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**ORANGE COUNTY AMATEUR RADIO CLUB**

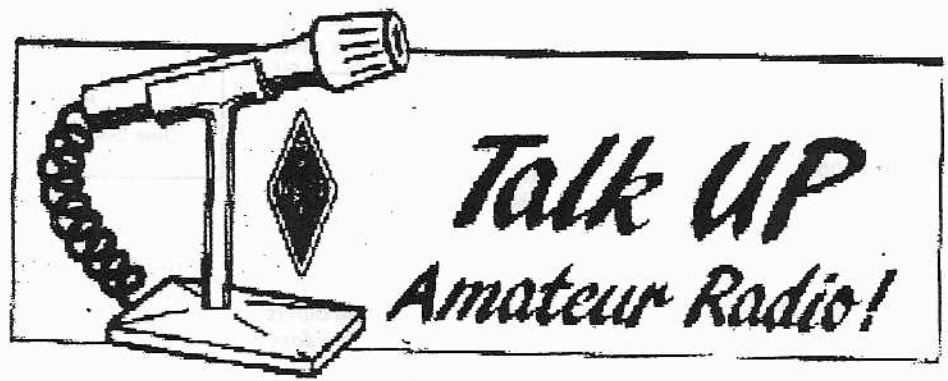
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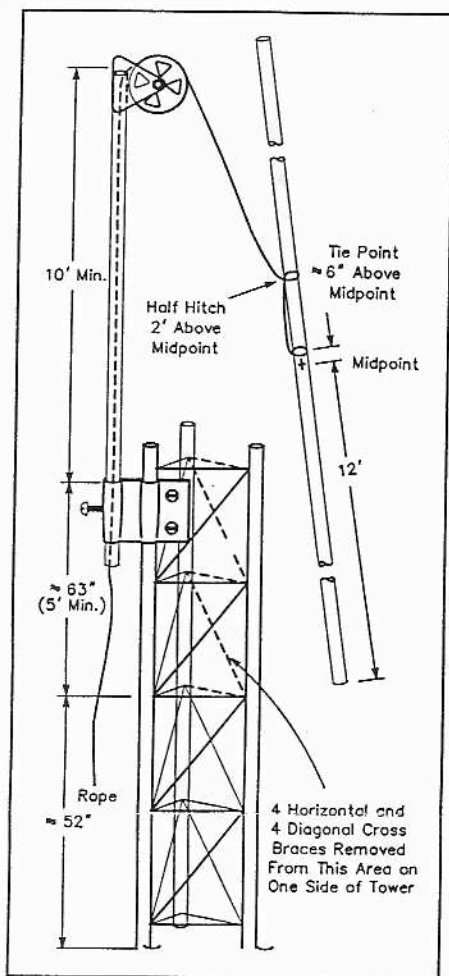
Prez Sez.....

**A VERY MERRY CHRISTMAS  
AND A HAPPY NEW YEAR TO ALL**



The safe way is  
The right way.

## Gin Pole for Raising Tall Masts

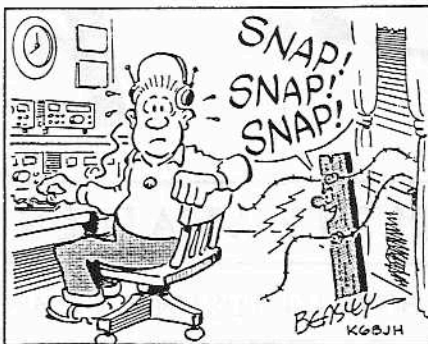


The AA4H extended gin pole consists of a standard 10-foot gin pole mounted on a section of tower with a number of support braces removed.

### TWO WAYS TO PROTECT A CAR ROOF FROM MAGNETIC-MOUNT ANTENNAS

◊ When I picked up a 2-meter mag-mount antenna at a hamfest, I was concerned that it might scratch my car's roof. To make sure it didn't, I got one of those textured rubber grips (used for opening tight jars) and placed it under the mag mount. It proved to be durable and provided plenty of friction to prevent slipping. The only problem was I kept misplacing the darned thing!

After several months, I hit upon another solution. My wife had bought two packages of balloons for a party. I cut off the stem of a balloon, and stretched the remainder over the mag mount. It fit snugly and looked great. For durability and added protection, I installed two more balloons over the first. I've been using this method for several months now, and am quite pleased with it. The balloons might deteriorate if left exposed to the elements continuously, but at 99 cents for 25 balloons, replacement shouldn't be too costly.—*Art Harris, N2AH, Kings Park, New York*



It's too bad the neighbor's electric fence made so much static (W1TR).

### FCC SETS FEES FOR VANITY CALL SIGNS

The Federal Communications Commission has adopted a fee for amateur vanity call signs of \$3 per year, to be collected for the entire 10-year term at the time of application.

The beginning date for these fees is September 18, 1995. The fees are the result of a mandate from Congress that the FCC collect fees to recover some of its regulatory costs.

The FCC said that the revenue requirement for amateur vanity call signs is \$840,000, and estimates that it will process 28,000 applications for them.

No start date for applications for vanity call signs has yet been announced, and the necessary FCC Forms 610-V have not yet been released. These fees apply only to vanity call sign applications, not to any other amateur license transaction.

### TWO SPEAKERS HELP BEAT HEARING LOSS

◊ As an aging ham, I suffer from partial hearing loss—a condition that seems to be worse at the higher audio frequencies. Increasingly, I had to ask for phonetic repeats on call signs, etc.

Not liking earphones, I tried various external speaker arrangements without success until arriving at the plan described here.

I mounted two 4-inch speakers in cigar-box baffles filled with glass wool, and placed them atop my transceiver, facing me. (The speaker cones must be in phase as determined by cone movement when dc—safely current limited—is applied.) Then I adjusted the speakers' angle so that their axes cross at my position. This arrangement allows me some lateral movement, as long as I'm located on one of the speaker's axes. At dead center, I benefit from both speakers.

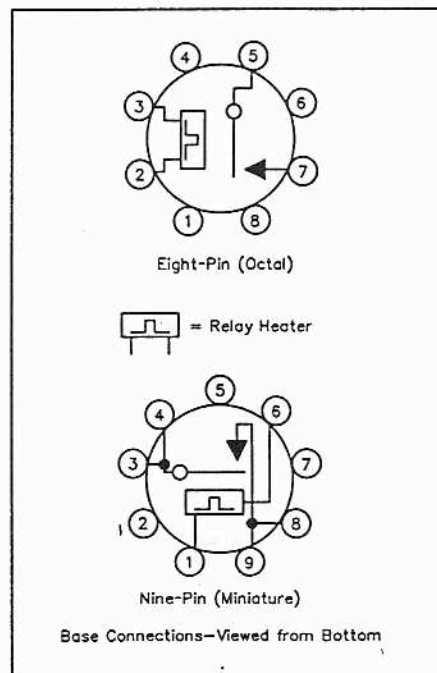
This arrangement works well for me, and now I only rarely ask for repeats or phonetics. I would like to hear from others who try this suggestion.—*Tom Freedom, W3HVF, Harrisburg, Pennsylvania*

### Fundraising?

#### HAM RADIO "AMBASSADOR" T-SHIRTS

◊ Men and women willing to step forward to show what a valuable service Amateur Radio provides the community can use their bodies as walking promotion signs. These eye-catching shirts sport a vivid, color logo on the back that proclaims "When all else fails..." and a 2-color logo on the left breast that reads "Amateur Radio—Dedicated to Public Safety." Wearing one can help reinforce the public's perception of the benefit of having ham radio operators as neighbors—even those who may be concerned about antennas! (ARRL Field Services Manager Rick Palm, K1CE, hasn't taken his off for three weeks!)

It's a great medium for publicity, and for fundraising activities, clubs can earn as much as \$6 on the sale of each T-shirt and \$8 per sweatshirt without stocking any inventory. Call for details. Club names or logos can also be imprinted. White, preshrunk 100% cotton T-shirts are \$14.95 and ash-colored, cotton/polyester sweatshirts are \$26.95, plus s/h (add \$2 for XXL). California residents add 7.75% sales tax. Credit cards accepted. All orders have a 30-day, no-questions-asked money back guarantee. Raymond Sarrio, WB6SIV, 6147 Via Serena St, Rancho Cucamonga, CA 91701; 800-413-1129 or 909-987-1020.



Anyone remember?  
Clue: look in middle  
Of this -----

Net Notes  
By BobEvans,WB6IXN

11/1 - 15m phone net - W6ZE/AF6C checks in HHC, NG7D, RE, & IXN. AF6C traces the AC hum on his sigs to a cathode short in a 6AS11 tube! And Bob tries out his 'explosive stare' on a lil 'trick & treater', and the poor kid's goody bag explodes on the spot! HHC 'tricks & treats' up in San Jose yesterday, & Ken misses Kei at the rig tonite!..But, it's off to a Carribean cruise next week! IXN says BPX has new difficulties wid a blood clot removed frm his leg, gangrene in his foot, and rotting skin over the prosthesis in his knee! Wyatt & Blanche tnx NG7D fer the funny get-well card! And NG7D didn't add any new contacts to the RS-12 log this week. RE tells AF6C to keep the safety belt as long as he needs it. And Alex gets rid of old coins & guns he won't need anymore, getting abt 4 times the monetary worth of the coins!

11/1 - 2m phone net - W6ZE/IXN checks in PZF, RE, NG7D, QW, VDP, BWH/m, ZH & TAM, and N6WWZ/m. PZF welcomes the lil rain we had today. And John sees VDP & QW at the TRW Swap Meet last Sat. RE has a velvet lined, glass doored, oak gun cabinet fer rifles, etc., fer sale. And Ralph gives up & dwn freqs. fer voice & packet on the MIR spacecraft. RE also says Navy Marine Corps MARS has declared CW an unsuitable form of communication!! And, Alex has been handling sum traffic frm MARS & RN6. BWH, playing wid computers, fergets abt Net last week. But Bob checks in tonite mobile, and arrives home in time to air Newline frm the Base station. NG7D talks wid his buddy in British Columbia on 20m yesterday. And John gives a run-dwn on the Huntington Beach Swap Meet. VDP says many large swap meets make individual vendors collect sales tax! Besides going to the TRW Swapmeet, QW also attends a woodworking show at the Costa Mesa Fairgrounds on Sun. And in the Contest, Rolf adds VA3, KJ3, XM7, & CK7 to his prefix list! VDP has IXN describe how he mounted his VDP J-pole fer 220 MHz at the QTH. And Larry hears lots of gud 40m CW in the Contest! ZH has jury duty this week..and gets a turkey leg frm TAM to chew on while working the Net! And Crhis does well in the Contest, collecting almost a 1/4 million points! TAM, ZH, & IXN get lots of 'ghosts & goblins' at their QTHs' last nite!! Ted, WWZ, checks in mobile, & we invite WWZ to join us on the Net Wed. eves.

11/8 15m phone net - W6ZE/AF6C checks in NGO, IXN, & COJ. NGO manages to 'stay up in the lemon tree' most of the day, sore gums & all! But yesterday, Kei & COJ hve a go-arnd wid Kaz in the afternoon on 15m. AF6C takes care of the filament-to-cathode short in the rig by installing a new 6AS11 tube. And COJ says he has a control box fer AF6C's rotor! And Bob says Club must send BPX a get-well card! IXN gets a call frm Blanche & Bob reports on Wyatt's progress. COJ gets a new hot water tank installed, & Dave goes to Riverside to see Greg Cordes abt an antenna. IXN & W6ZE conclude Net wid a discussion on seismically active regions in CA.

11/8 2m phone net - W6ZE/IXN checks in AF6C, RE, NG7D, VDP, PZF, BWH, QW, ZH & TAM. AF6C attends a symposium on transducers that utilize the Hall Effect to detect magnetic fields. These transducers hve many

uses in switching. And AF6C may give a presentation to the Club on these transducers, etc. RE & family celebrated the XYL's 83rd BD, wid a harmonic dwn frm up north fer the celebration! And Alex stuffed himself over at the Country Harvest in SA! RE reads ARRL bull. regarding late TAPR news. BWH, not mobile tonite, airs an interesting Newsline, wid news of waning CW in commercial & military services! NG7D gets his flu shot, wid only a mild reaction. VDP, still cleaning up the shack, is glad to see that WARC hasn't completely killed CW yet! QW listens to VDP's cleanup progress as Rolf looks at the magazines scattered all over the floor of the shack..wid no hamming lately..and too much work in the shop! TAM's car gets vandalized 2 weeks ago, and Chris gets his car bk yesterday. ZH has 2 more days on Jury Duty..(hoo-ray)! PZF `flies in & flies out'! Landline, John?

11/15 15m phone net - W6ZE/AF6C checks in NGO, HHC, IXN, & COJ. NGO wrestles wid a new bridge & a sore mouth! And Kaz gets the pair of earphones Kei sent to him. And HHC & Diane return home frm a vy nice Carribean cruise! HHC & IXN discuss magma activity in the Mammoth Lakes/Long Valley Caldera region. And COJ says W6EIN becomes a Silent Key. Dave will be handling the liquidation of EIN's ham gear! And Dave will try to get K6ZE bk fer another Club program. Club election of officers Fri. eve...Will COJ, NGO, & HHC put each other's names up fer Presidential nomination?!! IXN reports on WA6BPX's condition, wid Wyatt in the GG Medical Center fer at least another 2 wks! AF6C & NGO hve a go-arnd before net begins.

11/15 2m phone net - W6ZE/IXN checks in NG7D, RE, VDP, OPI, ZH & TAM, QW, ESD, & BWH/portable. Wid NG7D prtected frm the flu, John attacks his wheel chair problem. Not obeying John's commands, the errant chair wants to do its own thing! NG7D, RE, & IXN all loves gorging themselves at the Country Harvest in SA! RS-12 activity has been sparse, so John converses wid his buddy in BC, Canada! IXN enjoys the 18" of snow in Pittsburgh, PA., while he smells roses in CA.!! RE has 5 pieces of traffic fer traffic net tonite, so Alex reports on the 5 licensed amateurs aboard Atlantis/MIR, and 73s to pass traffic. IXN announces the 4.2+ EQ 28 mi. NNW of Truckee which jiggled the gambling tables in Reno, NV! VDP & QW will attend Meeting Fri. eve., & swapmeet at DeVry on Sat. IXN asks VDP what paint he used on the 220 J-Pole. OPI dumps the cat off her lap as ZE calls her to the rig! Cindy leaves a few red corpuscles wid the mosquitoes at San Juan & St Thomas in the Carribean. And Cindy & Don reward themselves wid a new KW-733 plus new ant installed by OPI...Sounds great, Cindy! ZH finishes jury duty, & Chris & Jane both get their vehicles bk frm repairs. Jane has a throat infection & can't talk, so ZH tells OPs to phone in your Christmas Dinner reservations ASAP! QW works on a hydroponic system fer his orchids. And Rolf will attend Meeting Fri. eve. Then, after TG, Rolf will be off to Santa Barbara fer the TG weekend! BWH, wid another security exercise at work, is portable tonite. Bob reports on his visit wid BPX at the hospital, and BWH airs Newsline. ESD has a BD on Nov 8, & `trips the light fantastic' to Laughlin, NV, where he enjoys the Smothers Bros. Wid golfing 2 days/wk, and dancing 3 nites/wk, ESD isn't arnd the QTH as much anymore!

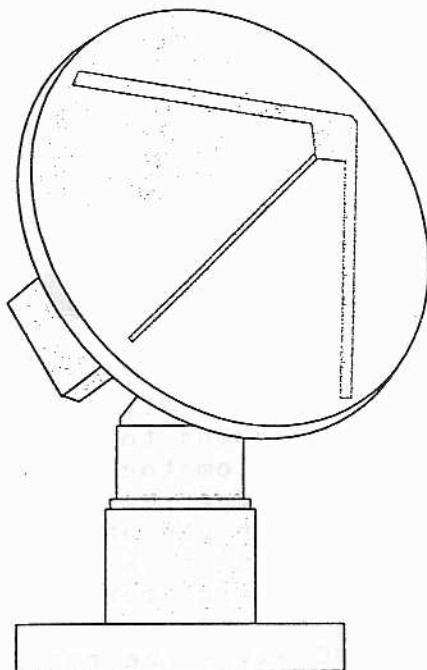
11/22 15m phone net - W6ZE/AF6C checks in NGO, HHC, IXN, NG7D, & TWA. HHC joins us after leaving Internet. Ken has the harmonics home for the weekend. NGO catches Kaz on 20m this afternoon, and Kei & Ida will do sum shopping over the weekend. Retirees party wid the working crowd at AF6C's establishment. Bob attends the party in his 'working auto', while the retirees drive up in their Rolls Royces!...Oh the advantages of retirement, Bob!!! Meantime, IXN keeps one ear on the group, and the other on a vry nervous Crystal Seismometer! HHC invites AF6C to watch the Pitt vs W. VA. game this Fri. at the QTH. AF6C quips, "Gud time to go to Trader Joe's & pick up sum cider!" NGO visits the dentist yesterday morn. to get sum high spots ground off the new bridge. And Kei talks to a JA9/mobile parked by a river. NG7D finally gets a loaner wheel chair he can live wid while his manual wheel chair is being repaired! And, NG7D gets a birdhouse frm his friend in Richmond, Canada. John will mount it in the backyard. TWA had ants. off the roof during reroofing ceremonies, and the Butternut is once more in operation. Charles & XYL are off to Carlsbad by train tomorrow for a traditional TG dinner wid family.

11/22 2m phone net - W6ZE/IXN checks in RE, NG7D, AF6C, BWH, VDP, TWA, QW, and ZH & TAM/m. ZH & TAM are on their way to Moreno Valley to TG wid IBR & IBP. ZH tells OPs to make Christmas dinner reservations by phone, packet, etc., by Dec. Club Bfast! RE, XYL, & daughter celebrated TG early. And Alex says for \$1.50 a plate, seniors can get a gud meal at the Tustin Senior Citizen Center Mon. thru Fri.! And RE picks up his new glasses today, thru which he reads ARRL bulletins. NG7D & family will enjoy a pre-prepared TG meal wid all the trimmings! AF6C wishes all a realy gud TG, as Bob tells OPs abt an antique 0 to 200 W RF ammeter gud to 60 MHz, that he just picked up! BWH wil 'smoke a turkey' in his Weber Smoker tomorrow. Bob airs Newsline & tells OPs that Wyatt, BPX, has 15 loaded avocado trees just waiting to be picked!..Call Blanche Berry for details! VDP will join his mother & family for TG festivities. Wid 16 states in the log, Larry will join the 160m CW contest this weekend to add more states to the log! TWA begins harvesting sum winter tomatoes, and Charles is now using the R7 for xmitting, and the RG5 for receiving DX! QW gets in later after listening to the harmonic on the phone wid family, and chatting sum wid the family. Tomorrow, its 'turkey day' at sister's house, wid a Fri. morning trip to Santa Barbara, returning home Sat.

11/29 15m phone net - W6ZE/HHC calls the net to order as AF6C repairs a feed line cable that got wound up in the SA winds! W6ZE/HHC checks in NGO, IXN, and later, AF6C. HHC reminds OPs not to forget the Club Bfast this Sat. morning. And NGO has a gud contact wid Kaz this afternoon. HHC asks OPs to state programs they wud like to hve for Club meetings. And AF6C finishes repairs to the damaged feedline frm his 'elevated merry-go-round' antenna! AF6C's sigs are 2 S units higher at IXN's QTH. Now Bob looks forward to installing an antenna rotator over the Holidays! IXN updates OPs on Wyatt's (BPX) health status, and upcoming plastic surgery.

11/29 2m phone net - W6ZE/IXN has a low net turnout tonite, checking in QW, BWH, VDP, NG7D, RE, ZH & TAM. QW draws blood frm his brain to digest TG goodies, causing QW to get very dizzy! And Rolf constructs

a 6 x 6 ft. greenhouse for his orchids, moving in the 2 new orchids he purchases in Santa Barbara day after TG. Hearing VDP talk abt working the 160m CW Contest this weekend, Rolf dreams of a 160m ant at his QTH! Like most OPs, VDP's backyard was not spared of a mess after the SA winds! IXN gets a license renewal letter from FCC, &, needless to say, made a vy prompt reply! BWH has a gourmet TG wid smoked turkeyd, &, after a super meal, kicks back & relaxes! And Bob airs an info-packed Newsline...the Vanity Call Sign form 610 shud be available in Feb.! VDP has 16 states on 160m & hopes to add to the list dirung this weekend's Contest. RE tells OPs abt \$1.50 noon meals at the Senior Center in Tustin, & IXN will call JSV & EZS & give them the news! NG7D & family finish off left-over turkey, & John & IXN find the CW bands overloaded during last week's Contest. And NG7D still needs Maine for his last state on the RS-12! RE completes a DMV course that shud give him a discount on his auto insurance! And RE reads an ARRL propogation bulletin. ZH & TAM roat the TG bird at IBR & IBP's QTH in Moreno Valley, while IXN & fam. TG in Indio, CA. ZH tells OPs to phone in their Christmas dinner reservations by Club Bfast this Sat.!



### Radio Tips: Amateur Satellite Frequencies and Modes

The amateur "space fleet" is constantly growing. In fact, by the time you read this, two more ham satellites may be in orbit.

Here is a chart of satellite frequencies according to the modes they use. Whether you operate SSB, CW, FM or packet, there's a satellite waiting for you to try! For more information, pick up a copy of the *Satellite Experimenter's Handbook*. Contact your favorite dealer, or see the *ARRL Publications Catalog* elsewhere in this issue.

| Satellite                                     | Uplink (MHz)          | Downlink (MHz)    |
|---|-----------------------|-------------------|
| <b>SSB/CW</b>                                 |                       |                   |
| AMSAT-OSCAR 10                                | 435.027—435.179       | 145.825—145.977   |
| AMSAT-OSCAR 13                                | 435.423—435.573       | 145.825—145.975   |
|   | 435.601—435.637       | 2400.711—2400.747 |
| Fuji-OSCAR 20                                 | 145.900—146.000       | 435.800—435.900   |
| RS-10   | 145.860—145.900       | 29.360—29.400     |
| RS-12   | 21.210—21.250         | 29.410—29.450     |
| RS-15   | 145.858—145.898       | 29.354—29.394     |
| <b>Packet—1200 bit/s</b>                      |                       |                   |
| (FM FSK uplink, PSK downlink except as noted) |                       |                   |
| AMSAT-OSCAR 16                                | 145.90, .92, .94, .96 | 437.05/437.026    |

| Satellite                                    | Uplink (MHz)              | Downlink (MHz) |
|--|---------------------------|----------------|
| DOVE-OSCAR 17                                | None                      | 145.825        |
| Telemetry only. FM FSK downlink.             |                           |                |
| WEBERSAT-OSCAR 18                            | None                      | 437.10         |
| Telemetry and images only.                   |                           |                |
| LUSAT-OSCAR 19                               | 145.84, .86, .88, .90     | 437.126/437.15 |
| ITAMSAT-OSCAR 26                             | 145.875, .900, .925, .950 | 435.870        |
| MIR Space Station                            | 145.55                    | 145.55         |
| Packet mailbox. FM FSK simplex.              |                           |                |
| <b>Packet—9600 bit/s</b>                     |                           |                |
| (FM FSK uplink and downlink.)                |                           |                |
| UoSAT-OSCAR 22                               | 145.900, .975             | 435.120        |
| KITSAT-OSCAR 23                              | 145.85, .90               | 435.175        |
| KITSAT-OSCAR 25                              | 145.87, .98               | 436.50         |
| <b>FM Voice</b>                              |                           |                |
| AMRAD-OSCAR 27                               | 145.850                   | 436.800        |
| Repeater. Weekends only.                     |                           |                |
| MIR Space Station                            | 145.55                    | 145.55         |
| Occasional simplex QSOs with the cosmonauts. |                           |                |

**Q** I have a packet TNC on a card that plugs into my IBM-PC. When I try to use it, my software says that there is an "interrupt" problem. (There is a reference to IRQ4—whatever that means!) What is an interrupt?

**A** There are two types of interrupts: *hardware* interrupts and *software* interrupts. Let's discuss hardware interrupts since the message you are receiving appears to be of that nature. They're a common source of problems for PC users who perform board installations themselves.

There are 16 hardware interrupts on an AT-class computer (286s, 386s and 486s). They are numbered 0 through 15 (0 through 7 on XT-class PCs; its data bus is 8 bit versus 16 on the ATs). Any event, such as hitting a key on the keyboard, moving your mouse or communicating with your TNC card, causes hardware interrupts. Interrupts signal the CPU to request processing time. Once the CPU is aware that a component needs attention, it services the request.

Many problems arise when two or more devices try to use the same interrupt. The reference to IRQ4 appears to be an indication that your software is detecting a potential conflict with that interrupt. IRQ4 is commonly assigned to serial port 1 (COM1). You'll need to determine if that interrupt is currently in use, and if the TNC card is also trying to use it. Solutions range from keeping the TNC configured for IRQ4 and disabling the serial port so that it doesn't attempt to use it, or configuring the TNC for another IRQ. Check the user manual or call the TNC manufacturer to determine what interrupts the board can use.

Here are some common hardware interrupt assignments:

|       |  |
|-------|--|
| IRQ0  | System Timer                             |
| IRQ1  | Keyboard                                 |
| IRQ2  | Cascade to IRQ9-15<br>(XT: Not Assigned) |
| IRQ3  | COM2                                     |
| IRQ4  | COM1                                     |
| IRQ5  | PC: Hard Disk adapter AT: LPT2           |
| IRQ6  | Floppy Disk adapter                      |
| IRQ7  | LPT1                                     |
| IRQ8  | Not Assigned                             |
| IRQ9  | Not Assigned                             |
| IRQ10 | Not Assigned                             |
| IRQ11 | Not Assigned                             |
| IRQ12 | Not Assigned                             |
| IRQ13 | Math Coprocessor                         |
| IRQ14 | Not Assigned                             |
| IRQ15 | Not Assigned                             |



Has your rig become an irate tiger -off freq.  
Retune and keep the spectrum clean.

## 1995 Board of Directors

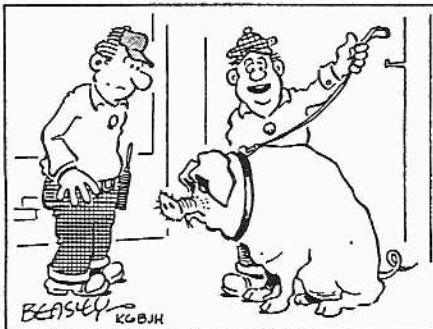
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## CLUB APPOINTMENTS

|                     |                   |              |          |
|---------------------|-------------------|--------------|----------|
| Club Historian .... | Bob Evans .....   | WB6IXN ..... | 543-9111 |
| W6ZE Trustee ....   | Bob Eokuler ....  | AF6C .....   | 639-6074 |
| RF Editor .....     | Cindy Hughes .... | KC6OPI ..... | 971-3448 |
| Refreshments .....  | .....             | .....        | .....    |

## DUES

|  |         |                           |             |
|--|---------|---------------------------|-------------|
| Regular Member .....   | \$12.00 | Additional Family Members | \$6.00 each |
| Teenage Member .....   | 6.00    | Optional Club Badge ..... | 5.00        |
| Dues for new members are prorated quarterly from January of each year.                       |         |                           |             |
| Family members must reside at the address of a Regular Member. One RF is sent per household. |         |                           |             |



I'M GOING TO GIVE THIS TO MY GIRLFRIEND --- SHE SAID IT WOULD BE NICE TO HAVE A HAM AROUND THE HOUSE

**Reserved For  
Secretary's Report**



**This Space For  
Treasurer's Report**



**This Space For  
Activities Report**





## HOW TO INSTALL PL-259 PLUGS ON RG-58, RG-59, RG-8X AND SIMILAR CABLES

◊ The method described here has proven to be a very simple and effective way to install PL-259 plugs onto small coaxial cables such as RG-58, RG-59, RG-62, and RG-8X (miniature RG-8). This method results in a low-leakage and mechanically strong assembly, with good RF electrical properties.

Step 1: Prepare the cable by cutting off the outer jacket for about 1 inch. Next cut off the shield braid to within about 1/4 inch of the outer jacket. (See Figure 4.)

Step 2: Prepare the cable reducer (UG-175 for RG-58 cable or the UG-176 for the larger cables [RG-59, RG-62, and RG-8X]). Using emery paper or a file, remove the plating from the end of the reducer and tin the outside surface of the end, being careful not to get solder on the reducer's inner surface.

Step 3: (A small vise is quite helpful for this step.) Slip the prepared cable end into

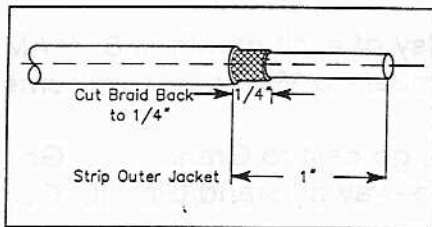


Figure 4—Like the manufacturer-suggested method, Step 1 of WX7E's PL-259 installation routine involves baring a section of the cable's shield braid. Unlike the standard method, you don't tin the braid.

the reducer so that the outer jacket is even with the tinned end. Fold back the shield braid strands over the tinned end at right angle to the reducer, and carefully solder the braid to the adapter end (See Figure 5). When the assembly has cooled, use flush-cutting diagonal cutters to cut the braid around the reducer end, and use a small file or knife to trim off any excess overhanging braid.

Step 4: Cut the inner insulation back to about 1/8 inch from the soldered braid, and tin the end half of the inner conductor.

Step 5: Screw the reducer and cable end into the PL-259 body and tighten with a pair of pliers. Now solder the inner conductor to the PL-259 pin, cutting off excess wire, and clean off any excess solder or soldering flux from the pin.—Emerson M. Hoyt, WX7E, Beaverton, Oregon



We operated from a local Civil Defense station located near the police station. Five hours into the contest we were informed that the phone line was picking us up, and "CQ SS" was going out with the dispatch calls on a busy Saturday night! (K5SL).

Q What is meant by the terms "balanced" and "unbalanced" when referring to transmission lines? What is meant by the characteristic impedance of a transmission line?

A The physical differences between balanced and unbalanced feed lines are obvious. Balanced lines are parallel-type transmission lines, such as ladder line or twin-lead. The two conductors that make up a balanced line run side-by-side, separated by an insulating material (plastic, air whatever). Unbalanced lines, on the other hand, are coaxial-type feed lines. One of the conductors (the shield) completely surrounds the other (the center).

In an ideal world, both types of transmission lines would deliver RF power to the load (typically your antenna) without radiating any energy along the way. It is important to understand, however, that both types of transmission lines require a *balanced* condition in order to accomplish this feat. That is, the currents in each conductor must be equal in magnitude, but *opposite* in polarity.

The classic definition of a balanced transmission line tells us that both conductors must be symmetrical (same length and separation distance) relative to a common reference point, usually ground. It's fairly easy to imagine the equal and opposite currents flowing through this type of feeder. When such a condition occurs, the fields generated by the currents cancel each other—hence, no radiation. An imbalance occurs when one of the conductors carries more current than the other. This additional "imbalance current" causes the feed line to radiate.

Things are a bit different when we consider a coaxial cable. Instead of its being a symmetrical line, one of its conductors (usually the shield), is grounded. In addition, the currents flowing in the coax are confined to the *outside* portion of the center conductor and the *inside* portion of the shield.

When a balanced load, such as a resonant dipole antenna, is connected to unbalanced coax, the outside of the shield can act as an electrical third conductor. This phantom third conductor can provide an alternate path for the imbalance current to flow. Whether the small amount of stray radiation that occurs is important or not is subject to debate. In fact, one of the purposes of a *balun* (a contraction of *balanced* to *unbalanced*) is to reduce or eliminate imbalance current flowing on the outside of the shield.

The *characteristic impedance* of a transmission line is the impedance that one would see "looking" into a line that's infinitely long. Since our theoretical line has no end, there can be no reflected power. A real-world transmission line can be made to appear as if it were infinitely long by terminating it in its characteristic impedance. Once a line is so terminated, the SWR is 1:1, since there is no reflected power.

Typical characteristic impedances of coaxial cables are (nominally) 50 and 75 Ω. Balanced lines are a bit higher, typically 300 or 450 Ω and beyond.

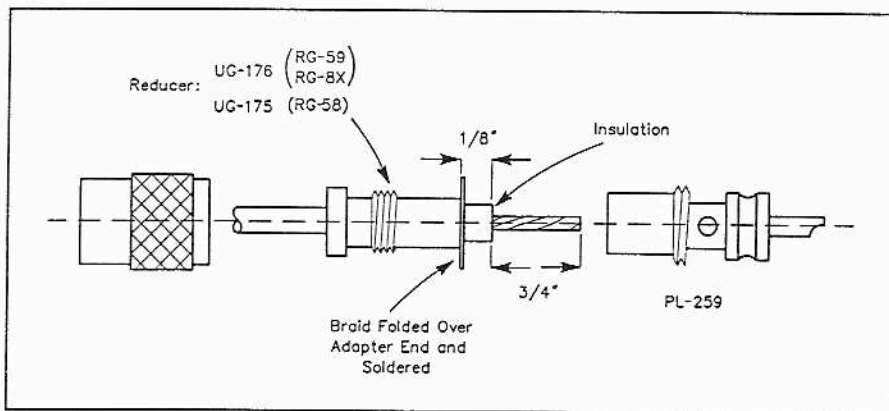
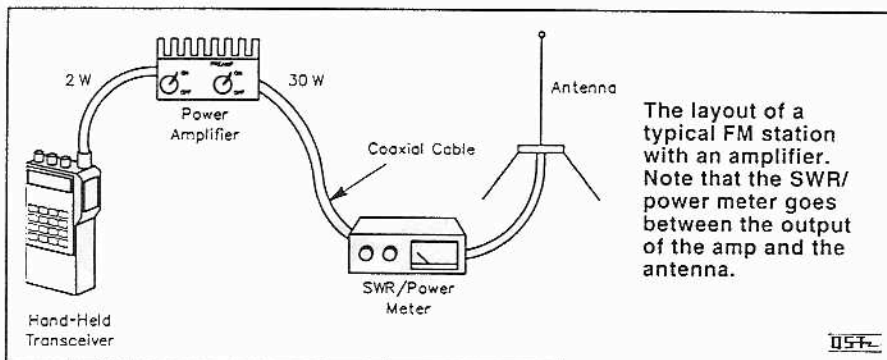


Figure 5—This drawing shows Step 3 about halfway through—with the coax braid flared just before it's folded back over the reducer end for soldering.



# Club Nets

| Band      | Mode | Day       | Local Time | Freq. MHz       | Net Control |
|-----------|------|-----------|------------|-----------------|-------------|
| 15 Meters | SSB  | Wednesday | 8:00 PM    | 21.375*         | AF6C        |
| 2 Meters  | FM   | Wednesday | 8:30 PM    | 146.550 Simplex | WB6IXN      |
| 40 Meters | CW   | Thursday  | 7:30 PM    | 7.135*          | WA6RND      |

(Listen for W6ZE, Net Control) \*Plus or Minus QRM

## General Meeting

November 17  
December 15  
January 19

General Meeting is the 3rd Friday of each month at 7:30 PM.  
American Red Cross  
601 N. Golden Circle Drive, Santa Ana, CA  
Talk in Frequency 146.550 simplex  
Major Cross Streets: Fourth St. & Tustin Ave.

## Board Breakfast

November 4  
December 2  
January 6

Board Meeting is the 1st Saturday of each month at 8:00 AM.  
The Wildflower Restaurant - Members & Visitors are welcome.  
Grand Ave., Santa Ana, CA  
Exit the 5 freeway at 17th Street, go east to Grand Ave. Go north on Grand; or exit the 22 freeway at Grand/Glasell. Go South to restaurant.

Orange County Amateur Radio Club, Inc.  
P.O. Box 3454  
Tustin, CA 92681



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