# FLASH
MAD RIVER RADIO CLUB

**Dayton Edition, 1992** **Editor: Tim O'Sullivan, KE8OC**

## This is MRRC Country!

Welcome to Mad River country! Mad River is a medium sized contest club that services Ohio, Southern Michigan, and small parts of Kentucky, Pennsylvania, and Indiana. Our main activities are centered around contesting and DXing. Our fiscal year starts and ends at the Dayton Hamvention meeting at which time our annual $7.00 dues are due. This money is used to defray the cost of publishing 'The FLASH' and covering the Hospitallity suite at Dayton.

OK, enough of the sales pitch. The rest of this edition is dedicated to the writing talents of some of our members, who's articals have appeared in the FLASH over the past year.



## USING YOUR OLD TERMINALS WITH NEW COMPUTERS

By Jim Stahl K8MR

I'm an old hand at single operator assisted DX contesting. In this category packet spots are obviously vital; but perhaps unlike operating in say multi-single, where a multiplier station tends to immediately pounce on a new spot, in S-O assisted a packet spot will frequently wait until other matters, such as a good run, are taken care of. Often this makes it desirable to have older spots than the most recent 8 or so that CT can provide. Further it can be handy to have a separate screen devoted to the packet spots, saving the computer screen for other functions. Therefore I have set up my station to have the TNC drive both the logging computer and the old ASCII dumb terminal.

This is a simple matter to have the TNC drive two displays. It is a considerably more complex matter to have two keyboards drive one TNC, so I didn't include this function. All outgoing spots, announcements, etc., must be done from the logging computer keyboard. The TNC output, on the RXD line (pin 3 of J4 on the KPC-2) is wired to pin 3 of the terminal RS-232 port in parallel with the other wiring to the computer port. The TXD line (pin 2) to the terminal is NOT connected. The ground line (pin 7) is also connected. To facilitate the connection, I paralleled J4 Pin 3 to an unused pin (11) for the RXD line to the terminal.

In my precontest testing, I have found that having the full time packet display, containing the last 23 lines of spots, to be a significant help. With the modest effort required, I think you may find it

**The MAD RIVER RADIO CLUB net occurs every Monday evening at 8:30pm EST on 3825 Khz ± QRM.**

worth doing.

**PREPARING FOR SWEEPSTAKES**
**Part I - Antennas and Radios**
**By Dave Pruett, K8CC**

Sweepstakes is probably my favorite contest. For the most part, it is easy for a W8 to get out effectively, however it can be difficult to generate a national-class score. This article is the first of two parts on preparing for the November SS. Since we are still enjoying the fine summer weather, this first installment will focus on station hardware. Next issue, we will cover operating strategy and preparation.

Whether you are a "big gun" or "little pistol", your station can probably benefit from these SS tips. The improvements are most noticable to the 24 hour 100% effort, but station effectiveness is a factor even when operating part time.

## ANTENNAS AND BANDS

Requirements for SS antennas can be summed up in one word: GEOGRAPHIC COVERAGE. Sometimes this coverage is limited by the propogation skip zone on a given band, but as a general rule, antennas that cover large areas are best.

From W8 in SS, coverage comes in one of two forms. One type of coverage is relatively short-distance and high angle, covering everything east of the Mississippi. This type of propogation covers the major population centers, which means good rates and lots of people to work. The second type of coverage from W8 is longer distance, covering everything west of the Mississippi. Although you would think there would be lots of W6s and W7s to work, the rate is never as good, and it seems that you run out of these stations quickly.

Since you can only work a station once in SS, it pays to think of the contest as one big band, and change frequency bands as necessary to find propagation that will keep up the rate. QSO totals by band are of only passing interest, however they can be indicators of successful strategy.

In the 1990 CW SS from K8CC, 860 of 1165 QSOs (74%) were made on 7 MHz. On SSB, with WD8IJP operating, 769 of 1472 QSOs were made on that band. This should tell you that from W8 in SS, there's "no meters like fourty meters".

Check out these band breakdowns from K8CC in the 1990 SS:

| band | CW | SSB |
|---|---|---|
| 80 | 85 | 209 |
| 40 | 860 | 769 |
| 20 | 48 | 327 |
| 15 | 33 | 64 |
| 10 | 139 | 103 |
| total: | 1165 | 1472 |

On both CW and SSB, the big band was 40m. The CW total in particular is incredibly biased towards this band. This is not in the least disturbing - in talking to successful SSers in this area, the more you focus on 40m, the more your score seems to improve.

On CW, 10m was a surprise in that backscatter was reasonably productive the second hour of the contest. However, this may have simply siphoned off QSOs from 20m and 15m. The small 80m total is not typical, however it is likely that many of QSOs from that band were worked instead on 40m.

On SSB, 40m did not start off well, as 10m conditions were good, thus drawing stations up high. Nonetheless, consistant 40m operation netted 52% of the overall QSO total. The fact that 20m outpaced 80m is not typical, but reflects reasonable daytime short-skip conditions.

In SS, your most important antenna is a moderately high (30'-50') 40m dipole for working within a 500 mile radius (which just about covers the eastern half of W/VE). It doesn't matter how big your 40m beam is (mine weighs over 200 lbs. and is larger than my house!), a W8 will live and die in SS by his 40m dipole. This is not to say that a beam is of no use. I had two dipoles and my 3L yagi in 1990, and was continuously surprised how often switching antennas would improve a difficult rx situation. However, I would bet that 700+ QSOs were made on my lowly 50' high SS dipole.

The second most important SS antenna for the W8 is his 80m dipole. This will be your main nighttime antenna, again for working inside the 500 mile radius. Height does not seem to matter too much, try to get up at least 40', but up to 100' is better. DO NOT try to use verticals on this band - you will be real loud in W6 land around 09Z, but so what? If you have beverages available, you can use them but keep checking various headings so as not to miss anybody.

As much as we might hate to admit it, 20/15/10 meters are not prime SS bands from W8. The problem lies in the skip zone we are presented with, which usually restricts us to working west of the Mississippi. Again, our problem is that there are too few people to work in that direction, which prevents us from generating any really good rate.

On CW, most any good tribander will get the job done in SS on the high bands. Gain helps on SSB, but even so, it's hard to hold a frequency against a W5 that has a bigger target audience. From K8CC, we have had good results using a stack with the antennas "sprayed" in different directions, one west and the other southwest or southeast. With a single antenna, the preferred heights are between 50' and 70'.

Once you have these antennas, you are at least 90% of the way to a ultimate SS station - anything further is simply icing on the cake. It's nice to have a beam at night on 40m to run west coast, or a low angle antenna for the same path on 80m. However, this type of activity is only marginally useful - don't forget, most of your QSOs come from the east.

## SETTING UP THE RIG

With your antenna farm in place, your attention should now turn to the shack. Experience has shown that without a doubt, after antennas and strategy, the biggest improvement in SS performance results from the addition of a second radio.

Now, before you protest that you cannot afford a second radio, consider a few ideas. First, think if you have a ham friend (maybe a non-contester) that you can borrow a rig from. Maybe you like CW and he likes SSB, or is a DXer who cannot fathom why you want to make domestic QSOs. The crucial thing is to find a second rig.

How you set up your second station depends on several factors, such as rig quality, high or low power, etc. The discussion might be easier if we use some scenarios as examples.

Let's assume that you have a competition grade radio w/amplifer, and that you can borrow another similar setup. The best possible configuration for SS is to put dedicate one radio/amp to 40m, and to bandswitch the other station across the remaining bands. This requires that our 40m antennas have separate feedlines from the other bands, which is not too serious of a requirement. This goes along with our previous discussion that focusing on 40m is our prime objective. Using a clever dual-station rig switching setup, you can CQ on one band while search-and-pouncing on another with the second radio to find new QSOs.

Suppose that the second rig either has no amplifier, or perhaps is not quite a contest-grade radio. The second possibility is to hook this second radio to a simple trap vertical or dipole. Always use your main rig to CQ, and sweep ANY other band with the second radio. If you think about it, there are very few stations that you cannot work with a barefoot rig and a multiband antenna in SS. You don't need to be loud, because you won't be CQing with this rig. One good point of this setup is that you don't necessarily have to disrupt your existing antenna setup. Caution is necessary, however, to make sure that the second antenna is adequately separated such that RF from the main antennas do not damage the second radio.

Another plan if you cannot borrow a second amplifier is to go "A" power barefoot. Using the second rig in either of the above configurations will result in a VERY competitive SS station.

How to do station switching is a very personal thing, with each operator having a preference as to what works for them. The absolute minimum is a setup where a single switch transfers all signal lines (headphone, keyer or microphone) between the two radios. The next step is some capability where you can CQ on one radio and monitor the other. One possibility is a split headphone setup, with the right radio in the right ear, and the left radio in the left ear. Some people operate this way ALL weekend, but even so it is preferred to be able to select mono or split operation as the occasion demands. Another option is what K8CC refers to as "Automatic Receiver switching", or ARS. With ARS, with the touch of a button your mono headphones are swapped to the second radio while CQing, and return automatically when the VOX relay drops out. See the CONTEST AERIALS column in the September/October 1990 NCJ, or contact K8CC.

To summarize: concentrate on 40m, high angle skip is preferred, beg, borrow or steal two radios, and be prepared to bandswitch like crazy.

# BEVERAGE SWITCH

**By Elmer "GOOSE" Steingass, WD8LLD**

During the past couple of years, we have batted around various ideas on how to improve the receiving antennas foe 160 meters at WD8LLD. The station presently employs a 650 foot unterminated east/west beverage antenna and a full size inverted vee that is mounted at 80 feet for receiving, in addition to a base insulated quarter wave vertical transmitting antenna. Although the vertical antenna does fairly well on receive, the beverage antenna showed some promise as the primary receiving antenna when used with a preamp. Articles previously published by ON4UN stated that in addition to having slightly better gain, a terminated beverage exhibits a unidirectional pattern as opposed to its bidirectional unterminated counterpart. The question that arose out of reading these articles was what would happen if the termination resistor could be switched from one end to the other to "steer" the beverage either to the east or to the west. This would allow one beverage antenna to become two antennas without the need to run another 650 foot piece of wire. An hour or so with a sketch pad yielded the circuit shown in Figure 1. The box containing K1 and associated circuitry is mounted on one end of the beverage and the box containing K2 and its associated circuitry is mounted at the other end of the beverage wire. An 8' ground rod is driven at each end of the beverage for the ground connections needed to terminate the antenna system (K8CC uses radials that will also work very well).

The Circuit operates as follows. In the default position, the end of the beverage attached to the box containing K2 is terminated to ground through the K2 relay contacts and termination resistor $R_t$. The value of this resistor is chosen so that it matches the characteristic impedance of the beverage wire (More on choosing that later). The signal coming in on the other end of the beverage wire is transformed from the beverage impedance to 50Ω by the L network composed of L1 and C1, passes through a .01μfd blocking capacitor to the RG-58 coax and on in to the shack. In addition to providing a signal path to the receiver, the coax is also the DC path for the relays. When the relays are energized with 12VDC, the end of the beverage connected to the box containing K1 is terminated through the K1 relay contacts and $R_t$. The signal now appears on the K2 side of the beverage, passes through another .01μfd. blocking cap, through the L network made up of L2 and C2, and out of the box to a length of coax that runs back to the shack side of the beverage. this coax enters the K1 box where it is connected to the RG-58 bound for the shack. RF chokes are installed on the coils of both K1 and K2 to prevent any signal coupling from the beverage to the relay coils.

Once in the shack, the coax from the beverage enters the power supply coupler, shown in Fig.2, containing a .01μfd cap to isolate the

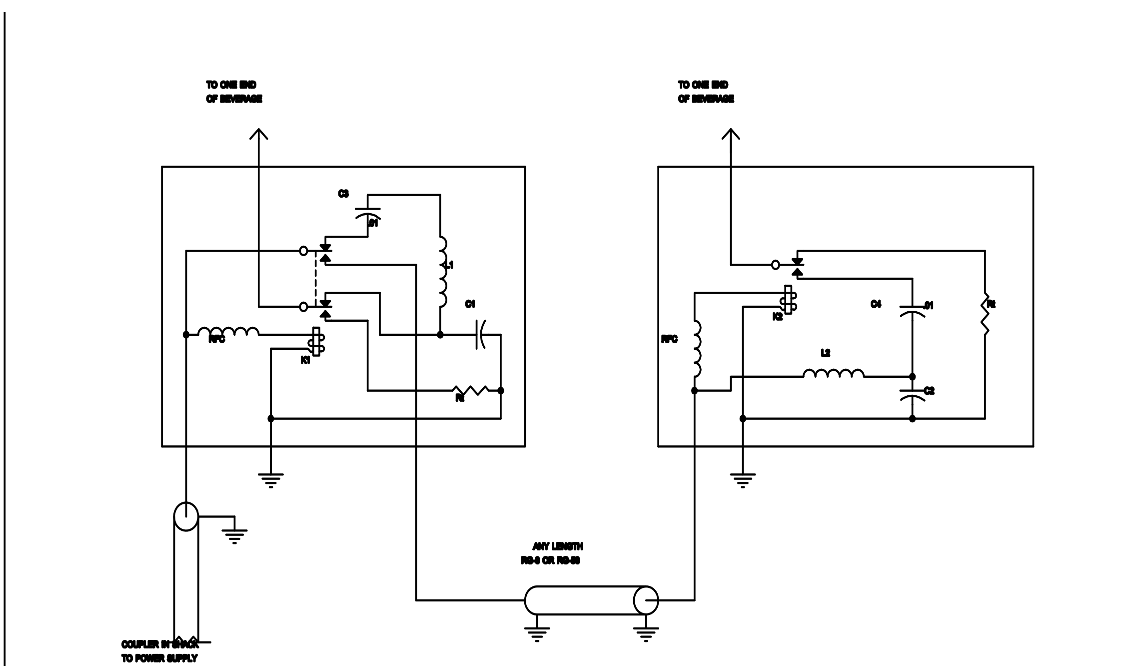



**Figure 1**

signal bound for the receiver from the 12 VDC power supply. This may be a bit of overkill, but the idea is to keep any 12 VDC or possible noise generated by the power supply out of the receiver.

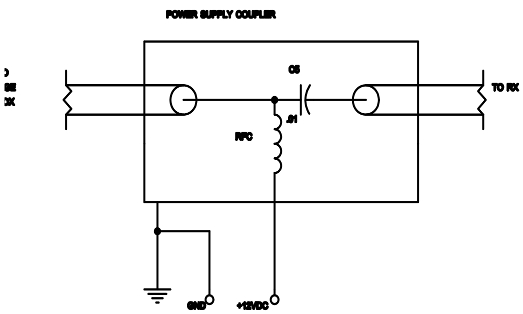


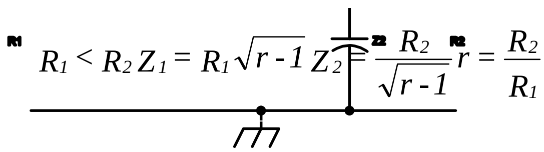

**Figure 2**

It should be noted that ring transformers, such as those mentioned in ON4UN's book or K8CC's article in the NCJ, can also be use din lieu of the L networks used here to match the beverage impedance to 50Ω. Due to the availability of an impedance bridge, we could determine the exact impedance of the beverage and design the L networks to match the antenna right down to 50Ω with no guesswork. If the reader decides to use this approach, it would be a wise idea to purchase a noise bridge or cultivate the friendship of someone who owns or works at an AM broadcast station that owns an Operating Impedance Bridge (OIB). Once the impedance of the beverage is known, the L networks can be designed using the equations shown in Table 1. If it is not possible to locate either a noise bridge or OIB, the network can be designed using the approximate characteristic impedance values contained in Table 2. Keep in mind that some 2experimentation will be necessary as the characteristic impedance of the beverage wire can be greatly affected by the proximity of nearby objects, such as other antennas or trees. It should be noted that the use of an L network makes this system a 160 only beverage system. If multiple band use is planned for the beverage, the ring transformer method described by ON4UN and others is the better approach.

As mentioned earlier, the termination resistor $R_t$ should be chosen so that its value closely matches the characteristic impedance of the beverage antenna. Again, the use of a noise bridge or an OIB will make choosing the proper value of resistance a relatively simple task, as the value can be directly read off the bridge. If it is not possible to gain access to a bridge, the resistor value can be chosen from those listed in Table 2 and optimized through experimentation.

**Table 1**

L NETWORK EQUATIONS



$R_1 < R_2$ $\quad Z_1 = R_1\sqrt{r-1}$ $\quad Z_2 = \dfrac{R_2}{\sqrt{r-1}}$ $\quad r = \dfrac{R_2}{R_1}$

WHERE:
$R_1$= SMALLER TERMINATING RESISTANCE
$R_2$= LARGER TERMINATING RESISTANCE
$Z_1$= SERIES ARM REACTANCE
$Z_2$= SHUNT ARM REACTANCE

There are numerous other methods that can be used to optimize a beverage antenna system for 160 meter operation. The method described here has been used with great success at WD8LLD and presents a simple way of augmenting an existing beverage antenna system.

**Table 2**

CHARACTERISTIC IMPEDANCE OF BEVERAGE ANTENNAS
(extracted from LOW BAND DXING by ON4UN)

| height above ground (ft.) | Characteristic Z (ohms) #16AWG | #14AWG | #12AWG |
|---|---|---|---|
| 1 | 409 | 396 | 383 |
| 3 | 481 | 469 | 456 |
| 6 | 523 | 510 | 497 |
| 10 | 547 | 535 | 521 |
| 13 | 564 | 552 | 539 |

**A 5 Element Alternative to the W2PV 4 Element Yagi-Uda Array**
**By Steve Miller, WD8IXE**

Over the past decade, the W2PV 4 element (PV 4) Yagi-Uda array has been a very popular design for HF contesting and DXing. The first description of this design, that I know of, was in the May 1982 issue of the YCCC Scuttlebutt by Bill Myers, K1GQ, although this article states the design had been around several years. The PV 4 sports good gain, and a very high "Front to Back" (F/B) ratio at the center design frequency on a 0.57 wavelength boom. However, the original article also states:

"The gain and VSWR tend to degrade rapidly at the high end of the band...The center of gravity ... (is) behind the center of the boom...(and) The antenna is unbalanced in the wind ...."

Calculations also show the F/B ratio is rather poor at both band edges. In the manner the PV 4 was first presented, its mechanical and (narrowband) electrical characteristics seem to have room for improvement.

The search for an alternative to the PV 4 began following a discussion with Bob Hayes, KW8N, after the ARRL SSB DX contest. Bob uses the PV 4 as the lower antenna in his 15 and 20 meter stacks. (The top antennas are a KLM 6 for 15 and a NBS 5 for 20.) During the SSB contest, Pat, NZ4K, blew up the gamma match on both PV 4 antennas. This was a surprise since a month earlier, I operated the ARRL CW contest from Bob's station with no trouble. After thinking about who else had mentioned problems with gamma match failure, I realized that most incidents involved a PV 4 antenna. The PV 4 input resistance gets quite low toward the high end of the band where, according to Bob, Pat had been occasionally CQing. Apparently, the low input resistance aggravates the gamma match problem (more on this later). Eventually, I told Bob the PV 4 design could probably be improved at which time he asked me to look into it.

This article presents a new, "optimized" Yagi-Uda design for 20 meters and comparisons to the PV 4. Design calculations used Yagi Optimizer software (YO 4.14) by Brian Beezly, K6STI. Keep in mind that "optimized" is a relative term in antenna design. To qualify as optimized, the design goals and *philosophy* must be well defined. During the design process, the relative importance of the following factors were considered for the electrical characteristics: VSWR, Gain, Pattern,and Bandwidth. Physical factors include: Boom Length, Element Placement, Turn Radius, Wind Load Balance, Weight Balance, and Survivability.

As for the physical design factors, the boom length of the new design is kept the same as the PV 4, 40 feet on 20 meters. Since this design would replace the lower antenna of a stack, elements must be positioned to allow antenna rotation while side-mounted to a tower. The boom to mast plate is placed at the center of the boom. This results in a turning radius very near the theoretic minimum, an important consideration with nearby guy wires.

The constraints of element placement lead to the choice of a 5 element design. Wayne Hillenbrand, N2FB, noticed the parasitic elements of his fine 6 element design were nearly equally spaced (see NCJ Jan-Feb 1986, pp 16-18). The YO starting point for the new design had 4 equally spaced parasitic elements placing the driven element between the reflector and first director. This results in a tail-heavy, imbalanced design. The weight imbalance is easily remedied by weighting the light end of the boom. To ease rotor strain while turning the antenna, the wind-load can be balanced by proper placement of a "dummy" element (made from PVC or another non-conducting element). This information along with survivability aspects should be available in the new book by Dave Leeson, W6QHS, Physical Design of Yagi Antennas, published by the ARRL. As of this writing (March 1992), the book was not yet available at the local ham store so specific details are unavailable.

The main motivation for the new design is to improve the electrical characteristics compared to the PV 4. Since Bob's station is active on CW and SSB (and the band is often full during major phone contests), it is desirable to maintain good VSWR, gain, and pattern across the entire band. YO was run with occasional adjustments of the optimization parameters to find a good overall design. After roughly 20,000 iterations, a suitable design emerged.

Following the design work, I noticed a SHORT5.YAG file on the YO program disk that contained a nearly identical design to the one I had just finished. It had a slightly better VSWR using a longer driven element. I lengthened the driven element of my design then re-optimized and came within 0.25 inches of all element lengths and positions of the SHORT5. (I wish I had looked at that file sooner!)

Several plots show various electrical characteristics of the PV 4 (on the left) and the new 5 element (on the right). The plots are actual YO screens using the WordPerfect "grab" feature (the quality is poorer than hoped). Each plot is auto-scaled so be careful when comparing plots as the scales are different. Dimensions of the design (neglecting boom and element clamp effects) are as follows:

Diameters: 1.000" 0.875" 0.750"

| Position | Length | Length | Length |
|---|---|---|---|
| 0.00" | 72.00" | 68.00" | 74.97" |
| 74.94" | 72.00" | 68.00" | 63.13" |
| 149.88" | 72.00" | 68.00" | 57.98" |
| 288.93" | 72.00" | 68.00" | 55.28" |
| 477.12" | 72.00" | 68.00" | 45.53" |

The VSWR of the new 5 element design is less than 1.5:1 across the entire band. This is a major improvement over the PV 4. The low VSWR results in less reflection loss from impedance mismatch. The better match also keeps the equipment happier and should require less amplifier retuning while moving up and down the band. At Bob's station, the low VSWR will provide a more equal power split between the upper and lower antennas for his stack configurations.

The antenna input resistance remains almost constant across the band and is higher than the PV 4 design. This makes the gamma match less prone to capacitor breakdown. The gamma match calculator in YO had a difficult time finding reasonable rod diameters and spacings to match the PV 4. Gamma match designs for the 5 element design were much easier to obtain. Some 50 ohm gamma match values are listed below.

| Dia. | Spacing | Length | Capacitance |
|---|---|---|---|
| 0.50" | 2.0" | 49.1" | 329 pF |
| 0.50" | 4.0" | 36.6" | 408 pF |
| 0.75" | 2.0" | 63.0" | 571 pF |
| 0.75" | 4.0" | 47.9" | 725 pF |

Capacitance values for the 5 element design average 2 to 4 times more than those for the PV 4. The voltage across the gamma capacitor is therefore lower by roughly a factor of 2 to 4 for the 5 element design thereby reducing the chance of gamma capacitor breakdown. Larger gamma rod diameters and spacings increase the required matching capacitance which further reduces the chance of failure. This problem is more prevalent when a higher impedance step-up is required to match the antenna (those of you with 75 ohm feedlines take note).

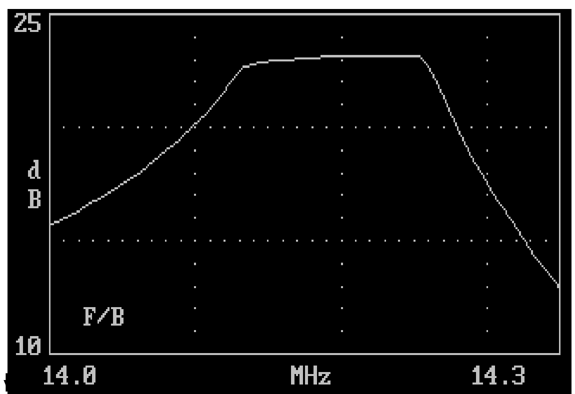
Directivity of the 5 element design is between 9.74 and 9.85 dBi in free space. The PV 4 directivity ranges from 9.80 to about 10.15 dBi in free space. Thus, the PV 4 has a slight edge in directivity however, the reflection loss due to impedance mismatch is higher for the PV 4. A loss of 0.18 dB occurs at a VSWR of 1.5:1 increasing to 0.50 dB at 2:1 and 1.25 dB at 3:1. Taking this into account, the gain of the 5 element design is slightly better on average. The gain difference between the PV 4 and 5 element designs are probably inconsequential over 99% of the time.

The new 5 element design has an improved pattern. The "Front to Back" ratio plots shown for both designs would be more accurately described as "Front to Rear Lobes" ratio. The rear lobe region is 90 - 180 degrees for E-plane plots, labeled as F/B (E), and 135 - 180 degrees for H-plane plots, labeled F/B (H). Four cases were plotted, free space, and above perfect ground at 50, 75, and 100 ft. [only free space E plots are shown - Ed]. E-plane patterns above ground are taken at the main lobe elevation angles, 18, 13, and 9 degrees for 50, 75, and 100 ft. respectively. In each case, the 5 element outperforms the PV 4 "Front to Back" particularly near the low and high ends of the band. The additional rejection from the rear should provide better signal to noise/QRM levels and hopefully will result in fewer repeats when working weak stations.

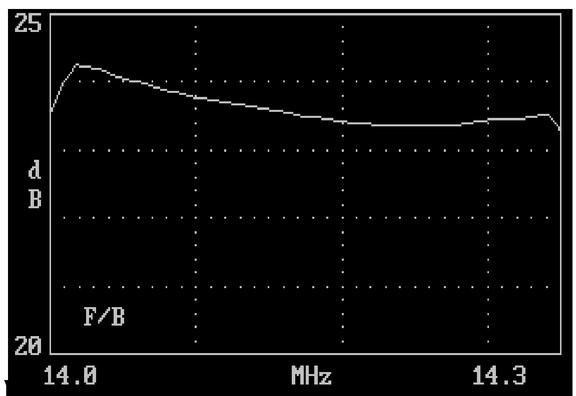
The new 5 element design is an attractive alternative to the PV 4. The electrical design has been improved with respect to the chosen design goals and philosophy. The cost (or disadvantage) of this improvement is the additional wind loading presented by the 5th element (and "dummy" element if used). From my point of view, this cost would be well justified. For those using the venerable 204BA, this design would be a nice step up (more gain, better F/B) and the old 204BA boom could be used for the following 15 meter version:

| Diameters: | 1.000" | 0.875" | 0.750" |
|---|---|---|---|
| Position | Length | Length | Length |
| 0.00" | 72.00" | 44.00" | 27.15" |
| 50.05" | 72.00" | 44.00" | 18.74" |
| 100.10" | 72.00" | 44.00" | 14.73" |
| 185.47" | 72.00" | 44.00" | 13.02" |
| 309.00" | 72.00" | 44.00" | 6.55" |

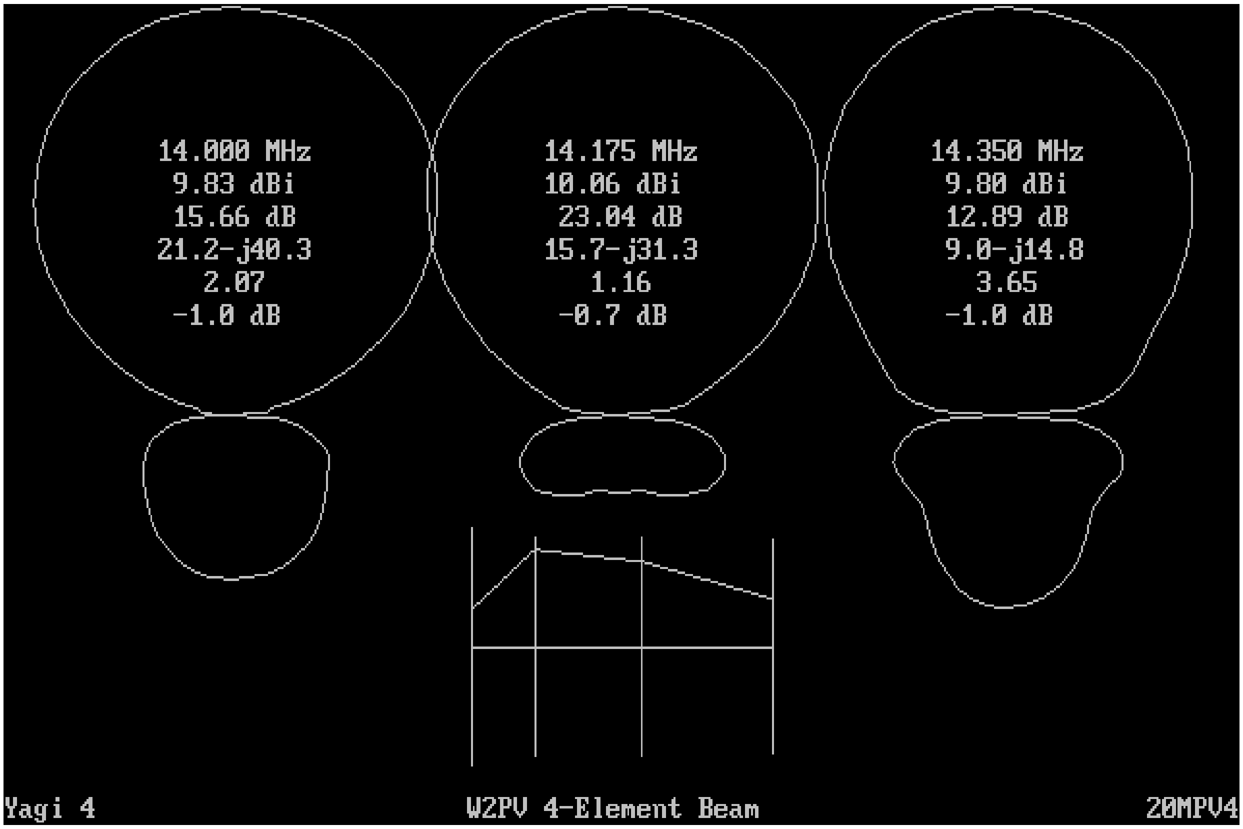
Good luck to those who try this design, it should work well.



F/B (E) - W2PV 4, 40' boom
Gain - W2PV 4, 40' boom



F/B (E) - New 5, 40' boom
Gain - New 5, 40' boom



YO screen - W2PV 4, 40' boom

YO screen - New 5, 40' boom

# DAYTON HAMVENTION TO HANG IT UP

By Jim Stahl, K8MR

After a forty-one year run in which it has become the leading ham radio convention in the world, the Dayton Hamvention is calling it quits. But while this is a major surprise to all hams, the amateur community will not be without a major late April event, as the Hamvention will be moving to Cleveland beginning in 1993. The Cleveland affair will be held at the IX Center in Brook Park, a southwest suburb of the city.

This shocking news was announced at an April 1 news conference in Dayton. The main reason for the move was the increasing space problems at the HARA Arena facility that has been home to the convention since 1964. Hamvention officials spoke of an unresolvable conflict between the increasing popularity of the event and the increasing development of the previously rural area. The final blow was the building of a golf course on land that had served as the parking area for the arena visitors. Faced with the nearly impossible logistical problem of providing shuttle busses for the 30,000 people who attend the Hamvention, organizers began looking at other options.

The Cleveland group, with financial assistance from the city's convention bureau, has agreed to pay the Dayton Amateur Radio Association an undisclosed, though substantial, sum over a ten year period for rights to the Hamvention trademark, exhibitor and attendee lists, consulting help, and an agreement to not compete with the new Cleveland Hamvention.

A spokesman for the Cleveland group said the amateur community will be well pleased with the new site. The IX Center, located right next to Cleveland's Hopkins Airport, is one of the largest single building convention centers in the country. There is enough indoor space to hold not only all the commercial exhibits but most of the flea market as well, although there are no plans to limit the flea market to the indoor space available. Organizers in Cleveland are studying ideas to take advantage of the unique airport location, including charter flights from around the world that could deliver Hamvention visitors directly from their plane to the Hamvention, and perhaps even direct from the plane sales of the latest Japanese ricebox radios. And yes, there are many acres of on site paved parking lots with easy freeway access.

We'll all be a bit sad to say our final farewells to Dayton after many years of fond memories, but we will be looking forward to the new and improved 1993 Cleveland Hamvention!

[*If it had not already occurred to you, this artical is intended to be humorous. The Dayton hamvention is not moving to Cleveland. APRIL FOOLS!-Ed.*]