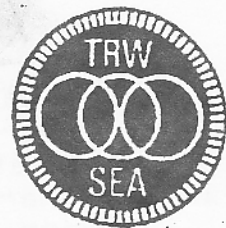




CROSSTALK

A Publication of the TRW Amateur Radio Club



OCTOBER 1992

CALENDAR:

Every Monday: DCS Net on 145.32 Repeater @ 7:30 PM

Every Wednesday: Emergency Communications Team Net on 145.32
Repeater at Noon

Every Friday: Club Breakfast in Bldg S Cafeteria, 7 to 8 AM

Oct 6: Executive Board Meeting, Location to be announced

Oct 13: Emergency Communications Team meeting, R3/1413, Noon

Oct 24-25: CQ WW SSB DX Contest

Oct 27: Club Meeting, E2/1200, Noon

Oct 31: Swap Meet, parking lot on NW corner of Aviation and
Marine, 7 to 11 AM

Oct 31: T-Hunt following the Swap Meet @ Noon, Meet in O3 parking
lot near the Porta Potties

Nov 14: TRW ARC Banquet

EDITORS NOTES:

It's sure nice to see so many new faces at club functions, membership continues to grow. With all this increased activity there are plenty of opportunities to write an article for Crosstalk about something you enjoyed or a new piece of equipment you recently tried. Don't worry about the grammar or spelling, I can help there. The deadline for submissions is the 1st of each month for the next month's issue.

The first T-Hunt was a lot of fun. You don't have to be a Ham to participate, just borrow a friend's Handi-Talkie and join in. Bill Whiddon won this new event using a 4 element beam he had just purchased at the swap meet to triangulate the hidden transmitter. Bring the kids and have some fun after the next swap meet.

73 de KJ6GR

President's Message:

Field Day and the National Convention are behind us and the club banquet is coming up. What else is happening? Well, the BBS is going strong, thanks to our new SYSOP. See Dave H's column elsewhere in this issue. Log in and download some software. We are working on packet link access for those of you who spurn the landline.

We are going to add several books to our reference library, and I'll list them as we receive them. They will be available for reading in the shack, or for brief checkout. We are also working on some new antennas, including an 80 meter dipole.

The MFJ QRP rig is in, and after our club VP fixed a bad solder connection, works fine. But we would like a QRP'er to check it out on a field trip. It works on 20 meter CW only, so general class licensees or above, let me or Dave Q. know when you want it. It is complete with transceiver, antenna tuner, rechargeable power pack, headphones, keyer, paddles, 20 meter compact dipole and audio filter. Hey, novices and technicians, time to upgrade!

A note about the monthly board meetings -- Due to the increased size of visitor attendance, and the president's intense dislike of fruit pizza, we will be moving the meeting to a new location next month. It will probably be held in E2/1200, but I still need to reserve the room. We will also reserve the central table for the board members. Visiting members will have a chance to speak, as always.

73, David

MFJ-247 VSWR Analyzer:

I recently purchased this very useful piece of test equipment to help with antenna adjustments while on my roof. I enjoy experimenting with my antennas, but running from my shack to the roof each time I make an adjustment is not my idea of fun. The analyzer works from 1.8 to 30 Mhz and has a built in frequency counter for accurate measurements. I used it recently to add a 160 Meter resonator to my Butternut HF-2V 80/40 Meter Vertical antenna. It made adjustment a snap, the frequency for the lowest VSWR was in agreement with my FT-1000D VSWR indicator but the magnitude of the VSWR was different. I suspect that the meter calibration is not right because I measured the VSWR of several known resistors and got erroneous readings. I plan to call MFJ for assistance.

73 de KJ6GR

W6TRW BBS



By Dave Hassall WA5DJJ

The W6TRW BBS on phone number 310-612-4970 has been going strong for the past month. There is now about 7 hours of new software loaded in a variety of areas. I have re-arranged the Message and the File areas to make them easier to use. I am still uploading many new programs every week. They are there for your use and enjoyment. In the near future as we get a larger user base the software downloading area will grow from the many user additions. But for now, This is the best I can do. If there is a particular shareware or public domain program that you are looking for,

please leave me a message with the program's name and I will search my files and the additional files that I have access to, and see if I can find it for you. I have put the downloading procedure on the logon message on the BBS. If you still have trouble downloading a file, please leave me a message, and I will try to help you. I have received some very good comments on simple improvements that can be made on the BBS and I will try to implement as many as time and talent permits. Getting a new version of the SOFTWARE is first on my list. Then initiating a packet link to the BBS is the second thing on my list. From there on the improvements will continue as time permits. Upgrading the Quality of Software to Download will continue even while I am working on the other two Items. There are TWO new TECHTALK sections in the message area to help users get answers to their technical RADIO and COMPUTER problems. There is such a LARGE talent base in this Amateur Radio Club that I am sure we can get our heads together and solve a problem. The computer BUY of the month are 386SX Motherboards. They are now cheaper than they have been for years, so, if you were thinking of upgrading your computer, THIS MAY BE THE TIME. The chat with the sysop function on the BBS does not work because the SYSOP is not where the computer is located. So, send the sysop a message on E-MAIL instead. My user number is #1. If you have forgotten your password and can no longer get into the BBS, Never Fear, log in as guest, insert all other information, and leave me a note and your phone number in the validation message, and I will look up your password and call you. Don't worry, you will not be the first one for whom I have performed that task. Tell your friends about our FREE BBS. The more users we can get into the BBS the better it becomes for all of us. You do not have to be a club member to use the BBS. This is one of our Community outreach programs and is open to all. There is a FOR SALE area to list your used Equipment or What have you in the Message Area. The latest Satellite Kepilarian Elements are in the Satellite area of the File Download Section. The OSCAR 22 Pictures are also there with the .GIF viewing program for looking at them. IMPROCES.ZIP is an outstanding program for viewing the OSCAR 22 pictures because of the many tools available to change the range of the pixels in the pictures. Many GREAT UTILITIES are located in the DOS UTILITIES file sections.

HAVE FUN.... DE WA5DJJ

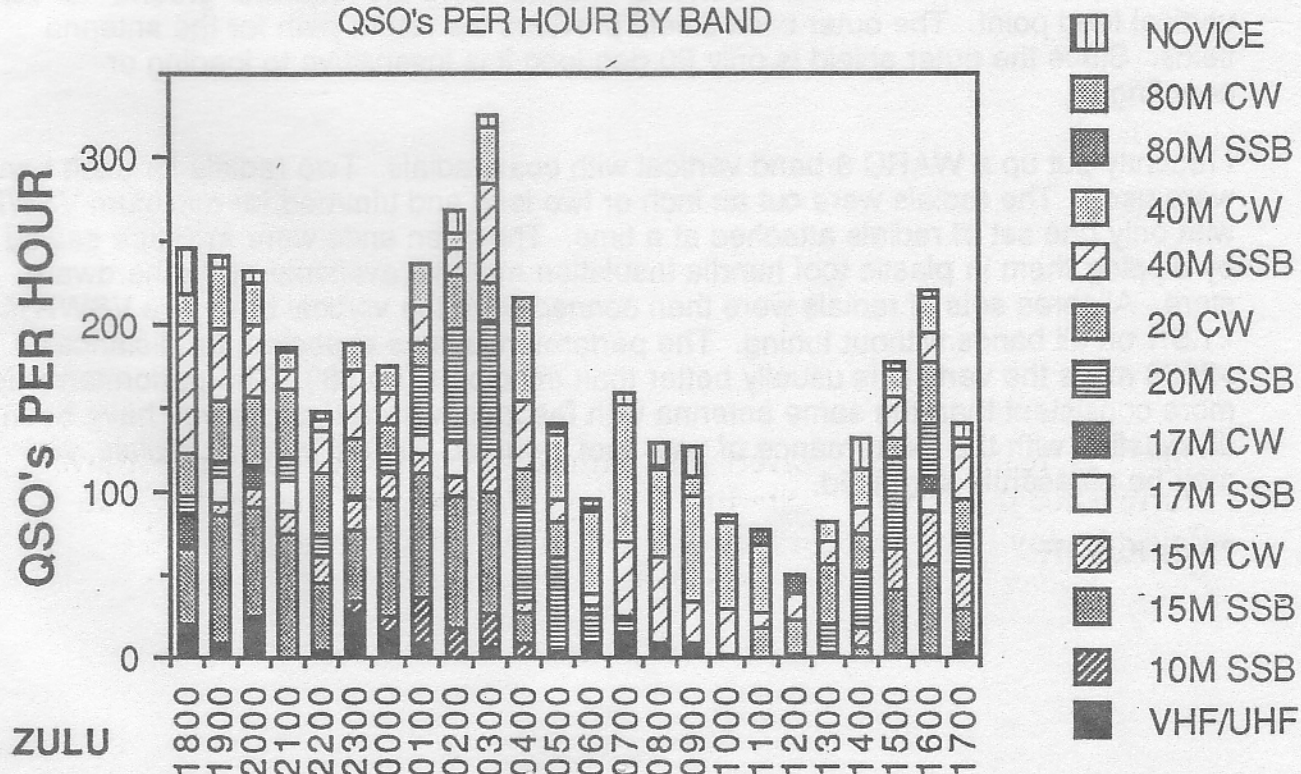
W6TRW FIELD DAY 1992

By nearly everyone's account Field Day 1992 was one of the biggest and best in recent memory. The cooks claim to have fed at least 80 people at one time or another and someone counted 43 cars in the parking area during the peak. I think a great time was had by all. Mr. Murphy seems to have taken the day off for the most part and the weather was just right.

Our total score was 11,850. About 1000 more than our last years count but a couple of hundred less than last years winners. The bands seem to have been a bit down, especially 80 & 75 meters, so we have a good chance at NUMBER ONE! The top score was Bob Hume, & Irv Zipper on 40 M cw with 677 contacts for 1354 points. Last year there were entire teams that didn't score that high!! George Eldridge of the XEROX ARC on 20 M cw got 512 contacts for 1024 points. Ken Edwards leading the 15 M ssb team made the most number of contacts with 723. Not far behind was Don Rinkowitz on 40 M ssb with 670 and Andre Burghard with 546 on 20 M ssb. Doug Tice (also from XEROX) on 15 cw came through with 412 points. Our efforts on UHF/VHF yielded 209 points - Thanks Rich, Frank, Dave Jeff, Blane, Jack and a cast of thousands. Our newest band - 17 M - with Bill Shanney gave us 155 points. I think Bill worked everyone that even though about getting on 17 M that weekend! Two of the real hero's of W6TRW FD '92 were Norb and Barbara on 80/75 meters who, despite the worst band conditions in years managed to add 114 points to our score. Some of the stations they worked were only 2 db above mental telepathy! Our Novices provided 110 points on voice and 14 on cw - now that was a cast of thousands. Steven (KB7ODW) and Dixson (KC6TGH) led the charge with Bob Burchett and yet more boy scouts really brought home the points. Even 10 ssb gave us a respectable 89 contacts. The biggest point count however, didn't come from a band. Jeff Shields gave us 800 bonus points for everything from packet to a message to the SCM and then he taped the earthquake on top of that. The only thing we missed was the message from W1AW for extra credit - and we almost got that (darn QRN).

This was really a team effort and unfortunately I did not write down nearly enough names. Starting Friday afternoon at the trailer with Howard, Ray, Irv, Jeff, Bill, and others, it was pull together all the way. Friday afternoon at Friendship Park looked like the staging

So what's for next year? Just as big a turn out I hope. A notebook so I can keep track of the hero's (there were so many I forgot this year - sorry!!!). Some new transmitting bandpass filters to cut down the noise. A much better antenna for 80/75. At least one Band Captains meeting BEFORE the start. A little more organization and maybe I can get the cooks to make the famous Hummingbird tongue pate - no promises but I'll try.



Above Ground Mounted HF Verticals - Revisited

The advantages of above ground mounting of HF vertical antennas was discussed in a previous Crosstalk article.¹ I've recently been doing some analysis of above ground radial systems and have verified a potential problem. L. A. Moxon, G6XN in his excellent book "HF Antennas for All Locations" (RSGB, 1982) points out that small differences in the lengths of resonant radial wires can cause large phase differences in the currents flowing in them. These differences can be caused by physically unequal lengths, dielectric loading from nearby structures or coupling to nearby metallic systems (i.e.: antennas, house wiring or plumbing).

This imbalance causes undesirable high angle radiation lobes to appear in the radiation patterns. The radiation pattern for a 20 meter quarter wave vertical with two resonant (quarter wave) radials at a height of 20 ft above average ground is shown in Figure 1. The same antenna with one radial 6 in too long and the other 6 in too short (± 2.7 deg) is shown in Figure 2.² Note the high angle lobe that is now present. This is caused by a 58 deg change in relative current phase between the two radials. The impedance of the antennas of Figures 1 and 2 are virtually identical so the imbalance won't show up in the VSWR.

Moxon states that short radials³ do not exhibit this behavior. Figure 3 shows the radiation pattern for the same quarter wave vertical with two 1/8 wave radials. Imbalancing these radials by ± 6 " had no effect on performance. A loading coil is required to tune this radial system resonance; a small reduction in bandwidth is to be expected due to the added tuned circuit.

An alternative solution to this problem is the use of coax radials. A coax cable such as RG-58, 59 or 213 having a velocity factor of 66% (solid polyethylene dielectric only) will be 60 degrees long externally when cut for 90 degree resonance. Figure 4 shows a quarter wave coax radial. Both ends are open circuit, since the coax is open at the far end it looks like a short at the antenna end providing the required "ground" for the vertical feed point. The outer coax shield provides the return path for the antenna fields. Since the outer shield is only 60 deg long it is insensitive to loading or coupling.

I recently put up a WARC 3-band vertical with coax radials. Two radials for each band were used. The radials were cut an inch or two long and trimmed for minimum VSWR with only one set of radials attached at a time. The open ends were moisture sealed by dipping them in plastic tool handle insulation material available at the hardware store. All three sets of radials were then connected to the vertical base, the VSWR is $< 1.5:1$ on all bands without tuning. The performance is as expected, for distances > 2000 miles the vertical is usually better than my dipole (up 38'). The performance is more consistent than the same antenna with resonant wire radials. If you have been dissatisfied with the performance of your roof mounted vertical try coax radials, you may be pleasantly surprised.

73 de KJ6GR

1. Anyone wanting copy of this article please contact me on X38159.
2. Unequal coupling to nearby structures or other antennas can cause the effective electrical length of one radial to be different than another.
3. MININEC analysis shows that radials <60 deg long are insensitive to small imbalances in electrical length.

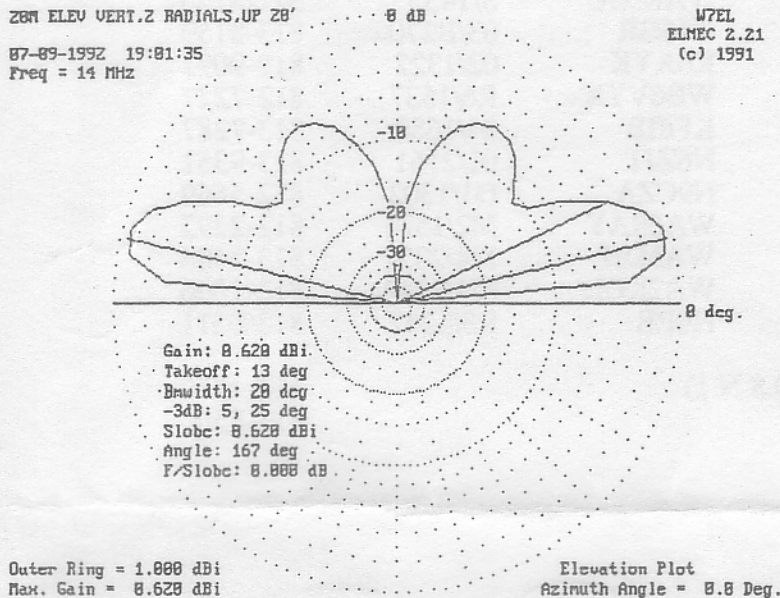


Figure 1. 20 Meter Vertical with two quarter wave radials mounted 20 feet above average ground.

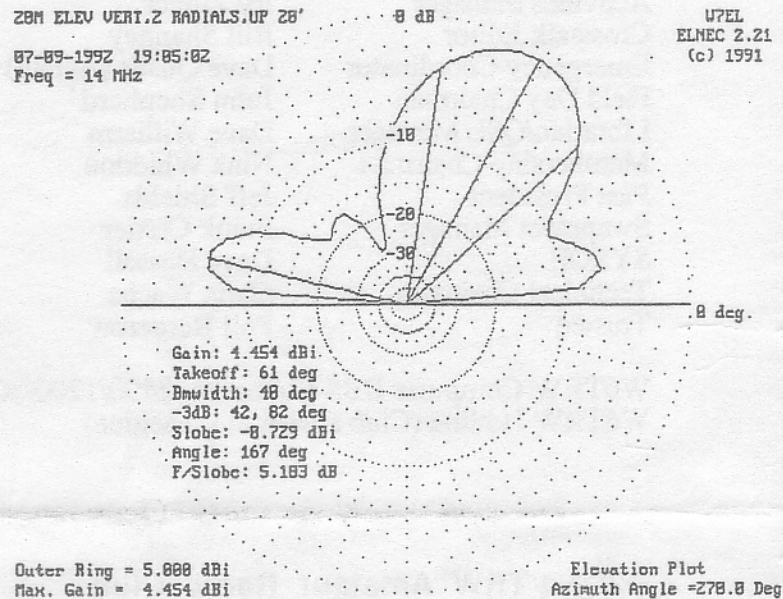


Figure 2. 20 Meter Vertical with imbalanced radials. Other azimuth cuts look worse.

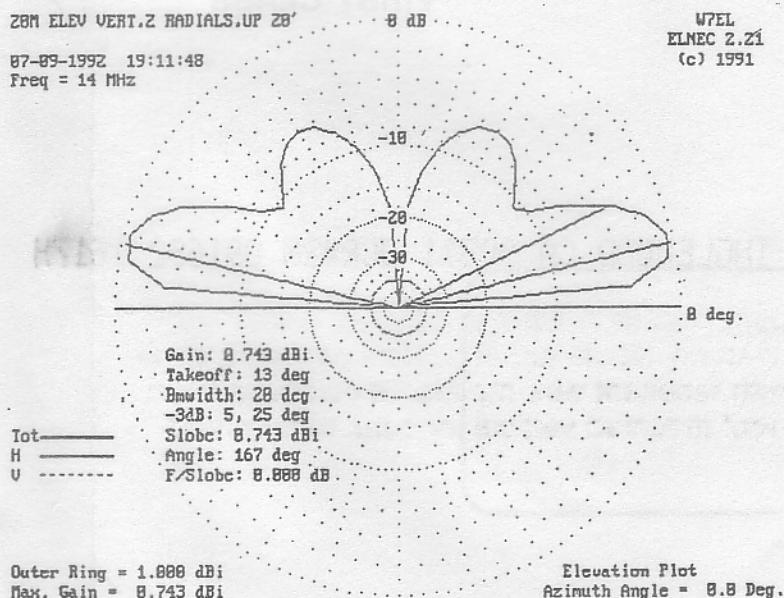


Figure 3. 20 Meter Vertical with two eighth wave radials mounted 20 feet above average ground.

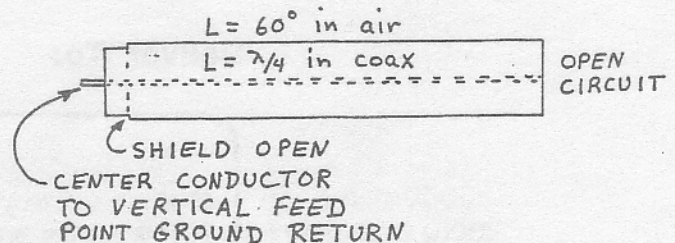


Figure 4. The Coax Radial is resonant inside coax for low VSWR and electrically short on outside to prevent pattern distortion due to imbalanced electrical lengths.