

# The Anchorage Amateur Radio Club News Bulletin

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January 1997

Editor - Harvey E. Rookus NL7DK

Vol. 26 No. 1

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HAPPY NEW YEAR

General Meeting

January 3rd 1997

"The Operations of the  
911 system used in Emergency Services"

by the

APD

**Note** The AARC Board Meeting will be held on the second Wednesday,  
January 8, in Room 150 Grant Hall, APU.  
Grant Hall is the first building on the left as you enter the Campus.

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## What's Up?

General Meeting First Friday of Month - Carr-Gottstein Bldg APU Campus 7 pm  
Second Bldg on the left.

Board Meeting - Second Wednesday 7 pm - Grant Hall APU Room 150

VEC Testing - 1st Wed 6:30 pm, Carr-Gottstein Bldg.; 2nd Saturday, 2 pm Hope  
Cottage - 530 W. International Airport Rd. Enter Rear of Bldg.

3rd Wednesday, VFW Hall - Eagle River 7 pm

No appointment needed. Bring copies of previous testing. Bring Photo ID.



**AARC GENERAL MEETINGS** are held on the first Friday evening of each month in the Carr-Gottstein Bldg, Alaska Pacific University Campus. The campus is located at 4101 University Drive and Bragaw St. Parking is available in the lot East of the building. The meetings begin at 7:00 PM and visitors are always welcome! The AARC legendary raffle is open to everyone!

**AARC BOARD MEETINGS** are held on the 2nd Wednesday evening of the month in Room 104 of the Carr Gottstein Building on the APU campus. The meetings begin at 7:00 PM and are open to all club members and visitors.

**ANCHORAGE ARES NET** The Anchorage area Amateur Radio Emergency Services Net is held each Thursday evening at 8:00 PM on the KL7ION repeater on 147.30 (+.600). Net control is Lil Marvin, NL7DL and alternate NCS is KL7IO. The Westlink Amateur Radio report, Swap N Shop and the PARKA Net follow the ARES Net on the same frequency.

**THE KL7AA REPEATERS** sponsored by the club are as follows:

KL7AA 146.94 (-.600) 100.0 or 141.3Hz tone. Anchorage area \* + number for patch # to hang up. (5 min time limit)

Patch on 0600 - 2200 daily, 0700 - 2359 Fri/Sat, 0700 - 2200 Sundays. Emergency autodial enables 24 hrs a day. Emergency autodial numbers (10 minute resettable timer)

- 911 for life or death
- 912 Anch Police Dispatch
- 913 AK State Trooper Dispatch

# hangs up Emergency numbers also

KL7AA 146.76 (-.600) 141.3HZ tone Mt. Alyeska, and Girdwood areas.

KL7AA 224.94 (-1.6) NO TONE Anchorage area. KL7AA 444.70 (+5.0) 100.0Hz tone Anchorage area. Patch enabled 24 hour a day. \* + number for patch # hangs up patch. (5 minute time limit) Emergency autodial enabled 24 hours a day. (10 minute resettable timer).

- 911 Life or death
- 912 Anch Police Dispatch
- 913 AK State Trooper Dispatch

# hangs up Emergency numbers also.

A reminder that not only is using an Amateur phone patch system to bypass the Long Distance carrier illegal, it can result in the loss of the entire phone patch system. Prefix's outside the Anchorage dialing area are disabled.

The repeater Trustee is William Reiter, KL7ITI. Doug Dickenson, KL7IKX is chairman of the UHF/VHF committee.

**KL7AA PACKET OPERATIONS** The KL7AA Packet BBS. Callsign of the PBBS is KL7AA-7 (ANCBBS). Callsigns of the multi-frequency switch are KL7AA-8 (AARC), KL7AA-7 & KL7AA-8, and operate on user frequencies of: 145.010 and 147.960 (147.960 is the statewide ADES provided backbone). Linking from 145.050, and 440.050 is provided through multi-frequency switches throughout the city.

KL7AA operates a high power Node switch on 145.01 from the Rabbit Creek area, with the callsign of KL7AA-1 (Anc), as well as a Node switch on the top of the ARCO Building in downtown Anchorage, on 145.050 KL7AA-5 (Anc5)

KL7AA also operates an HF Gateway with the callsign of KL7AA-10 (HF80) on 3.605 Mhz. This gateway has access to all local and stateside networks.

The AARC sponsors an Amateur < Internet Gateway station, NL7NC-9 (AKGATE). This gateway is available from any of the local Node stations on 145.01, 145.05, 440.050, or 147.960.

A reminder that 147.960 is the state sponsored ADES backbone link connecting Fairbanks, Anchorage, Homer, Kodiak and Juneau together. User access for keyboard to keyboard activity is best accomplished between 1600 and 2200 daily, during this time, the Packet BBS stations will hold off from heavy bulletin forwarding.

ALL PBBS AND USER ACTIVITY IS SECONDARY TO EMERGENCY REQUIREMENTS OF THE ALASKA DIVISION OF EMERGENCY SERVICES (ADES).

AARC 'HomePage On Internet'

<http://www.alaska.net/~lawson/aarc.html>

**Ham Radio Luncheon**  
**Every Tuesday**  
**Royal Fork near Dimond**  
**Center on Old Seward**  
**11:30 'til 1:00**

**Let's all be responsible!**

You say your Amateur License is important to you?

**Fair Warning:** Mail sent to amateurs that is returned to the Commission marked Address Unknown, Forwarding Expired, etc., is grounds for revocation of your Amateur Radio License.

If your address on your ticket is not the same as your present address, get a 610 form to submit to the FCC for an address change.

Request a 610 form from the FCC at this toll free number: (800) 418-3676. For customer assistance, dial (800) 322-1117 from 8 am-4:30pm ET Monday-Friday. The above taken from: Handi-Ham World.

**The Anchorage Amateur Club Radio News Bulletin** is the monthly newsletter of the Anchorage Amateur Radio Club. Permission is granted for reproducing articles appearing in the Anchorage Amateur that do not indicate a copyright separate from the Anchorage Amateur Radio Club. Letters to the Editor and articles for publication should be submitted to Harvey Rookus, NL7DK, 3310 Checkmate Drive, Anchorage 99508. Telephone number (907) 333-4693. E-Mail 73521.3316 Articles and Notices for the paper should be typewritten or on IBM compatible formatted computer disks (3.5 inch). Deadline for articles is the 20th of the month.



## ALASKA SCIENCE AND ENGINEERING FAIR

The Club received a letter from the Science and Engineering Fair Thanking us for the contribution that we made to them. They also included a Grant Application to us giving their needs for the coming year. They are already on the Club's list of those Organizations who would be remembered when we contribute any funds. At the present time no figures are available.

### JUDGES

The Science Fair next year will held March 21-23, 1997 at the University of Alaska, Anchorage.

The Fair can use the many technical skills of the talented members of your Club as Judges." So..., if you would like to help with the judging at the next Fair, Contact: Bill Mans, Alaska Science and Engineering Fair c/o Anchorage School District, PO Box 19-6614 Anchorage, AK 99519-6614.

#### Please Note:

We have been asked to have 'No food or drinks' in our meeting Room. It was also mentioned to me (Editor) that we should not be wandering in areas other than those we are using for our meetings, Etc.

Thank you for your assistance in following these simple requests.

## ONE SIZE FITS ALL!!

By Jim Wiley, KL7CC

I am occasionally asked by newcomers and experienced hams alike what antenna do I recommend? Well, like all questions, the correct answer has many variations depending on how much room is available, cost considerations, neighbors, deed restrictions (covenants), and what the operator is attempting to accomplish.

One of my favorites, and an antenna with a long and distinguished history, is the open-wire fed dipole. This antenna is a "classic", dating from the 20's and 30's, but still hard to beat. Modern technology has produced a variation on this design that eliminates the major objection to and most vexing technical problem of this design, namely bringing the open feeders into the house.

An antenna of this type is suitable for all HF bands, 160 through 10 meters, although some smaller versions may work best on 80 thru 10. In brief, this antenna operates on the fact that even very high SWR values are unimportant as long as 2 conditions can be met. They are (1) that the transmitter can be coupled to the load, and (2) that the line losses are low enough so that even high SWR values do not cause excess loss.

The new technology trick that allows this antenna to again be popular (it was always an excellent performer) is the special high-SWR BalUn transformer made by Palomar Electronics (they advertise in both QST and CQ).

This particular BalUn is able to handle extremely high SWR values even when running power levels of 1500 watts. Caution: Do NOT attempt to substitute another type of BalUn - you will only end up with a mass of melted plastic and a largish cloud of smoke!! The Palomar BalUn is a 4:1 type, which means it transforms 50 ohms Unbalanced to 200 Ohms Balanced. A call to them will produce the correct part as soon as you explain what you are trying to do.



The antenna itself is simply a dipole or inverted-vee erected as high as economically possible and as much as practical in the clear. Typical heights are 30 to 50 feet, although the one I use is at 75 feet. The antenna may be ANY length!! - as long as it is (approximately) 1/4 wave (or longer) at the lowest frequency it will be used on. For example, my antenna is 95 feet per side and works well down to 160 meters (1800 KHz) and all the way up to 10 meters (30 Mhz). I use the inverted vee configuration.

Note that my antenna is of a length that is not particularly resonant in ANY ham band! The secret is that I use a "antenna coupler" to correct the complex impedance the antenna presents on (whatever) frequency I am using, and so as far as the transmitter is concerned, it is looking at a "perfect" 50 Ohm match, and a SWR of 1:1. Also note that the feed line I use (home-made, 600 Ohms impedance) does not match the antenna properly on ANY frequency (except perhaps by accident). The SWR of the antenna -feedline combination is usually at least 5:1, and can be as high as 50:1 - that's right - fifty to one!!

When the 4:1 BalUn is connected to a open-wire feeder, with a nominal impedance of 450 to 600 Ohms, the following interesting things happen: The SWR between the 50-Ohm coaxial feeder and the open wire line is effectively divided by 4, which results in a much smaller range the antenna coupler has to deal with. The 50 ohm feeder that goes from your antenna coupler to the balun DOES exhibit high SWR, but since it is only a few feet in length, the losses do not accumulate to the point where they become a problem. Good quality RG-8 feedlines (or their equivalents, such as Belden 9913, RG-213, Belden 8214 and so on) are all capable of handling the voltages and currents produced by this type of operation. Do not use RG-58, RG-8X, or other small cables in this application - the cable must be able of handling significant voltage and current excursions!

The type of antenna coupler used with this antenna can be important. Some coupler designs are much easier to use than others. The couplers make by Drake, including the MN-2700 and MN-2000, (low power can use the Drake MN-200) are perhaps among the easiest to tune up, and others of similar design, such as the Kenwood AT-230, AT-150 and such are similarly easy to use. The Kenwood models listed are only suitable for power levels up to 200 watts or so. Couplers using the "universal transmatch" or "ultimate transmatch" circuit are also suitable, but they are more difficult to adjust. In any case, you MUST use an antenna coupling unit to get satisfactory performance with this type of antenna. The disadvantage is that you must tune the antenna when changing bands (at least for transmitting - it often receives as well when "untuned" as when properly matched). The overwhelming advantage, however is that this antenna works everywhere - all the HF ham bands, in between SWL and marine listening, for WWV, literally everything! WARC bands too!

The feed line used between the antenna and the 4:1 Palomar balun can be either commercial 450 Ohm "ladder" line or home made. Home made line is very easy to build. I stretched out 2 each 100 foot lengths of #16 copperweld wire between my tower and a tree, using a "come-along" to get them really tight, and then attached plastic insulators (called spreaders) between the wires every 4 feet or so along the line. Spreaders are easy to make and the local plastics dealer (Cadillac Plastics) has relatively inexpensive material (1/2" UDMH - Black) that I cut up in my bandsaw to make 4" long, 1/2" square insulators. Drill a 1/8" hole about 1/4" in from each end, which is used to thread the "tie wire" through. The tie wire is wrapped around the actual feed line wire and soldered so as to hold the insulator in place. See the diagram for details. I use more of the high density plastic to make a triangular part which serves as the combined center insulator and support



attachment point and more of the same to create - each 10" long end insulators which are used to terminate each end of the actual antenna.

If your antenna doesn't tune easily on one or more bands, try adding (preferred) or subtracting a few feet of wire at the ends. Note that the added wire need not be in the same plane as the main wire! In my case, these added tuning wires are soldered on just ahead of the "end" insulator and come off at a 60 or 70 degree angle to another support - and another end insulator. Remember, you are not working with a "resonant" antenna, so lots of room is available for experiments and "try it and see" techniques.

Now, for the important stuff - how does it work? One of our members, Tim, NL7YL (now AB5OU) managed to work something like 100 different countries using an antenna of this design, mounted 40 feet high (atop his roof) and about 70 feet end-to-end. All very interesting, you say, but how much power was he using? Well, hang on to your hats - because Tim did this while running QRP (5 watts or less!).

One of our newer members, Marv, WL7CPC, uses one of these antennas for daily schedules with his buddies in California. He reports signals are almost always excellent (except when propagation is so bad nobody is hearing anything) and that he gets excellent reports from the far end.

OK, how much does all this cost? The most expensive single part of the antenna proper is the special Palomar balun - about \$80 as of this writing. The wire, insulators, steel slip-up mast and other stuff probably comes to another \$100 or so. The antenna tuner you may have already, although used units are often available at flea markets. Balance this against the costs for 4 or 5 separate antennas, feedlines, supports, and so on, and the "One Size Fits All" becomes very interesting indeed.

(Diagram on next page)

## THE ONE-SIZE FITS ALL ANTENNA, PART II

There has been considerable response to my article in last month's issue of SCRC news about the "One Size Fits All" HF antenna. Here are some answers to some frequent questions:

Q: What kind of mast should I use to hold the antenna up in the air? A: Actually, any type of support is satisfactory as long as the 2 basic requirements are met. First, the mast must be physically strong enough to support the antenna and any ice load it may collect, and with enough lateral bracing so it will withstand storms and not fall down. Second, the mast must be high enough so that the antenna is "in the clear" for most if not all of its length. The second requirement means that, for a typical installation, the center of the antenna should be at least 20 feet above the ground, with 30 feet or more being preferred. Remember, higher equals better when it comes to antennas of almost any type.

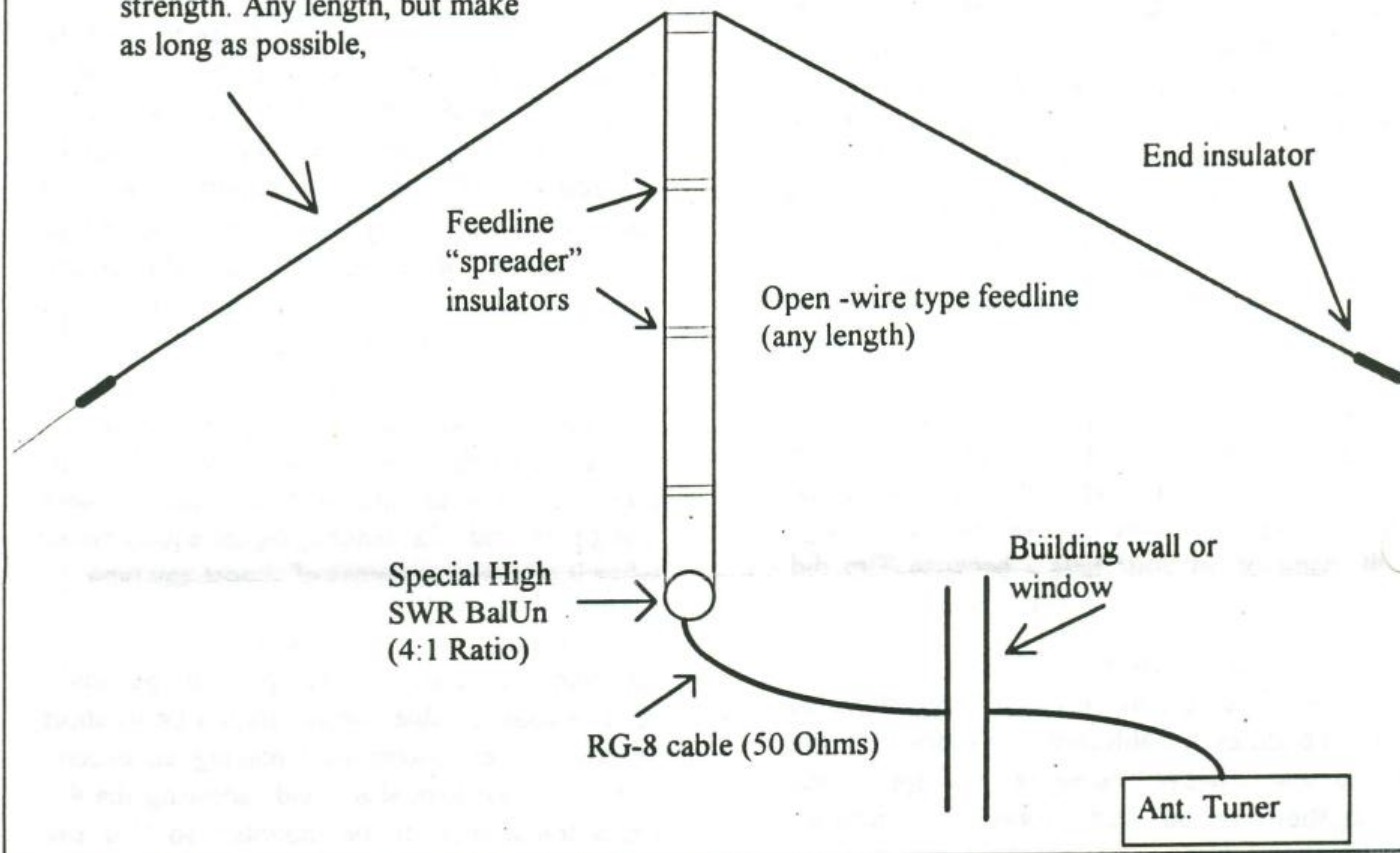
Q: How long should the coaxial cable part of the feed line be in relation to the open wire portion?

A: The coaxial cable portion should be as short as possible, consistent with making an orderly exit from your ham shack and allowing the 4:1 balun transformer to be mounted so that the path of the open wire feedline between the actual antenna and the balun transformer is as straight as possible while maintaining good clearance between the open-wire feedline and any metal objects such as towers. (See next question for additional information). In my case, the coaxial cable portion of the antenna is about 12 feet long.

Q: You mentioned that the open wire feedline must be kept clear of metal. How close can I come, and how do I prevent it from touching things on the way down? Also, it OK to have the open wire feeders touch non-metal portions of the structure or trees? A: To answer the second part of this question first, the feedline

### MULTI-BAND HF ANTENNA

Antenna wire - use 12 to 16 gauge copperweld for best strength. Any length, but make as long as possible,

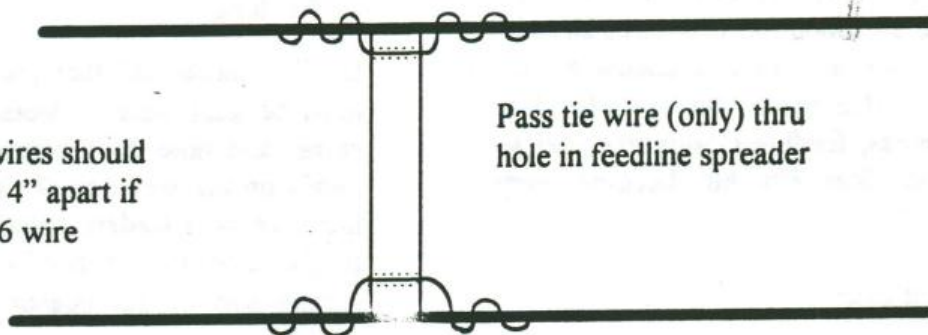


### FEEDLINE SPREADER INSULATOR DETAIL

Wrap and solder tie wire around feedline wire

Feeder wires should be about 4" apart if using #16 wire

Pass tie wire (only) thru hole in feedline spreader





must not touch anything, especially buildings or trees, other than insulating materials specifically intended to guide the wires. The levels of RF voltages and currents on the open-wire portion of the antenna, particularly when running high power, can cause wood materials and trees to catch fire! Keep the open wire portion of the feedline at least 12" (more is better) away from such items unless it is supported by insulating (plastic or ceramic) materials at the point of closest approach. Now, referring back to the first part of the question: In addition to safety considerations, the performance of the antenna can be severely compromised if the open wire feed is allowed to touch (or run too close to) metal objects of any kind. A minimum separation of at least 12" is recommended. If you must run the open wire feeder alongside metal supports or buildings, be sure the line is arranged so that both wires are as equally distant as possible from the metal object, and of course as far away as possible. I have seen installations where the feed line was supported on little horizontal poles, keeping the feed line about 4 feet away from the tower, and results were excellent.

Q: My antenna tuner is only marked for use in the standard ham bands. How can I tune this antenna so it gives optimum performance on short wave broadcast or marine frequencies? A: Use a self-excited SWR meter such as the MFJ-249, connected so as to temporarily substitute for your transceiver or receiver. Set the SWR meter to the desired frequency, turn it on and adjust the antenna coupler for minimum SWR. Remove the SWR meter and reconnect your transceiver, and you are ready to go. You need not pay strict attention to the "band" markings of the antenna coupler. They are there to give you a starting point when using most varieties of ham antennas, but in fact the bottom line is that whatever combination of adjustments you find are necessary to achieve low SWR will work OK. I often find, when tuning my antenna outside the ham bands, that using the next higher or lower "band" setting enables me to tune odd

frequencies. For example, the match for the 30 meter WARC band (10.1 Mhz) using a my coupler can be made using either the 40 meter or the 20 meter position, and adjusting the variable controls to achieve a match. Finally, remember that for simple receiving applications, such as listening to WWV or Short-wave Broadcast stations, the antenna will usually give acceptable results without precise tuning. Your tuner should have a "bypass" position which can be used in this case. Also, you can tune the antenna "by ear" when receiving just by listening to receiver noise and adjusting the antenna coupler for maximum noise or signal strength.

Q: You said the antenna needs to be in the clear. I cannot find anyplace on my property that isn't covered by trees or buildings. What now? A: In the clear means (mostly) not right next to trees or buildings. If you can get at least 5 feet (10 is better) between the antenna wires and other objects, the antenna will work fine. Obviously if you can get completely away from metal objects, trees and so on, the antenna will work at its best. Also, all other considerations aside, if you can get the center of the antenna clear but have to accept some compromise at the ends, there will be little degradation of performance. Along these same lines, it makes little difference which way the wire is oriented. This antenna, when installed at heights of 20 to 70 feet, is essentially omni-directional. If you are considering a choice between a favored direction and a less obstructed location, choose the clearer site.

Q: I don't have enough space available to install an antenna 90 feet long. What now? A: As the article says, ANY length is OK, as long as the antenna coupler can make a match between the transmitter and antenna. If you just can't get a match using the length you have chosen, it is possible that a **shorter** length will work! Also, remember that the antenna need not run in a perfectly straight line. Bending the wire to allow more overall length, particularly at the ends, is a good way to clear up this sort of problem.



**Anchorage Amateur Radio Club, Inc.**

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HF Antenna, All. Bands 80-10

Meters; MFJ QRP CW

Tranceivers: MFJ 30M, 9030;

MFJ 17M, 9070.

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4348H or 249-3151W

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w/book. \$50 OBO

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**Hey, Hey!** Are you looking for something for your Ham Shack?

Are you trying to clean out your

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so you can buy something that

you may or may not need. If so,

why not drop an ad into the mail

to the Editor at 3310 Checkmate

**Give Us A Try!**

If you have a business and want

to see what kind of a draw the

Club Newsletter has, try us with

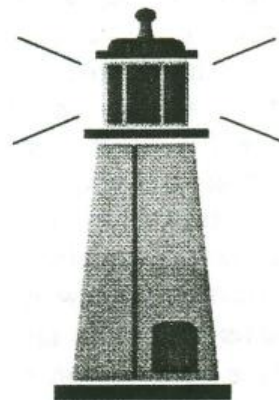
a Business Card size ad for one

Month at \$10. Who knows, it just

might work!

**NOTICE**

**There will not be a VEC  
Testing session on the First  
Wednesday of January,  
January 1st as it is New Years  
Day!**



How's this for a Neat Ham Shack?