for a one-ounce domestic postage rate "forever." After May 12, of course, the cost of purchasing "Forever" stamps will increase to \$.42. Better stock up now.

The "Forever" stamps can be used for international postage; however additional postage must be added. As noted above, international mailing rates are higher than domestic rates.



Kevin Imel (KF7CN)...

Continued from Page Two

His amateur radio interests include weak-signal VHF, HF DX and public service work, though he notes that he is "currently QRT except when mobile due to needed repairs/remodel of home antennas and feed lines that I haven't found time for...yet!"

Other interests and activities include serving as an Emergency Medical Technician, home-brewing beer, and competitive pistol and three-gun (rifle, pistol, shotgun) competition. He's also an "avid (some might say "rabid," he notes) fan of junior hockey (Spokane Chiefs of the WHL) and the Seattle Mariners.

Steve Pack (WB7VAS)...

Continued from Page Two

accounting firm; then branched out into a career in developing tax preparation software. He spent 15 years with Chip Soft and Intuit corporations, developing and updating the Turbo Tax software. A couple of years ago, he decided that retirement looked good and now enjoys spending time with his family and pursuing some hobby interests.

In addition to amateur radio, Steve enjoys woodturning ("everything from pens to artistic bowls"), bullseye pistol and rifle shooting and "teaching his two granddaughters how to fish." He and his wife, Mary, also enjoy traveling, with a trip to Iceland planned for later this year.

New EME array at the K5QE contest station

By Marshall Williams (K5QE)

In order to work some "rare" grids outside of our normal limits, we have erected a medium sized EME array here at the K5QE contest station. The antenna is made up of eight 2M18XXX antennas from M2. Each antenna has the special EME elements that give a bit more gain and allow wider spacing than normal.



The boom for the array is a 20ft section of 4" Al pipe (ID=4") and two 24ft sections of 4" tubing (OD=4"). We telescoped 4ft of 4" tubing into the 4" pipe on each end and secured with 4 3/8" stainless steel bolts. That gave us a total length of 60ft for the main boom. There was surprisingly little sag for such a long boom. Of course there was no weight on it at this point. We added two stiff arms in the vertical plane for a boom truss and two stiff arms in the horizontal plane for a second boom truss. All trusses were made from Phillystran to avoid pattern degradation.



Each riser was 15ft of 2" x 1/8" wall tubing. We put an antenna at the top and bottom of each riser. Each riser has a stiff arm to support trusses. The individual trusses were spaced 17ft apart for a total length of 51ft on the boom. That left us 4.5ft on each end to attach the various trusses and for tie down ropes.

The EL rotor is an M2 MT5000. This is a special order rotor that Mike made for NASA, who sent it back saying it was too much rotor for them!!! After it sat in his warehouse for a couple of years, I harrassed Mike until he sold it to me. It is a brute of an EL rotor. I am happy that we got it for this big array.

The EL rotor is currently an M2 Orion P2800. While the P2800 is a big rotor, I have been warned that it is not big enough for this monster EME antenna. I plan to replace the P2800 with a big prop pitch motor soon. Hopefully, that will hold it.



Results were very gratifying although we still have some glitches. We worked a G4, a couple of DL's, and a PA3 in Europe. We worked some east coast guys and some west coast guys. We worked a ZL and a couple of JA's....total was 14 new grids the first time out. We will do better next time.

This project is big, but just about anyone could do it. Mike Stall at M2 provided all the parts and lots of help and assistance. I am giving him two "Atta Boys" for all his knowledge and insight. I encourage others to follow along...EME is not as hard as most people think that it is!

Looking at N Connectors

By Jim Aguirre (W7DHC)

This is the first half of a two-part series on N connector Basics. In it, we'll explore the commonly available versions, looking at the pros and cons of each, along with some general information applicable to all versions.

In Part Two, we'll look at some "tips 'n tricks" for installing them correctly.

Part One...the basics

Radio amateurs with equipment used on the UHF and above bands are generally familiar with the N connector. Many HF operators, on the other hand, view it as "that oddball connector." Even VHF+ operators, however, may not be familiar with the different versions available or the correct procedure for installing this connector on coaxial cable. By the way, for those closet HF operators out there...you know who you are...the N connector can be used on the lower bands too!

The N connector was developed by Paul Neill of Bell Laboratories and was the first coaxial connector to offer good performance at microwave frequencies. The standard N connector is rated for use to 11 GHz. A high-precision version is rated for use up to 18 GHz.

This connector is available in both 50-Ohm and 75-Ohm versions but are not interchangeable between versions. The 75-Ohm version is used primarily in computer cabling, so may show up at hamfests. Be sure to check "bargain" connectors to be sure they are the 50-Ohm version if you intend to put them into radio use. The male/female pin/receptacle on the 75-Ohm version is significantly smaller than those on the 50-Ohm version.

The N connector has two especially redeeming features; it is constant impedance and it is weather resistant due to the rubber gaskets incorporated into the design. A "word to the wise" is in order here regarding "waterproof." The N connector is NOT a "waterproof" connector as some seem to think...it is "weather resistant"...and still should be properly protected from the elements in outdoor use.



The three common versions of the N connector (l to r): clamp-style, PL-259-style and crimp version.

Commonly available versions

There are three versions of the N connector commonly available to the amateur radio community; the "old-style" compression version, a two-piece "PL-259-style" version and a three-piece crimp-style. Each has its pros and cons. Before we explore each in a bit more detail; however, there are some general comments applicable to all of them.

First...buy good quality connectors! Saving a buck or two by using cheaper connectors will come back to bite you...and, "Murphy" will make sure it happens at a critical time! I prefer Amphenol connectors, but there are some other good brands as well. Amphenol has always produced a good connector and I trust it.

If you've looked at the price of Amphenol connectors lately, however, they have gotten EXPENSIVE! There are a couple of ways to cut that cost, however. First, I buy most of my N connectors at hamfests; still in the original sealed plastic envelopes. I usually find them in "junk boxes" or amongst a bunch of miscellaneous components. They usually go for a buck or two and are almost always top-of-the-line silver-plated versions.

That brings me to the other way to cut the cost. You don't "need" silver plated. They're nice if you can get them cheap, but Amphenol also makes a nickel-plated version that works just fine, and at much less cost.

Continued on Page Six

More on N connectors...

Continued from Page Five

You don't usually find these at hamfests, but many on-line dealers do offer them. There are other good nickel-plated connectors out there as well. Remember: "Nickel" will save you a whole bunch of nickels!

Okay...let's look at the three commonly-available versions of the N connector in a bit more detail.

"Old-style" clamp connector

The "old-style" clamp version is the original N connector developed by Paul Neill. It has six component parts; body, clamp, gasket, washer, nut and pin. In some of the less expensive brands, the metal washer has been eliminated. (More on that in a bit) This version has



Clamp-style N connector: The parts are shown in assembly sequence. The flat metal washer shown next to the nut is sometimes omitted (see text for details).

only one soldered connection; the pin. The coax braid is "clamped" in place, avoiding the need to get the entire connector hot during the installation process.

The "standard" pin provided with even top-brand N connectors; however, usually does not accept the center conductor for Times Microwave LMR-400 or Belden 9913F7 coax. They are just a little bit too small. Fortunately, replacement pins can be purchased that WILL work with this coax. I get mine from RF Connection (<http://www.therfc.com>). They run \$1.50 each. Even with the cost of buying a new center pin, my "hamfest bargains" are still cost effective, especially considering that they are silver-plated.

You can also buy good quality nickel-plated, clamp-style N connectors (not Amphenol, however) with a LMR-400/9913 pin included for around \$4 apiece. They are not Amphenol, but are a well-made Mil-Spec connector. RF connection offers them, as I'm sure do

other vendors. I guess I should say here that I have no involvement with RF Connection other than being a satisfied customer.

As mentioned above, some of the lesser expensive N connectors may come without the metal "washer." This thin, flat washer is designed to go between the nut and gasket, preventing distortion of the gasket when the connector is assembled. I've used a few of them without washers in the past and found that they worked OK if I put a dab of silicone grease on the back of the gasket where the nut pushes against it. This helps keep the rubber from sticking to the metal nut as it is tightened and avoids "scrunching up" the gasket. Personally, I don't buy this style any more, but they can be made to work.

Below are my thoughts on the pros and cons of the clamp-style connector.

Pros: readily available, even at hamfests; minimal soldering needed, thus avoiding damage to the coax dielectric, most weather-resistant version

Cons: more loose parts to misplace; a bit more care required when installing; may require a replacement center pin for LMR-400/9913 coax; only available for RG-8/RG-11/RG-213/LMR-400/9913 size coax; usually the most expensive of the three versions

PL-259-style connector

This version is a relative newcomer to the market in recent years. I would guess that it has been around for about 10 years, give or take a little. It has only two component parts; the body and the shell assembly. The pin is held captive in the dielectric which is usually Teflon. All soldering is done on the connector body with the shell assembly removed. Once soldering is complete (and the body has cooled), the shell assembly is threaded on to the body, completing the assembly.



PL-259-style N connector showing the parts separated.

Continued on Page Seven

More on N connectors...

Continued from Page Six

My experience with these connectors is that the center pin socket is a very tight fit for LMR-400/9913 center conductors. The slightest burr or sharp edge on the center conductor will keep it from entering the pin socket. I have found that it is actually possible to push the center pin out of the dielectric if the fit is too snug and you try to force it. On the few occasions when I've used this version, I have resorted to tinning the center conductor and lightly filing it to a slightly smaller diameter in order to get it to fit easily. Beveling the front edge of the coax center conductor helps as well.

The major drawback to this style N connector...and the reason I don't use it any more, except on smaller coax...is that you must solder the coax braid to the body. This requires that you get the connector body hot enough for solder to flow. When used with low-loss coax, this almost always results in melting the foam dielectric and damaging the cable. Virtually all of the "low-loss" coax used in VHF+ activity is foam dielectric! If you are using a solid-core dielectric coax, they will probably work fine.

One interesting benefit of this style connector; however, is that it will accept the same threaded reducers as UHF connectors. This allows it to be used on RG-58 and RG-59/RG-8X size coax. Interestingly, I have found that if I use silver-plated reducers, I can usually solder the smaller coax braid without damaging the coax. I do keep a damp rag handy to pull off heat quickly as soon as the solder has solidified. This avoids "cooking" the coax during the longer, natural cooling cycle.

Cost-wise, this style connector is usually a little bit less expensive, but not much. All the ones I have seen are silver plated and that increases the manufacturing cost. If there is a nickel-plated version, it may be even cheaper.

Pros: *less expensive than clamp-style connector; installation procedure is similar to UHF connectors; accepts the same threaded reducers as UHF connectors, allowing it to be used with different coax sizes*

Cons: *may not easily accept LMR-400/9913 center conductor; requires a lot of heat to solder, usually causing damage to foam dielectric coax; not as weather resistant as clamp-style N connector*



Crimp-style N connector: the crimp collar is on the left.

Crimp-style connector

Finally, there's the three-piece crimp-style connector. It consists of a body, pin and crimp collar. Both the center conductor and shield connections are made by tightly crimping them with a special tool, though some people (myself included) prefer to solder the center pin and only crimp the coax shield. The result is the same, but I feel the soldered pin provides a more trouble-free connection over the long haul.

The assembly sequence is to first install the pin by crimping or soldering; then, the crimp collar is slipped over the coax and the connector body pushed into place until the pin is on proper position. Finally, the connection is crimped using the crimp tool with proper size die. Once the prep work is done, the actual crimp is quick and easy.

The crimp-style connector has been around for quite a while in industrial settings; however, it has only fairly recently found favor in the amateur radio community. The primary reason for this is that the high-volume crimping tools used by industry are very expensive and few amateurs could afford them.

Reasonably priced, hand-operated crimpers that are sufficient for ham radio use are now available. You can find a decent crimping tool with several sets of dies for different coax sizes in the \$75 to \$100 range. I

Continued on Page Eight

More on N connectors...

Continued from Page Seven

bought mine through RF Parts (<http://www.rfparts.com>); another company with which I have no connection other than being a satisfied customer. It cost \$100.

Devotees of the crimp-style connector say they are much quicker and easier to install. I have not found that to be the case, however. Cable preparation must be carefully done in order to result in a properly crimped connector and that takes time. My experience tells me that cable preparation for the crimped version takes every bit as long as that for the compression-style connector.

The main advantage of this type connector, at least in my mind, is that it is available for a wide variety of coax sizes, even including the tiny RG-174 stuff. You can find crimp-style connectors for RG-58, RG-59/RG-8X, RG-8/213/LMR-400/9913...and probably more.

Price-wise, crimp-style connectors run about the same as the two-piece UHF-style units. Some people report making bargain buys on crimp-style connectors via eBay. Remember, however, that whatever you pay for the connector itself, there is also the hidden cost of the special crimping tool. Over time, that will become minimal.

Pros: *less expensive than compression style connector; available to fit a wide variety of coax sizes; can be used with LMR-400/9913; can be used with foam dielectric coax without the possibility of heat damage*

Cons: *requires careful cable preparation; not as weather-resistant as compression style connector; requires a special crimping tool costing \$75-\$100*

So, there you are! Take your pick based on your specific needs. In Part Two, we'll look at some tips 'n tricks for installing these connectors. Check the next issue of the *Noise Floor*.



Hamfest bargains: Look for them in "junk boxes" and miscellaneous parts bins. Be sure to verify that the package is unopened and that all the parts are present.

Loosen rusty antenna bolts!

Remember a few years back when you put up that Yagi? Yeah...the one where you used cheap steel bolts for the mast mount! Ohhh...that one! Now, you need to get it down and the nuts won't budge.

Next time, use stainless steel bolts! For now, however, try PB Penetrating Catalyst (aka "PB B'laster") made by Blaster Products. It's a combination penetrant, lubricant and rust inhibitor. According to the manufacturer, "It quickly breaks loose the surface tension of frozen parts and protects against further rust and corrosion."



Check it out at <http://www.blasterproducts.com/store/>. They also make several other lubricants and cleaners that could be useful around the hamshack. According to the company's website, retailers that sell this product include Home Depot, Lowe's, True Value Hardware, Ace Hardware, NAPA Auto Parts and Walmart. You can also purchase it online at the company's website.

Editor's note: *this does not constitute an endorsement of this product. Use it at your own risk!*

Assembling DIN connectors

By Lynn Burlingame (N7CFO)

I recently needed to solder leads to a mini-DIN connector for the WINLINK station I am putting together. Soldering DIN connectors can be difficult because it is easy to overheat the plastic core that holds the pins. This softens the plastic and puts the pins out of alignment. This is one of those projects that can go from bad to worse in about three seconds!

I've had poor luck with these connectors in the past, so I solicited advice on the society e-mail reflector. I got advice – lots of advice! Many thanks to those of you that helped out. Here is a synopsis of what I learned:

- DIN connectors with wires attached are available so you can solder wires rather than the pins. Unfortunately, I could not locate any on short notice, so I had to make my own.
- Buy high quality connectors from a firm like Mouser. The plastic in cheap connectors melts easily while the better ones tolerate the heat better. The only way to determine which kind you have is to try soldering one to see what happens.
- Use the mating connector to hold the end you are soldering. This helps keep the pins in alignment if the plastic softens.
- Tin the wires and pins prior to soldering them and use liquid flux.
- Use a heat sink.

I made a trip to Vetco in Bellevue for a mating female connector and I was in business. The connectors are tiny and difficult to secure, so I decided to turn the female connector into a jig. I had some brass brazing rod that fit nicely between the pins, so I soldered the pins to it. The rod served as a heat sink and also gave me something substantial to clamp in the vise.

I found that using the jig made all of the difference. I clamped the brazing rod into my Panavise at an optimum angle under a good light and had no difficulty making the connections with no discernable heating of the plastic.

One final bit of advice – buy an extra. The male connector comes apart into six pieces, and without a sample to look at they are difficult to get back together!



N7CFO's DIN-connector soldering jig.