The **FLASH**

The Official Newsletter of the Mad River Radio Club

October/November 1994

NEXT MRRC MEETING

The next meeting of the Mad River Radio Club will be at the USECA Swap-and-Shop in Warren, MI on Sunday, October 23, 1994. A map and further information about the swap is included in this newsletter. The meeting is planned for 12:00 noon the one meeting room at the swap - check with K8DD or N8CQA at the QRP-ARCI table at the swap for more details.

The ***FLASH*** is the official newsletter of the **Mad River Radio Club**, and is published six times per year in even-numbered months. Submissions of material for the ***FLASH*** are welcome, and may be sent to the editor at the address of the last page.

The Mad River Radio Club is an ARRL-affiliated club of amateur radio contesting enthusiasts. The club area is centered on Findlay, OH, and serves the surrounding states. Membership in the MRRC is open to anyone. Dues are $12 per year, payable to club treasurer **KE8OC**. Please make checks out to **Tim O'Sullivan**.

In addition to six in-person meetings per year, MRRC has an informal net every Monday evening at 8:30 PM Eastern time on 3825 KHz ± QRM. Everyone is welcome to check in for the latest club news and information.

From the 'Big Fish'

By Goose Steingass, WD8LLD

Where has the summer gone? Its already October and time for CONTEST SEASON!!! Fortunately, we got all the antenna work done (for the most part) here at LLD this summer. I had an idea of trying to get another tower up here....but my XYL nixed the idea. She said that if I put up another tower she was going to divorce me. I'm going to miss her!

For all of you who missed the MRRC meetings at KN8Z and Findlay, we as a club have decided to concentrate on the ARRL 160 and CQ 160 Contests for our club project this year. Let's all get on in the 160 tests and aim to win the gavel. With a little effort from our membership, a win is clearly within our reach. If you don't believe that we can do it, look at last year's results and see how well we finished with just a few entries.

To add a little extra incentive for the 160 contests, **Ted, K8AQM** has suggested the idea of a Michigan-Ohio challenge. His idea is that the Michigan MRRC members would take on the Ohio MRRC ops in the ARRL 160 contest. The winner would get possibly a traveling trophy in addition to gloating rights, ad nauseum. Ted was volunteered to be in charge of determining the prize. (This kinda sounds like an Ohio State - Michigan football game, doesn't it?) Come on all you OHIO MRRC guys get on and lets stomp 'em!!!! HI! Seriously though, this is an excellent incentive to get everyone on for the contest. Lets' see everyone on for this test! If you don't have 160 capabilities, contact one of the members that does and do a multi-op with him.

November is coming and that means Sweepstakes. Last year we finished second in the medium club category. I feel that we have an excellent chance of winning the gavel this year. Let's also give this contest the old MRRC try. NEWS FLASH!!! I will even get on for the ssb test from here even though I don't operate that mode very well. Those of you that have big gun caliber stations that just might be dark on the sweepstakes weekends, why not entertain the idea of offering your station to a guest op for the contest? **Pete, N8ATR** told me at Doc's that he would gladly offer his station for cw weekends. I am sure that with a little persuasion, we could get the Sheller machine fired up also on both modes.

In other news, congratulations are in order for **Greg, K8GL** for placing second in the region in high power single-op in the ARRL DX CW Contest and to AA8AV for finishing second in low power single-op in the ssb portion of the ARRL DX Contest in our region. In addition, congratulations are in order for the LLD contest crew on "making the box" in the 1993 CQWW CW Contest. We managed to finish in 4th place in the US. Kudos to ops **AF8A, NZ4K, KU8E, W8TK, AND WD8AUB**! Now all I have to do is get a shorter call for the station. The MRRC ops are making their calls known in the contest results!

Hope to see all you Michigan members at the USCEA Swapfest, the site of the next MRRC meeting in October. This will be held on the weekend prior to the CQWW SSB Test.

Good luck to everyone in finishing up your antenna work before the contest season starts, and good luck in the contests and **GO MAD RIVER!!!**

73, de **Goose, WD8LLD**
gooster@delphi.com

MRRC Club Scores

SEPTEMBER VHF QSO PARTY

K8MFO	210	80	20,400	50/144/432
K8MR	154	77	11,858	50/144

SEPTEMBER CW SPRINT

KW8N	242	40	
K8MR	241	40	
W8FN	217	40	
WD8AUB	227	38	
WM4T	160	37	Op. KU8E - No 80M!

SEPTEMBER SSB SPRINT

KW8N	311	47	
AA8U	258	43	Op. KF8QE
W8FN (op. KU8E)	233	45	Op. KU8E
NZ4K	227	44	At WD8LLD
WD8AUB	101	35	
K8MR	77	34	
WD9INF	84	31	

Jim, K8MR is the official club scorekeeper. If you're going to use the mail, or can get into the Ohio PacketCluster system, send the score to Jim. If you are connected to the Great Lakes PacketCluster System (which covers MI and NW OH), send your score to **K8CC**. In a new development, MRRC score reporting is now possible via the Internet - send scores to **k8mr@barf80.nshore.org**..

Of course, a much better alternative is to turn in the score live on the MRRC net on Monday evenings, 8:30 Eastern Time on 3825 KHz.

MRRC CALENDAR

October 23
- *MRRC Meeting at the USECA Swap (see details in this issue)*

October 29-30
- *CQ World Wide DX Contest (SSB)*

November 5-7
- *ARRL November Sweepstakes (CW)*

November 19-21
- *ARRL November Sweepstakes (SSB)*

November 26-27
- *CQ World Wide DX Contest (CW)*

THANKS!

To everyone who contributed to this issue of the ***Flash***. But, let's not rest on our laurels. As we head into the contest season, it's all the more important that timely MRRC news, results, and tips get into our newsletter. We need YOUR items the ***Flash*** - start working NOW on an article for the next issue!

Deadline for publication:

DECEMBER 1, 1994

From The Editor

By Dave Pruett, K8CC

Well, whaddaya think of this newsletter? I say this not to expound on my layman's editing capabilities, but rather on the quality and quantity of the content. It has been a ***long*** time since we have had a ***ten page*** edition of the ***Flash*** - it makes my job a lot easier when I have lots of material to work with. Kudos to those who contributed to this issue - a job well done!

One area where a lot of contesting-related information is available is on the ***Internet Contest Reflector***. For those not aware of the Internet, it is a world-wide electronic network of govenment agencies, academic institutions, corporations, and private providers linked together to provide exchange of information. NCJ Editor Trey Garlough, WN4KKN, works at a company that is on the internet, and has set up the ***Internet Contest Reflector*** for dissemenating information on amateur radio contesting. How it works is that a user like you or I sends a message to WN4KKN asking to be included on the Reflector. From then on, any E-mail sent ot the Reflector is passed on to you, and you may also send E-mail to be "reflected" to other participants.

There is a great deal of activity on the Reflector, so one can probably spend many hours perusing a day's worth of E-mail. Many people gain access to the Internet through their place of employment. I am not so lucky - Chrysler's MIS people have a deep-rooted paranoia that connecting to the Internet will allow our competitors to suck out our corporate secrets. Internet access is also possible through private providers (usually a public BBS or the like). At this time, I don't have time to pursue this route, so if those of you with access to the Reflector would keep your eyes peeled for interesting items that can be used in the ***Flash***, please do so and pass it on to me (preferably in the form of a ASCII file on disk).

On the club front, I was amazed to see ***fourty people*** attend the MRRC meeting at the Findlay Hamfest. Findlay is usually pretty well attended by the MRRC crowd, particularly in conjunction with the N8ET get-together, but this year has to be a record turnout. We missed not having a N8ET party, since Bill and family was out of town and did not return until Saturday night. The breach was filled by the impromptu MRRC Hospitality Suite hosted by **K8AQM**, **K8DD** and crew at one of the local motels. Word has it that a great time was had by all.

One plan that has not worked out yet is to get **Everett, WZ8P** in the loop for printing the ***Flash***. I have been finding that with an increasing workload at work, two weeks from deadline to publication is not long enough to get the newsletter created and still get it to Everett with enough time to get it into your hands (we usually have a meeting or some other deadline to meet). I hope that we can get Everett in the loop for the next few issues.

Hope to see everybody at the USECA MRRC meeting.

73, Dave, K8CC

Grid Overcurrent Protection for the Alpha 76

By Randy Farmer, W8FN

Owners of the ETO Alpha 76 family of amplifiers like the compact design, low noise and high reliability of the amps, but most live in fear of accidentally damaging their horrendously expensive 8874 tubes. The 8874 is a marvel of power tube engineering, providing large amounts of power from an exceptionally small envelope, but there is a price to pay in that the tube is very fragile; it can be destroyed by improper operating conditions that tubes such as the 3-500Z or the 3CX1200 would simply shrug off. The big problem is that the allowable grid dissipation of these tubes is only a few Watts. Loading the tube too lightly with drive applied, such as can happen if the wrong antenna is accidentally selected, or grossly overdriving the input, will result in large grid currents that can destroy the 8874 grid in milliseconds. This kind of accident is almost inevitable, especially under contest conditions, where the going can get... uh, intense. Sooner or later operator fatigue or simple brain fade is going to cause a mistake. With these facts in mind, and looking at the ever-increasing cost of replacement tubes, I decided soon after acquiring my Alpha 76 to add circuitry that would protect the amplifier tubes from accidental grid overcurrent.

The simple circuit I built and installed into the amplifier samples the grid current and automatically takes the amp off-line if the grid current exceeds a preset value. The circuit uses readily-available parts and does not require butchering of the amplifier to install. This circuit was developed for my Alpha 76, which is one of the original variants, circa 1977. I have not looked at the schematics for subsequent versions, but I would be greatly surprised if there were significant differences in the basic design. The grid trip circuitry was built on a piece of copper-clad perfboard and installed behind the amplifier's front panel near the HV/Control board. The RESET pushbutton switch and the ALARM LED were installed in holes drilled (carefully) in the front panel.

Figure 1 shows the schematic of the amplifier's bias and grid metering circuitry and the added grid trip circuitry. Grid current is measured in the amplifier by sampling the voltage across 10Ω grid shunt resistor R28 on the HV and Control circuit board. (Note that this resistor is only a ¼ Watt resistor in the Alpha; look inside a 3-500Z amp such as the SB-220 and you will find a 2-5 Watt grid shunt resistor. This should give you a clue about the expected levels of grid current in this amplifier relative to its more robust cousins.) Cutoff bias of 28 volts is applied to the cathode of the power tubes when the amplifier is in Standby by means of R18. When the amplifier is on line the T/R Return line is pulled to ground, thus grounding the anode of Zener diode D8 and providing a 5.1V operating bias to the cathodes of the 8874s. As the amplifier's grid current increases, the voltage drop across grid shunt resistor R28 increases. Since the low side of R28 is clamped at 5.1 volts by the Zener diode, this means increasing grid current will cause the voltage at the cathode of the tubes to rise. The voltage across R28 is measured by the amplifier's metering circuitry when the GRID position is selected on the front-panel function switch (as it should always be). The full-scale 150 mA value of the grid current meter corresponds to a voltage of 1.50 volts across R28.

The added grid trip circuit consists of a comparator with an adjustable threshold that monitors the voltage across R28. When the grid current rises high enough that the voltage across the grid shunt resistor exceeds the threshold voltage, the comparator output activates a latching relay to take the amplifier off-line by breaking the return to ground for the T/R relay provided by the exciter at the rear-panel RELAY jack. The latching action of the grid trip relay requires that the operator manually reset the grid trip circuit by means of an added front-panel RESET button to return the amplifier to operation.

The grid trip comparator is one section of an LM324 quad op amp, available at Radio Shack. The 324 was used in lieu of a true comparator such as the LM339 due to its low voltage single-supply capability and the ability of its output to source current without requiring additional components. In this circuit, a couple of milliamps are stolen from the Alpha's nominal 5.1 volt bias circuit to provide power. Note that the power is taken from the cathode side of R28 in the bias circuit in order to prevent the grid trip circuit's operating current from flowing through the grid current sensing circuitry. Although this means the supply to the op amp will fluctuate with the amplifier's grid current, this is not a problem due to the op amp's high power supply rejection ratio. When the amp is off-line the 324 supply pin rises to the +28 volt cutoff bias, but this is well within the device's ratings.

The reference input of the comparator (the op amp's inverting input) is tied to the +5.1 volt bias established by D8, the amplifier's bias diode. Current flow into the reference input is limited to a very low value by 10K resistor R1. The sense input at the op amp's noninverting input is taken from the arm of potentiometer R3, which is connected between the cathode side of R28 and ground. The grid trip point is set by varying the setting of R3. Diodes D1 and D2 across the potentiometer limit the total adjustment range of the trip point to two diode drops (approximately 1.2-1.4V), or about the same as the full-scale range of the amplifier's grid current metering. Under normal operating conditions, the voltage at the wiper of the trip set pot will be less positive than the reference voltage at the comparator's inverting input and the output of the op amp will thus pull to near the negative supply (ground). When the voltage at the wiper of the set pot rises to a value of only a millivolt or two above the reference voltage because of excessive grid current, the output of the op amp jumps to near the positive supply voltage due to the high open-loop gain of the op amp. The output of the comparator drives relay driver transistor Q1, which turns on when the comparator trips and actuates DPDT grid trip relay K1.

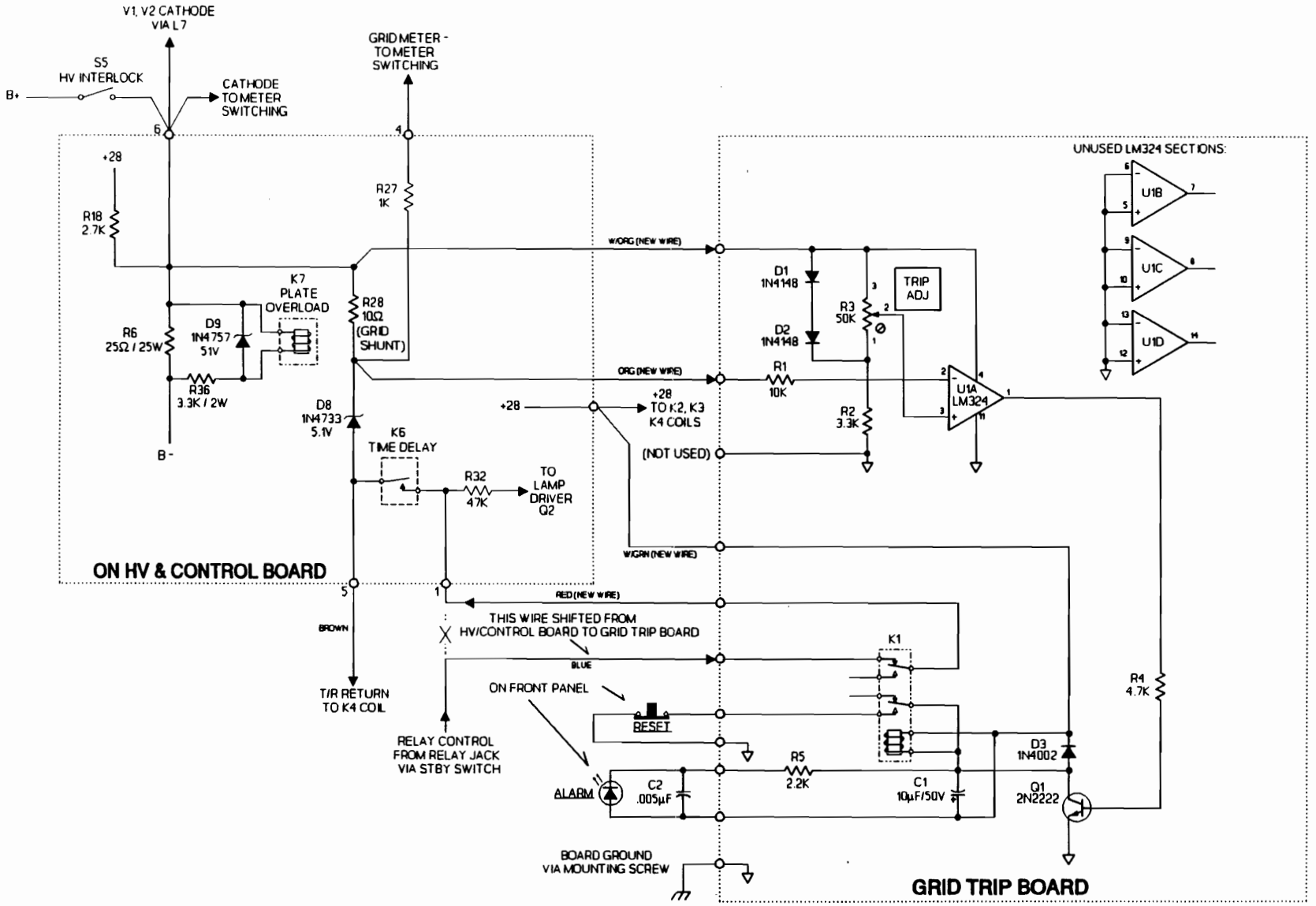
Grid trip relay K1 completes the circuit between the relay control jack and the cathode circuit control point through a set of normally closed contacts. When the comparator causes K1 to actuate in response to grid overload this connection is broken, removing control from the exciter VOX line and taking the amplifier off line. The second set of contacts of K1 connects the low side of the relay coil to ground through the normally closed pushbutton RESET switch when the relay is actuated, latching the relay in the "on" condition regardless of the state of the control to driver transistor Q1. Thus even a momentary grid overcurrent will trip the relay and cause it to remain latched until the operator manually resets the circuit by pressing the RESET switch. 10µF capacitor C1 across the coil of K1 serves as a small time delay to require a momentary hold of the RESET switch to clear the fault condition and is not really required for proper operation. The red ALARM LED connected across the relay coil serves as a visual indication of the fault condition. (On more than a few occasions a mysterious drop in rate has been explained immediately by a quick glance at the front panel of the amplifier!)

This simple protection circuit has served me well over the 12 years or so I have owned my Alpha. It has undoubtedly helped to preserve the life of the tubes, which as far as I know are the ones that were installed at the factory in 1977. A fair number of different operators have operated at W8FN over these years, and just about all of them at one time or another have had occasion to press the RESET button on the Alpha front panel. Every time it happens I am glad I took a couple of hours to build and install this little gadget. I'll trade a few moments of temporary consternation for a $700 retube bill any time. Remember, *stuff* happens; maybe if you see it, you won't step in it!

NA Update Disks Available

LTA, publishers of *NA*, announces plans for the release of version 9.12 of the contest logging program. This latest version includes all program improvements and bug fixes, and will be mailed at no charge to all registered users of *NA* Version 9 within the next week.

This is the third general release of *NA* Version 9 provided free of charge to the user community. Release 9.01 went out immediately after the Dayton Hamvention, while release 9.03 was sent to users immediately prior to ARRL Field Day.



W8FN
31 AUG 94

Figure 1. ALPHA 76 GRID OVERCURRENT PROTECTION

80 Meter Verticals

By Mike Socha, W8UA

Back in 1984 I put up my first set of 80 meter phased verticals. These consisted of two pieces of #14 wire suspended on nylon ropes from the top of my 120' tower. The two wires were separated about 65 feet, or 1/4 wavelength, and fed "endfire" with a 90 degree delay line. A simple switchbox was used to change directions. This antenna had two switchable broad lobes in a cardiod type pattern. The performance was predictable, 15-20 dB f/b ratio, and probably 2-3 dB of gain. I didn't have the biggest signal on 80, but I sure could hear well. It's amazing what a little directivity can do to greatly increase the signal to noise ratio on the band.

The verticals were cheap and simple, and performed well, but were not without some annoying problems. For one thing, the nylon support ropes would stretch and cause the wire verticals to droop. At times, there would be several feet of slack in the vertical elements, which ended up on the ground. Stretching of the wire elements was another problem. And of course, the antenna was susceptible to icing in the winter. One other problem I had to deal with was that of tree branches growing up and getting tangled in the support ropes. Trimming 60 foot trees was not an option I was willing to consider. After three years it was time to make a change.

After mulling over the options, I decided on building new verticals using 2 inch irrigation tubing. At the time, irrigation tubing was easy to obtain. There was a dealer in Ann Arbor that stocked both 2 and 3 inch. I understand it has become difficult to find, but that is another story. I bought three 30 foot lengths of the 2 inch stuff, and hauled it home on the roof of my Pontiac.

There are many options to consider when deciding to build full size 80 meter verticals out of 2 inch tubing. One option is to use 2 inch tubing the full length. Another option is to start with 2 inch tubing, and use several smaller diameter sizes to taper the length to the top. Yet another option is to start with a manageable length of 2 inch tubing, say, 40 feet or so, then using a reducer, use small tapered tips to complete the length. I chose the latter. Of course, it was easy for me to make a design decision since I just happened to have some machined donut reducers and small diameter element tips left over from my Wilson-type 2 el 40 meter yagi.

I cut one of the 30 foot pieces of tubing in half, and with a short length of 1 3/4 inch tubing, spliced each half to the end of the other two 30 foot lengths. I now had two 45 foot, 2 inch verticals. Using the donut reducers, I added 18 foot tapered tips to the two 45 footers. The tips are made of 7/8, 3/4, and 5/8 inch tubing. This makes for light weight, and small wind load. The inset drawing shows the details of how the reducers are used to join the 7/8 inch tips to the 2 inch tubing.

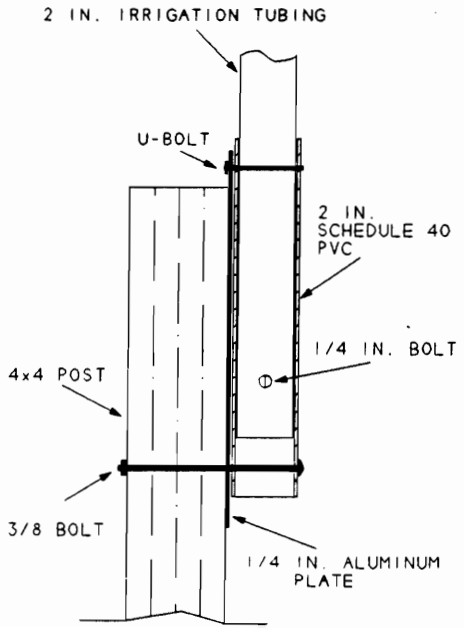
I now had to decide on what type of insulated base to use for my two 63 foot verticals. I knew that there had to be something as simple as, but more elegant than a coke bottle. The accompanying drawing shows the details of my insulated base design. It is simple, inexpensive, and functional, and has been trouble free for the last 7 years.

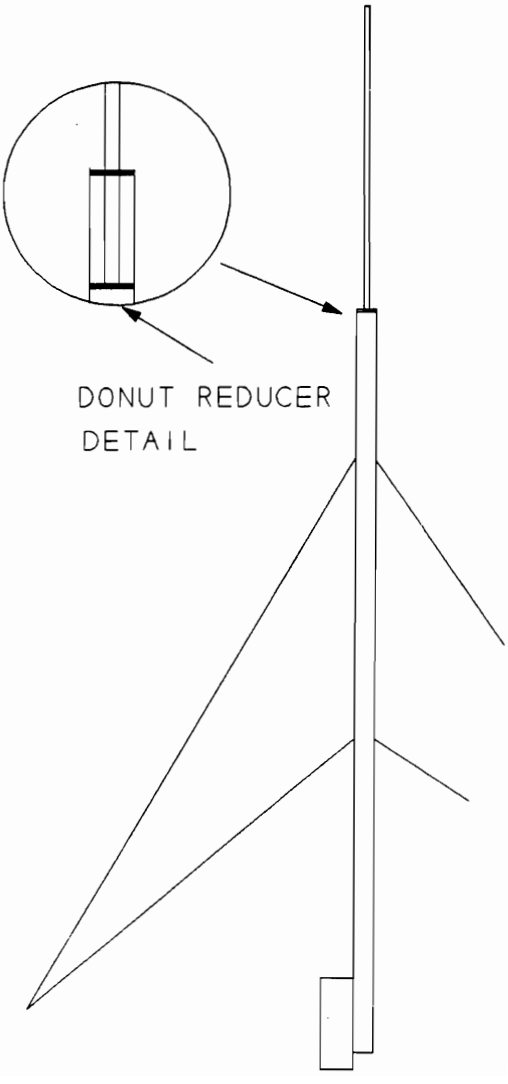
The heart of this design is an 18 inch long piece of 2 inch schedule 40 pvc pipe. It has an inside diameter of 2 inches, and the irrigation tubing makes a nice fit. I use a 1/4 inch bolt to hold the pvc to the tubing. If anyone has tried to lift up a 63 foot spaghetti vertical, they will appreciate the fact that this design incorporates a fold over feature. A 3/8 inch bolt through the lower part of the pvc pipe acts as a hinge. I use a piece of wolmanized 4x4 lumber as the main support. The 3/8 bolt goes right through the 4x4, holding the lower part of the pvc in place.

An aluminum plate, 4 x 18 x 1/4 inches is mounted up against one side of the 4x4. It sticks up above the top of the 4x4 about 2 inches. There are two holes drilled near the top of the plate to accommodate a U-bolt. After the element has been raised to the vertical position, a U-bolt is used to fasten the upper part of the pvc insulator to the aluminum plate. That's all there is to the base.

The vertical can be walked-up with the help of two or three people in just about 2 minutes. I have two sets of nylon rope guys that have held these verticals up for the last seven years. Even when the nylon ropes stretch, the elements remain reasonably straight.

The full size aluminum elements have noticably better bandwidth than the wire elements did. The 63 foot elements are resonant at 3.8 Mhz, and about 6 turns of coil at the base brings will bring the resonant frequency down to 3.5 Mhz. The SWR bandwidth is about 100 khz, under 2:1. Although this article describes elements made of 2 inch tubing, the base mount can be scaled for any other size tubing you might use.





160M for Little Guns

By Dave Pruett, K8CC

As mentioned elsewhere in this issue, MRRC has decided to make a maximum effort in the fall 160M contests to see what our club can do in the Club Competetions. To be successful, we must encourage EVERYONE to get on the air. Many of MRRC's big stations like **KN8Z**, **WD9INF**, and **K8CC** already know what they will be doing that weekend, so here are some tips for the 160M "little gun" to plan for some fun operating in the 160M tests.

The first thing to realize is that W8's are in a pretty good spot to make lots of easy QSOs in the 160M contests. Its a lot like Sweepstakes - lots of QSOs out to around 1000 miles, and yet its not hard to work a reasonable quantity of W6/W7 stations to round out the multiplier total. DX is still a challenge, but is not impossible for even an average station.

I think that the trick to enjoying a 160M contest in something less than "full - banazi" mode is to decide ahead of time how much you want to operate. Ken, AA8AV usually operates my station in the 160M contests, and I am amazed at how he can sit in the chair for hours at a time banging out those QSOs with his enthusiasm intact, particularly on the second day. Perserverence, and a good station, are what it takes to do well in the overall picture, but there ARE alternatives.

First, take assessment of your antenna system. Try to put up a reasonable 160M antenna rather than jury-rigging one of your other HF antennas and you will enjoy the contest a LOT more. Check out the article by N8CQA across the page for lots of great suggestions for an effective skyhook. If you are not a die-hard 160M buff, it's not likely that you have any low-noise receiving antennas. If you're in the construction mood, try K1ZM's RX loop made from CATV hardline (conveniently reprinted in this issue). Maybe string a temporary random-wire across several yards, or try a "slinky" - essentially a beverage laying on the ground. It's lots of fun experimenting with RX antennas - however, don't let your lack of one stop you from getting on in the contest.

If you have an amplifier that covers 160M, I recommend running it, particularly in a part-time effort. More so than the other bands, signal strength is often the issue on 160M, both in being heard and to hold a frequency while calling CQ. With a reasonable antenna such as an inverted-L and a KW, you are an instant "big gun. However, don't despair if you don't have an amp - you can work a LOT of people with 100W.

When running a 160M contest part-time, it is important to judge the best times to operate. Activity is highest at the start of the contest on Friday evening through the early evening up through 07Z or so, tapers off somwhat through the middle of the night with a small increase around sunrise. The pattern repeats on Saturday beginning an hour or two before sunset, although typically fewer QSOs are made the second day since most of the serious entrants have already worked each other.

The part-time entrant can use the knowledge of activity to assess when to operate to his or her best advantage. With a "big gun" station running a KW and a big vertical, you can operate whenever you want - the first few hours can often provide rates of 100+/hr. With 100W, calling CQ during times of high activity might prove futile, so fast "search-and-pounce" is the key. However, when activity is lower, even a small station can call CQ effectively. During these times, you can often attract stations by virtue of being "new meat" on the band - and on 160, like the other bands, a pileup is often the most effective tool for holding a frequency.

One aspect of the 160M contests that can be fun for small stations is the multiplier structure. In the ARRL contest mults are sections and countries, while in the CQ contest mults are states, provinces and countries. The majority of multipliers are domestic, so there are lots of mults even for a small station to work. Some DX is possible for small stations (there are usually a few "big guns" on from the Caribbean that are easily workable) but the little gun should focus on knocking off all of the available domestic mults to run up the total.

So, what kind of results can you expect as a little gun? With an inverted "L", a KW, and 10 hours of operating time, I would expect around 500 QSOs and 65 multipliers. Lose the amplifier, and its probably 250 QSOs and 50 multipliers. If you can spend more time, the 100W station can probably improve its multiplier significantly, while the KW station will need to start working DX to improve its mult count above the low seventies.

One other reason for YOU to get on the air and improve the club score is to provide QSOs for other MRRC stations. Everyone should be on the lookout for other member callsigns and make an effort to make a QSO. It helps our club score double - the points count at both end.

Hope to see everyone during the ARRL 160 contest. Like I said before, **AA8AV** will be manning the key at **K8CC**, but I have some tentative plans to be a "little gun" myself. See you on the air!

The Michigan-Ohio 160M Challenge

To add some interest to the ARRL 160M Contest, the club is sponsoring a inter-state challenge. We will total the final scores of all the MRRC stations in Michigan vs. Ohio - the state with the highest total wins. We are working on some prizes for the winners, but these are as yet undetermined. Plan now to be on the air in the ARRL 160 Contest and help your state WIN!

160M Antennas for City Lots

By Buck Switzer, N8CQA

At 1.8 MHz, a ½ wave dipole is 260' long, and ¼ wave sloper is 130' and a half-square is 260' x 130'!! However, it *is* possible to bend a 160M antenna into your lot. Antenna wire need <u>not</u> be entirely straight; avoid 90 degree bends. Here are a few choices:

<u>END FED (not random) WIRE</u> - The wire should be at least 130' long. Run from the back of the tuner to the end insulator with a minimum of two radials. Get it as high as you can and as straight as possible. With a tuner, it should work on all bands. Make sure you have a <u>good</u> ground or ground plane to work against or the result is RF in the shack.

<u>INVERTED "L"</u> - Fed outside the shack with coax. Wire should be 130' to 135' long. From feed point, run vertically as high as possible, the balance of the wire is run horizontally, as straight as possible. Trim to desired resonant frequency on 160M, or user with a tuner on all bands. A minimum of two radials from the feed point are recommended.

<u>TWIN LEAD MARCONI</u> - A single band antenna using the "folded dipole" technique to provide a reasonable load to the transmitter. The twin-lead segment is 110' long with both wires soldered to a 20' long piece of #14 or heavier wire. Suspend like an inverted-L with the feed point near ground level with two or more radials. Trim the end wire to the desired resonant frequency - no tuner is required.

<u>¼ WAVE SLOPER</u> - Feed it high on a tower, tie off the end near ground level. These antennas never resonate where they should, depending on the beams on the tower for top loading. Start with 130' of wire and add or trim to the desired frequency. There is some directivity in the direction the sloper is pointed. These wonderful antennas are worth the trouble it takes to get one working.

<u>LOADED TOWERS</u> - Gamma matching or otherwise loading a tower as a vertical can be a very successful transmit antenna. Making one work for 160 or 80 is a complex task which requires a separate article

There are other antennas that can be squeezed into a small lot, but these should get you started. Due to the vertical orientation of most of the above suggestions, your next project will be a receive antenna to lower the noise level. More to come on that subject.

Suggested reading:

"Easy-UP Antennas for Radio Listeners and Hams"
Edward M. Noll, W3FQJ - MFJ-38

"Wire Antennas for Radio Amateurs"
Wm. Orr, W6SAI, Stuart Cowan, W2LX
Radio Publications, Inc. - 93-877

"W1FB's Antenna Notebook"
Doug DeMaw, W1FB
ARRL - #2618

A Simple Receive Loop for 80/160M

By Jeff Briggs, K1ZM
(Reprinted from the YCCC newsletter, the 'Scuttlebutt')

Reasonably good conditions this past contest season have rekindled interest and activity once again on our two lowest frequency bands. As I am often asked about smallHot receiving antennas for 80/160, here's a very simple, yet effective, RX antenna that is a real performer on 160M. As a bonus, it may also be tuned for 80M. Or, use two loops!

The basic ingredient is 20 feet of CATV hardline although the antenna may be made from RG8X or RG59U. Refer to the diagram and parts list as you read the text for specific constuction details.

You start by shaping your 20 foot piece of hardline into a rectangular "quad" with five foot sides. You'll note that the bottom side of the loop (where it is to be fed) actually consists of two 2½ foot sides which attach to a small Radio Shack box using typical UHF connector hardware. The box serves two purposes in that it keeps the feedpoint matching network weatherproof and it also adds rigidity to the bottom of the loop.

After forming your basic loop, you will need to cut the outer jacket of the hardline (the shield only - NOT the center conductor) at the ten foot point of the loop. Assuming that the feedpoint is at the bottom of the quad loop, this places the 1" cut in the jacket at the top center of the loop when mounted in a rectangular configuration.

To cut the jacket, *carefully* make a diagonal cut along the jacket at the midpoint of the hardline. This may be done with a hacksaw. Then make two right angle cuts around the jacket's circumference and you will find that you can easily and safely lift off the 1" of jacket required without breaking or weakening the center conductor of the hardline. Next, tape up the cut point and add some rigidity to the joint by placing some 3/8" wooden dowel along the cut point and tape the whole joint again. When done, you will have a weatherproof joint and will have restored the mechanical rigidity of the cut point as well.

To make your feedline connections, any number of ideas will work. My own preference is to make two cuts in the jacket at right angles, file down the center conductor using a flat file and then jam a PL-258 double-female UHF connector into each side of the 2½' hardline ends using a rubber hammer. The shield connection is made with a 1" hoseclamp. This approach then allows me to fit a UHF double-male connector into each PL-258 which can then be mounted into SO-239 recepticles mounted on opposite sides of the Radio Shack box. I place a third SO-239 female on the top of the box in order to bring in my RG-58 feedline.

After having finished building your loop, you can mount it on a 1¼" *wooden* dowel which makes a fine non-conducting mast. I tape the top of the loop to the dowel with a nail on either side of the hardline just to make sure the taping doesn't slip over time. A six foot piece of furring strip material can be affixed to the dowel at right angles (making a cross) which gives two anchor/tape points for the sides of the loop. The dowel can simply be placed in the ground or, alternatively, you can mount it in a Radio Shack rotator at ground level in order to rotate your loop for directivity. I find that placing the rotator at about two feet above ground level on a TV mast works very well. The 1¼" dowl fits very nicely into the top of the rotator, and the bottom side of your loop winds up about waist high. This makes tuning accessibility very convenient and a breeze to complete.

Referring to the diagram one again, you will see that the two sides of the loop and the feedline come into the Radio Shack box via SO-239 UHF connectors. If your box is plastic, tie the shields together using solder lugs and a bus wire to connect the three SO-239 shells.

Place your tuning capacitor (a 1000 pF ARCO trimmer) in series with the center conductors of the two sides of the loop. This can be done inside the box by placing the trimmer between the two SO-239 center pins. You should place the tuning screw DOWN to facilitate adjustment. Then you add another wire from either side of the trimmer cap to the center pin of the feedpoint SO-239. It does not matter which side of the tuning cap you affix the feedpoint to; either side will work just fine.

To tune your loop, wait until dusk, hook up a feedline and listen to a receiver for maximum signal/bandnoise on 1835 KHz. I do this using two 2M FM HTs. I place one next to my HF radio speaker and use a rubber band to hold the mike switch in transmit. I listen outside at the feedpoint using the second HT and tune the trimmer cap for maximum signal. My preference is to start with the ARCO trimmer fully meshed (i.e., maximum "C") and start loosening the tuning screw which decreases "C". You will find that a hardline loop usually gives a well-defined peak. Sometimes RG8X or RG59U loops produce very broad peaks. What you see is what you get - so, at the end of day, go with it. Remember, 80M will require less "C" than 160M when tuning.

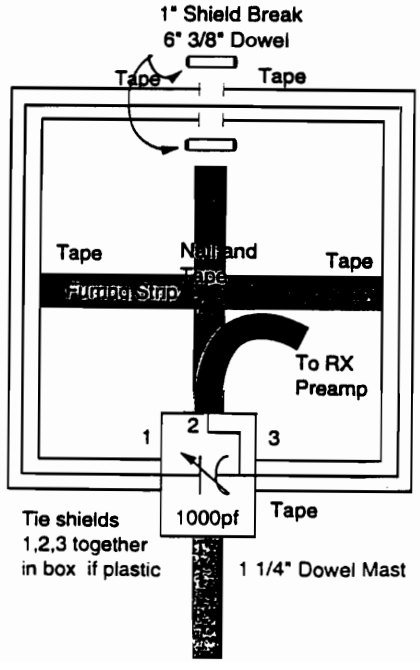
You will find that this antenna produces very low amplitude signal strength at your receiver. I find it to be weaker than most beverages. To compensate for this, a good quality, low-noise preamp is usually required for comfortable listening levels. Two that I have used are the *older* type AMECO PLF-2s (the ones in a black *metal* box) and the Advanced Receiver Research VD 1-30 MHz preamp. Don't even think of the newer plastic junk now being sold by AMECO or the Palomar preamps, which will produce more birdies than you'll ever find at your local pet shop! The old AMECOs can be found in the Yellow-Sheets or at hamfests. The VD 1-30 MHz from ARR continues to be available for about $30; just check QST for ARR advertisements. The only disadvantage about the latter is that it is not tunable and requires a separate switchbox to switch it in and out. So I personally prefer the AMECOs myself but the VD 1-30 is an accpetable substitute and is cheaper to boot. I place these preamps in line with my beverage box common just before the front-end input of my receiver. As with any beverage receive antenna, remember to break this line using a relay whe you transmit or you may even fry the front-end of your radio du to induced RF pickup on the loop.

Loop tuning tip from K8CC:

It is very important to tune the CATV RX loop with the final feedline connected, because it appears that the capacitance of the feedline going to the shack affects loop tuning.

PARTS LIST:

20' CATV hardline
1000 pF Arco trimmer
Radio Shack box 2"x2"x4"
SO-239 (3)
PL-258 double female UHF (2)
Double male UHF (2)
8' 1-1/4" Dowel
1' x 3/8" Dowel
1" hose clamp (2)
Electrical Tape
6' furring strip
#6 screws/nuts (12)
Solder Lugs (3)
Ameco PLF-2 or ARR VD1-30



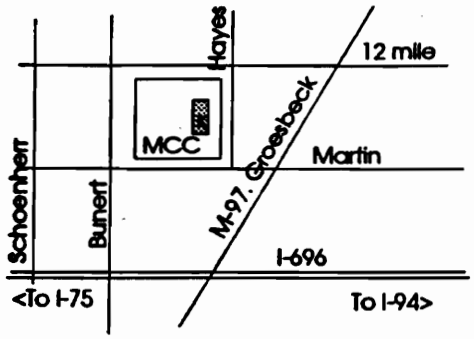
Mad River Radio Club Meeting
Sunday, October 23, 1994

At the USECA Swap and Shop

MACOMB COMMUNITY COLLEGE, SOUTH CAMPUS, WARREN, MI
12 MILE RD & HAYES STUDENT COMMUNITY CENTER (K - BLDG.)

DOORS OPEN TO THE PUBLIC AT 8:00 A.M.

TICKETS AT THE DOOR $4.00 EACH. KIDS UNDER 11 ARE FREE WITH AN ADULT



Exit I-696 at M-97, Groesbeck
Go north on M-97 to Martin
Left on Martin, then right on Hayes
Bldg. K is on left at second crossing

Ham Gear, Electronic Parts
Connectors and Cable
Computer Hardware and Software
VE Testing (Pre-registration req) (No Walk -Ins)
Non ham related gift items
Food service by the Culinary Arts Dept.

Table information:	Virginia,	N8NLS	313-268-069[illegible]
	Kevin,	N8QVX	313-772-8082
VE test registration:	Bill,	N8CVC	313-468-8345
Club Information:	Dave,	KF8CT	313-268-6730

Tables $15.00 each. **$12.00 if purchased by 7-1** Talk in on 147.18+, 146.42 simplex

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ADVANCE REGISTRATION FORM

DEADLINE FOR TABLE REGISTRATION IS SATURDAY OCTOBER 1, 1994
RESERVATIONS AFTER THIS DATE MUST BE CONFIRMED BY PHONE

NO.		COST	AMOUNT	
_____	8' Table Rental			Name _____
	Before July 1, 1994	@ $ 12.00	$ _____	Adress _____
	After July 1, 1994	@ $ 15.00	$ _____	City, State, Zip _____
_____	Swap Tickets	@ $ 4.00	$ _____	Phone _____
	Total amount enclosed		$ _____	

Make ckecks payable to : U.S.E.C.A.
and mail with Legal Size Self Addressed, Stamped Envelope to:

VIRGINIA PRZEKAZA
34473 Coachwood Dr
Sterling Hts, MI 48312

Sponsored by: Utica Shelby Emergency Communications Association

SWEEPSTAKES RECORDS FOR MICHIGAN
through 1993

CW Single Operator - High Power

93	WA8ZDT	182,704-1202-76
93	K8CC	181,336-1193-76
91	K8CC	182,490-1185-77
90	K8CC	171,300-1142-75
83	WA8YVR	159,100-1075-74
88	K8CC	156,436-1057-74
78	K8LX	153,150-1021-75
83	K8CC	152,144-1028-74
86	K8CC	151,848-1026-74
77	K8LX (WA8ZDT)	151,694-1039-73

CW Single Operator - Low Power

74	W8CQN	137,492- 929-74
91	KW8G	134,288- 872-77
93	AA8AV	133,912- 881-76
92	KW8G	132,440- 860-77
92	AA8AV	132,132- 858-77
76	W8CQN	131,254- 899-73
92	WG8M	121,650- 811-75
91	AA8AV	116,732- 758-77
75	W8CQN	116,060- 829-70
91	KJ8A	113,700- 758-75

CW Single Operator - QRP

92	WK8V	51,830- 355-73
91	WK8V	47,334- 343-69
88	WB8AAX	42,600- 300-71
93	WK8V	42,560- 304-70
91	W8VCF	41,538- 301-69
91	N8CQA	39,480- 282-70
92	WB8AAX	38,364- 278-69
89	WK8V	32,508- 258-63
91	WB8AAX	32,368- 238-68
89	N8CQA	32,256- 252-64

CW Multi-Operator

87	K8AQM	162,504-1098-74
92	K8LX	157,542-1023-77
91	K8LX	147,440- 970-76
92	KV8H	129,514- 841-77
77	W8UM	125,720- 890-70
86	K8AQM	120,960- 840-72
91	WB8OHO	112,274- 769-73
80	W8UM	110,016- 764-72
79	W8UM	105,376- 712-74
84	K8JRK	102,200- 700-73

SSB Single Operator - High Power

93	K8CC (WD8IJP)	294,294-1911-77
93	AA8U	239,316-1554-77
91	K8MJZ	239,008-1552-77
92	K8MJZ	236,852-1538-77
92	K8CC (WD8IJP)	231,000-1500-77
90	K8MJZ	228,912-1506-76
92	AA8U	226,534-1471-77
78	K8LX (WA8ZDT)	223,200-1488-75
81	K8LX (WA8ZDT)	222,592-1504-74
90	K8CC (WD8IJP)	220,800-1472-75

SSB Single Operator - Low Power

92	AA8AV	186,494-1211-77
93	AA8AV	167,706-1089-77
90	N8CXX	154,924-1006-77
83	WD8MGQ	154,364-1043-74
91	AA8AV	153,230- 995-77
85	WD8MGQ	151,548-1038-73
88	WD8MGQ	148,808- 979-76
92	N8NVT	126,588- 822-77
84	WD8MGQ	125,060- 845-74
90	AA8AV	120,736- 784-77

SSB Single Operator - QRP

93	WB8G	100,408- 652-77
89	KB8DLH	43,216- 296-73
89	W8VWY	28,676- 214-67
91	KODD	27,950- 215-65
92	N8CQA	26,980- 190-71
87	K8DD	11,960- 130-46
88	W8VWY	9,328- 106-44

SSB Multi-Operator

93	K8MJZ	246,092-1598-77
87	K8CC	214,500-1430-75
87	N8CXX	205,050-1367-75
87	K8MJZ	204,150-1361-75
83	WD8CRY	192,992-1304-74
93	KG8CO	188,342-1223-77
91	K8LX	182,550-1217-75
81	K8SS	182,208-1248-73
86	W8SH	179,672-1214-74
82	WD8CRY	179,376-1212-74

SWEEPSTAKES RECORDS FOR OHIO
through 1993

CW Single Operator - High Power

93	KW8N (WD8IXE)	180,424-1187-76
92	KW8N (WD8IXE)	180,334-1171-77
92	WR3G	179,256-1164-77
93	KQ8M	178,752-1176-76
91	WR3G	173,866-1129-77
91	KW8N (WD8IXE)	172,172-1118-77
90	KW8N (WD8IXE)	169,800-1132-75
90	NG8D (K3UA)	165,376-1088-76
92	WOCG	162,944-1072-76
78	K8NZ	161,320-1090-74

CW Single Operator - Low Power

92	K8CX	153,846- 999-77
93	K8BL	149,264- 982-76
93	K8CX	144,298- 937-77
89	K8BL	136,192- 896-76
91	N8AA	132,132- 858-77
88	K8BL	130,720- 860-76
92	KV8Q	129,206- 839-77
92	N8AA	127,680- 840-76
93	KV8Q	121,600- 790-76
87	K8ND	117,822- 807-73

CW Single Operator - QRP

92	WA8RJF	82,950- 553-75
90	K8BL	75,000- 500-75
93	WA8RJF	65,036- 458-71
90	WA8RJF	60,480- 420-72
89	K8ATQ	58,756- 397-74
89	W8IDM	54,312- 372-73
88	W8IDM	53,136- 369-72
89	WA8RJF	50,700- 338-75
87	W8IDM	45,560- 335-68
93	W8VK	36,708- 266-69

CW Multi-Operator

83	WB8JBM	161,616-1092-74
82	WB8JBM	154,944-1076-72
81	WB8JBM	154,322-1057-73
84	WB8JBM	150,088-1028-73
91	NG8D	147,224- 956-77
74	WB8JBM	147,022-1007-73
91	W8EDU	142,912- 928-77
79	K8ND	142,080- 960-74
81	K8ND	141,044- 953-74
93	W8EDU	140,296- 923-76

SSB Single Operator - High Power

93	KW8N (NZ4K)	270,424-1756-77
91	K8AZ (K8NZ)	238,700-1550-77
92	NZ8O	225,148-1462-77
78	W8KIC (WB8MZZ)	219,450-1463-75
81	K8ND (WB8MZZ)	217,412-1469-74
76	WA8PLZ (WB8AYC)	213,014-1459-73
77	W8KIC (WB8MZZ)	208,800-1392-75
78	K8AZ	207,150-1380-75
78	K8MR	205,350-1369-75
93	NZ8O	204,974-1331-77

SSB Single Operator - Low Power

93	K8BL	154,616-1004-77
92	K8BL	148,610- 965-77
89	K8BL	142,142- 923-77
81	K8EE	118,114- 809-73
82	K8EE	113,150- 775-73
93	N8AA	111,650- 725-77
86	KQ8M	108,624- 744-73
87	K8BL	104,390- 715-73
80	WA6EZV/8	104,340- 705-74
93	WT8C	101,850- 659-75

SSB Single Operator - QRP

93	WA8RJF	64,824- 438-74
92	W8ILC	64,064- 416-77
92	WA8RJF	61,500- 410-75
90	AA4YZ	50,850- 339-75
89	NQ8Y	47,850- 319-75
88	N8EIH	42,918- 311-69
88	NQ8Y	36,938- 253-73
92	AA4YZ	36,412- 186-71
93	W8VK	33,434- 229-73
93	NQ8Y	31,800- 212-75

SSB Multi-Operator

92	KW8N	304,766-1979-77
91	KW8N	294,140-1910-77
89	KW8N	260,106-1689-77
85	WB8JBM	255,744-1728-74
87	WD9INF	245,100-1634-75
91	WD9INF	244,112-1606-76
83	WB8JBM	229,252-1549-74
86	WB8JBM	228,068-1541-74
92	K8CX	226,688-1472-77
89	WD9INF	207,480-1365-76

Treasurer's Report

I know this is starting to sound like a broken record, but I still don't have an accounting for the 1994 Dayton Suite. Assuming that we broke even as reported by AA8FE, heres where we stand:

Balance reported 9/94	$799.06
Income	
Dues collected at Findlay Meeting	$144.00
Dues via direct mail	$12.00
Expenses	
Findlay Hospitality Suite	$44.54
August Flash Printing expenses	$50.20
ARRL DX Plaque	$50.00
Checking Account Maintenence (Sept)	$3.00
Balance 10/94	$807.31

There are a few outstanding expenses to straighten out with K8CC for Suite expenses and past ***Flash*** printing, but even when those are taken care of we will be on solid financial ground. With a little help from Mr. Bruening, I hope to have a complete status for the next report.

Respectfully Submitted, **Tim O'Sullivan, KE8OC**

Hal Brooks (W9VW) Memorial DX-pedition

By Doug Klein, WD8AUB

Hal Brooks, W9VW was a super person, and indeed a great contester. Many people will recall W9IOP and the big signals and scores that Larry's station generated. However, not everyone knows that the operator (even in the single-op entries) was not always Larry, but often Hal.

Hal passed away in 1993, but his memory will always be with us, especially those of us who knew him well. Last year, **Don, K8MFO** discussed putting together a group of us who knew Hal and getting a call with VW in the suffix to remember Hal by (and to play radio, too!). The plans fell through at the last minute but, resurfaced again this year.

I am pleased to announce that a number of MRRC members (some are FOC members too) will be going to Provodenciales, Turks & Caicos for CQWW CW to put **VP5VW** on the air as a multi-multi entry. The main idea is to put the call on all the bands all the time and make VP5VW be heard anytime you tune across a band. The operators will also be focusing on good, clean cw in Hal's memory.

We will be taking 5 notebook computers, and NA (of course) to log with and hope that you will take the time to work us on 6 bands. QSL via W8TPS. The operators include: **K8MFO, WD8LLD, WD8AUB, W9VNE, W6RGG, W0CG, WA4DRU, WT8N, and WW8J.**

MAD RIVER RADIO CLUB
Dave Pruett, K8CC
2727 Harris Road
Ypsilanti, MI 48198 USA

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