ATCO NEWSLETTER

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The ATCO newsletter is the official publication of a group of amateur television operators known as "AMATEUR TELEVISION IN CENTRAL OHIO Group Inc." and is published quarterly (January, April, July, and October)

ATV REPEATER UPDATE

ATCO HAM IN THE SPOTLIGHT

This month the ATCO Newsletter honors Wilbur Wollerman K8AEH. Wilbur's ham radio activity has been seen and heard for many years and most recently he made a new world record ATV contact. Congratulations, Wilbur!(see inside). I remember years ago when Wilbur would put on "crazy wigs", stand in front of his ATV camera late at night and wave at myself, Bill Parker W8DMR, Fred Yost K8JGY and others. It was much tougher to be seen then because in those days most equipment was hand built and quality was hard to come by. Wilbur, your hamshack looks as good now as it did then. (still one of the best equipped I've seen).

NEWS FROM SOUTH OF THE OHIO BORDER...OVWIA CELEBRATES 1ST ANNIVERSARY.

The Ohio Valley Wireless Imaging Association ATV repeater will be one year old on May 31, 1995. This inband 70cm repeater is located in Huntington, WV and has the output on 421.25 and input on 439.25 Mhz. Both transmitter and receiver are built by PC Electronics. The Mirage repeater amplifier feeds a home-brew dual slot antenna mounted at 1205 ft. above sea level. Another dual slot is mounted at the top of the 205 ft. tower at 1225 ft. I recently inspected both dual slots during a site cleanup day and discovered they look as good as the day they were installed. - Thanks Art for the mylar. It really works! The repeater controller has a 147.45 receiver. #9 will key the repeater video and cw identifier and *61 will hold the ID on for one minute. A complete TVRO satellite receiving system was donated and will be installed at the repeater site soon. Every Friday night from 8 till 10pm we have an ATV roundtable net. We take check-ins on several local repeaters and can link to a near by Columbus repeater if anyone is interested. It is a good time to check for band openings to the south.

BALLOON LAUNCH # 4

I am in the process of building a new payload for the upcoming ATV balloon launch scheduled for late May or early June 1995. A color camera showing the balloon, ground, and horizon will be on board. A new ATV transmitter may be ordered for this flight. This activity has done more to promote ATV in our area than any other activity to date. Hundreds of hams across the tri-state area had a hand in the past launches so if you would like to join in the fun and set up a chase team to help track and recover the payload please contact me and I will let you know the exact date and time of the launch. We had 15 chase teams on the last balloon launch and a coon hunter found the payload 30 ft. up in a tree at 3:00 AM. We told him next time we would put some scent on the payload so his dogs could track it better! If you can't make it down for the launch I hope you will monitor the flight and pass along video reports via several repeaters that will be linked for this event. I will say 73 for now and will be looking for ATV from the north on my monitor.
Ron...WA4GSS

FLASH!...NEW RADIO SPECTRUM DISCOVERED

The current issue of Worldradio notes that investigators have recently uncovered a number of lost documents from a classified research project conducted during World War II. The project has now been declassified, making this report possible. This research discovered a hitherto unknown region of electromagnetic spectrum below zero cycles per second. Although referred to in the documents as "Negacycles," this region will no doubt now be known as a "Negahertz." Several interesting phenomena were reported concerning the properties of this region and the equipment used in the test. The conclusion of the limited research showed that antennas of negative length, termed "imaginary antennas," performed remarkably well at these frequencies, particularly when buried. Signals improved when the buried depth increased and installation rules "the deeper the better" works best.

War time security prevented extensive evaluation of propagation in this new portion of the spectrum, but the documents indicate that researchers were optimistic about its potential for meeting special communications needs. Preliminary findings indicate that the best propagation seemed to coincide with sunspot minimums. The Maximum Useable Frequency in Megahertz (MUFM) becomes Minimum Usable Frequency in Negahertz (MUFN).

Space limitations don't permit inclusion of the many pages of complex mathematical calculations supporting various conclusions in the research notes. Suffice it to say that the imaginary "J" numbers in the calculations take on a whole new real meaning when applied to these frequencies. Where the "skin effect" explains how Megahertz r.f. currents flow on the outer skin of a conductor, Negahertz currents flow exactly in the center of the conductor making dual use of a feed line possible simultaneously. As you would expect, the net R.F. current flow for signals of the same power and frequency is zero allowing high power feedlines to be very small.

One of the more critical problems researchers encountered was severe component chilling when running at high power on these frequencies. A number of defrosting methods were tried, but only with limited success.

The entire project was finally discontinued in mid-summer 1943, when tests conducted in the Mojave Desert ended in the loss of several members of the research team to hypothermia, exposure and frostbite. Since all of the research was conducted entirely with vacuum tube equipment, it remains for modern day researchers to explore the impact of newer solid state technology on this problem. (continued next page)

APRIL FOOL!!!.....
article by: Dick Sisson, W5ONL From Worldradio, April 1995 via: The Chattering Relay, Cuyahoga Falls ARC, Cuyahoga Falls, OH Path: K8NIO via WP61. submitted by Bill...W8DMR.

VIDEO CAPTURE WITH VGA TO NTSC CONVERTERS

A couple of years ago, a video capture board would have cost over $1,000, but today they are becoming more and more affordable. I found one at the "CompUSA" computer store in Columbus, Ohio for $229. This particular board called PC PrimeTime seems to appear in a lot of places. Here are some of its features:

- TV on the PC! That's right! It has a cable ready tuner which means it can receive cable channel 58 (427.25 Mhz) as well as all amateur 400 mhz tv channels. It also has video inputs for a VCR / camera.
- Thirty frames per second, 2 million colors video capture - this means you can record your own video clips. Beware: it takes a lot of disk space to store these clips but they are NEAT!!
- **Full screen** playback of Microsoft Video for Windows and video clips is provided. Usually, programs that supply such video clips provide a very small 2 inch by 3 inch (or so) picture on your PC video screen.
- Onboard Hardware video compression engine.
- Scalable, movable video window - move window with video source anywhere on screen and any size.
- Capture, save and print images - what you capture you can put into a document. And, if you've got enough memory, you can capture seconds worth of live action video that you can then re-transmit!
- Graphics overlay with chroma keying.
- Stereo Audio amplifier.
- On-Screen Remote Control.

You must have Windows 3.1 or greater to use it. It will **not** run with Windows NT, but I do have it running with Windows95 in only 8 meg of memory. You need to be in a 640 X 480 VGA mode to use this particular board. You will notice a definite difference in price for the boards that work in resolutions higher than that. However, in my case the VGA to NTSC card only works at 640 X 480 so I have to leave my Windows in 640 X 480, but lately that's ok! You see, I've been wearing those @#!@ bi-focals for about 5 years now -- and I just can't see those small screens well anymore!

The board must connect to the "feature connector" on your VGA board which is a 26-pin connector on the board. A word of caution to any of you who are considering the purchase of a Pentium... Most of the video capture boards I have seen require connections to the feature connector on the VGA board. According to the technical people at PC PrimeTime, these boards won't work on PCI video because some of the signals that used to be present on the feature connector are now part of the PCI bus. However, you can still run your video off an ISA bus slot on your pentium. What we must give up for ATV!

In order to transmit my PC video, I bought a Creative Labs "TVCoder" board which cost me about $160. Now I have three boards in my computer just for video! There are some on the market that do all three functions (with the exception of a TV tuner) but if you're like me and want to get there in pieces, this is good way to go.
I hope this helps anyone who might be interested in video capture!

Bob...KF8QU

MORE VIDEO VGA TO NTSC CONVERTERS

I've found additional sources for these converters. If anyone has further info, let me know so I can pass it on.
MultiPro CTV - An external converter with VGA input and VGA, S-VHS, video and audio outputs. It supports 640x480x16.7 million colors interlaced and non interlaced modes. Has freeze, scan. RF output on ch 3/4.
Its available in the Columbus Ohio area at Microcenter for $249.00

AVer Key - An external unit similar to unit above. Supports windows 3.0 up in all modes up to 640x480. Input is VGA 15 pin with output NTSC composite, S-VHS, video RGB and VGA RGB.
Available from JDR Microdevices ($179.00) or Jameco ($169.00) both in the San Jose, California area.

Art...WA8RMC

ACTIVITIES ..... from my workbench

Can you believe it! Winter seemed to have been on fast track this year. It feels like last week I raked the leaves and cut the grass for the last time prior to serious snowfall weather. Now it's spring and the Dayton Hamvention is just around the corner. I must get more efficient doing the things that I have to do and less aggressive on the things that I want to do!!! Oh well. Art, sweep the workroom floor, put away the heater that kept me warm at the bench during winter, and start the next project.

Repeater activity has been at a slower pace this past winter. That "giant" repeater rebuild project still hasn't been completed but Ken and I have started it. The rebuild reestablished itself when we got the feeling that there might be competition for available space at the repeater site. After all, one needed to only look around and gaze at all of the expensive commercial gear around us and stare at our near disaster of a cabinet in comparison. I do suppose that there were some people that thought our equipment was rather crude. It started out looking good enough at first but after we added two more coax lines, interdigital filters and preamps with no extra room in the cabinet, things got to look unprofessional (God bless those Ty-Raps). So Ken found a good cabinet that is quite a bit deeper (the interdigital filters fit great) and about a foot taller. Best of all it has front and rear lockable doors so if we decide to "get sloppy" again, only we will know. I welded some internal brackets and installed side plates to hold the filters. New lightning protectors were added on top to accommodate the new coax lines so I think its looking much better. The cabinet was installed a few weeks ago but no **new** equipment at this point. The only thing that changed was the removal of some extra internal coax runs due to the more efficient placement of the filters. A new RF shielded box is being worked on to house the 427 transmitter because we found some desense problems between it and the 1280 receiver but not complete yet. I hope to finish it soon and install it so we can move on.

Since the new cabinet was installed, we've been getting reports of increased 439 input sensitivity. Tom KA8ZNY reports P5 pictures to the repeater now with only 500 milliwatts of signal. He says he's never been able to do that before. However, there is a down side. For some reason now it won't pass Tom's color signal. I have no explanation here but it deserves looking into. Could it be one of the cables we removed?

In addition to the repeater, the airport link has been providing quite a bit of headache material. I know it hasn't been good all winter but there is little activity then and outside work was not convenient. During the last warm spell we had a few weeks ago, I've been able to rescue it to my basement for inspection. I found a bad capacitor in the switching power supply causing it to oscillate. Fixed!! Also an intermittent pot was causing erratic video. Fixed!! Last but not least, last fall I aimed the link antenna to what I thought was downtown Columbus. Now that the leaves are off the trees I can verify that the antenna was off target by about 20 degrees. I believe that it was smarter to put the antenna on the radar tower up about 65 feet and above all trees now even though it meant about another 150 feet of feed line. That proved to be correct. I've measured about 2½ watts of RF at the antenna producing solid P5 pictures (the distance is about 10 miles). Only one problem left. I thought I adjusted the pedestal incorrectly the first time for the picture remained good for only about an hour after I returned home (go figure). A return trip and a _ turn of the screwdriver corrected the problem...I thought. Again the signal went to #&**@# shortly after returning home. I haven't been back yet but maybe I need a larger hammer. Something isn't right. I suppose next time I ought to tuck it under my arm, bring it home and babysit it for a while. To compound the issue I'm told that the radar will be decommissioned sometime in mid summer. If we find a new site, will I have to start over? "Are we having fun yet? Sure we are!!!"

To take place sometime this summer is a new 446 mhz link to the remote sites. When installed, all control signals will be routed to the remotes via the downtown repeater. Then you won"t have to point your antenna to the site to bring it on line. The crystals are on order and the transmitter (about 1½ watts) is ready. We'll keep everyone posted.

That's all for now, guys. More things are planned (Ken gave me his wish list...Yea, right!!) so it looks like we'll be busy. Actually, I've got to spend more time working on my own stuff which needs major work by now. In addition I'm planning to find lots of goodies at Dayton. Hope to see you there. Enjoy.

Art...WA8RMC

BUILD AN ATV LINE SAMPLER...A MOST IMPORTANT PROJECT!!!

OK guys...here it is! I guarantee that this item will be the most important piece of equipment in your hamshack -second only to your camera, transmitter and receiver! If you want to really know what kind of signal your transmitter is producing without relying on reports, then you need this one. I've been preaching for years that an "on-the-air" signal can **NOT** be monitored reliability by viewing it on a companion receiver because there are too many variables: resolution limitations of the receiver, ghost pickup by reflections and most important the reliability of your buddy watching it and trying to make you feel better by giving a good report. I could go on but I hope I've got your interest. Put aside that antenna project and tackle this one first.

Circuit description:

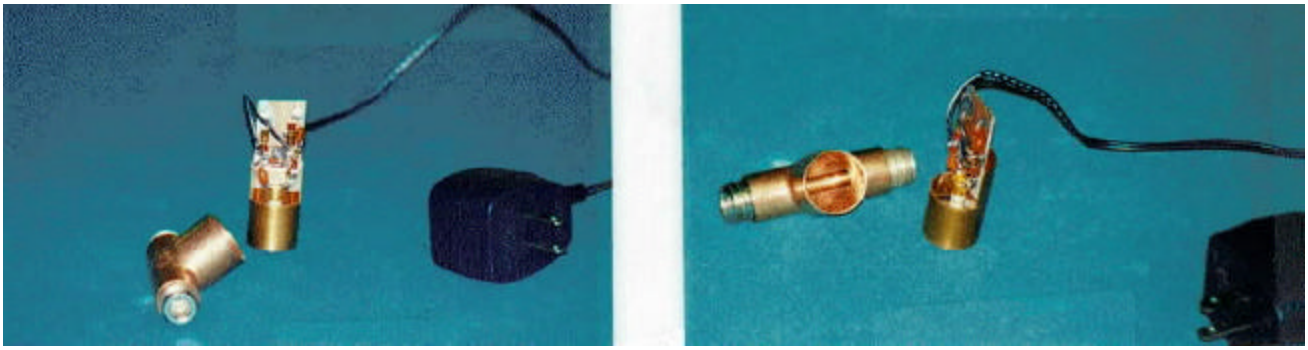
The line sampler extracts a small portion of the RF signal in the transmission line via the probe. It then rectifies it in the 1N23 diode and amplifies it in the op amp for display on an oscilloscope. The input 10K resistor forms a current load for the diode while the 2.2k resistor at pin 3 isolates the diode from the op amp. The 2.2k resistor (pin 6 to 2) along with the 100 ohm resistor sets the op amp gain of 23 (2200+100/100). The resultant signal at pin 6 can drive about 5 volts into a 1000 ohm load. The output signal here is determined by the probe loop proximity to the transmission line. The closer the pickup the larger the output. Sufficient gain is available to produce above 2 volts at the output, probe closest to the line and as little as 5 watts of RF. If that can't be obtained, try another diode...there is a large variation in sensitivity between a 1N23(poorest) and a 1N21WE(best). The circuit is DC coupled so a CW carrier can be read as well as the AC video components.

The variable gain AC coupled post amplifier can be connected to a video monitor. Not shown but definitely possible is the inclusion of a small DC millivoltmeter connected to the scope point calibrated in "average" watts. Calibration is done by sliding the tube into the "T". When calibrated, solder it in place. It's important to have a device like this because you can adjust the transmitter and see directly the affect even though it may not be evident in the actual picture. I've calibrated my scope with the aid of a Bird wattmeter in the line with the sampler and an CW RF carrier. I read the Bird and marked the corresponding negative going voltage on the scope which corresponds to power. Voila! I've now got a peak reading oscilloscope wattmeter.

There are two basic parts to this sampler - the probe and the amplifier. If you own or know where to get a Jones Micromatch type of coupler, then you only need the amplifier section. The coupler is readily available at hamfests for about $6 to $15. It comes as either a single or double unit and under various names. If a Micromatch type coupler is used, the bypass capacitor in the plug must be removed. Then a standard single contact microphone plug is best substituted for the original. The amplifier must be located within a couple of inches of the plug and kept well shielded. If you can't find a Micromatch, then my tube probe is just as good.

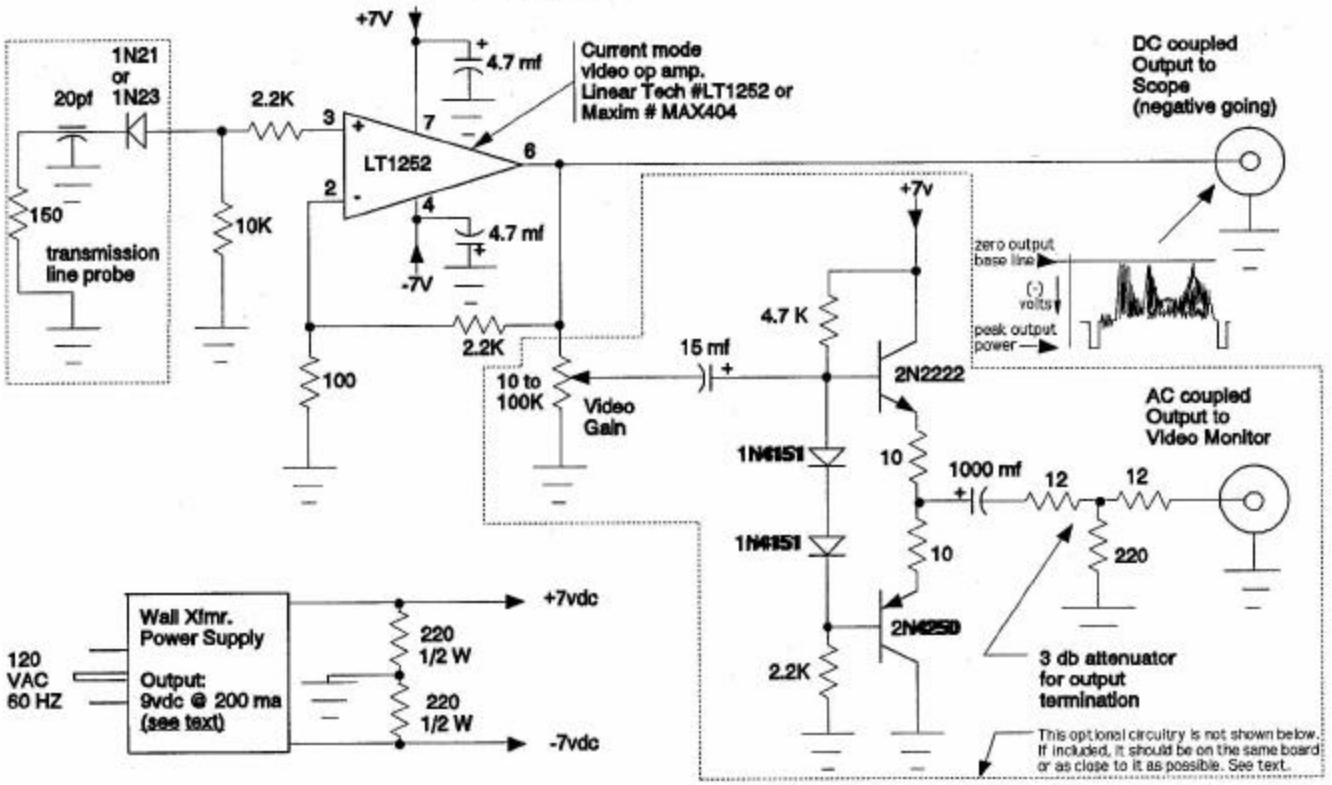
Items needed:

1. Copper "T" fitting with (2) 1/2" and (1) 3/4" outlets. No modifications required here.
2. (2) "N" female fittings modified by cutting or filing off flanges flush with body.
3. Cut a 1½" piece of ¼" copper tubing with a tubing cutter so as to leave an internal burr.
4. 1½" to 2" piece of ¾" copper tubing to use as a probe and amplifier housing.
5. 13/16" x 1½" piece of blank copper clad glass epoxy pc board material.
6. Cut a 13/16" disk of pc board material so it fits snugly inside of the ¾" copper tube. Drill a ¼" hole in the center for diode holder. Trim or file off approx 1/16" of copper all around perimeter of disk on one side only and trim about 1/32" around the ¼" hole on the side opposite the perimeter trimmed edge..
7. (1) 1N21 or 1N23 diode with removable end caps. These are common on diodes of this type but not all. Check to make sure you get one that the ends pull off (used to reverse the diode polarity).
8. Op amp. Use Linear Technology # LT1252 or Maxim # MAX404. These are inexpensive current mode video amplifiers but not too common. DigiKey Corp (1-800-344-4539) has the Linear Tech part for $2.94 ea. If necessary, I could order from the manufacturer if enough people want them. Let me know.
8. Misc resistors and capacitors common variety as shown on schematic.
9. Power supply. Mine is rated 9vdc @ 300 ma. Other supplies with 10-15 vdc output @ 40 ma are suitable.

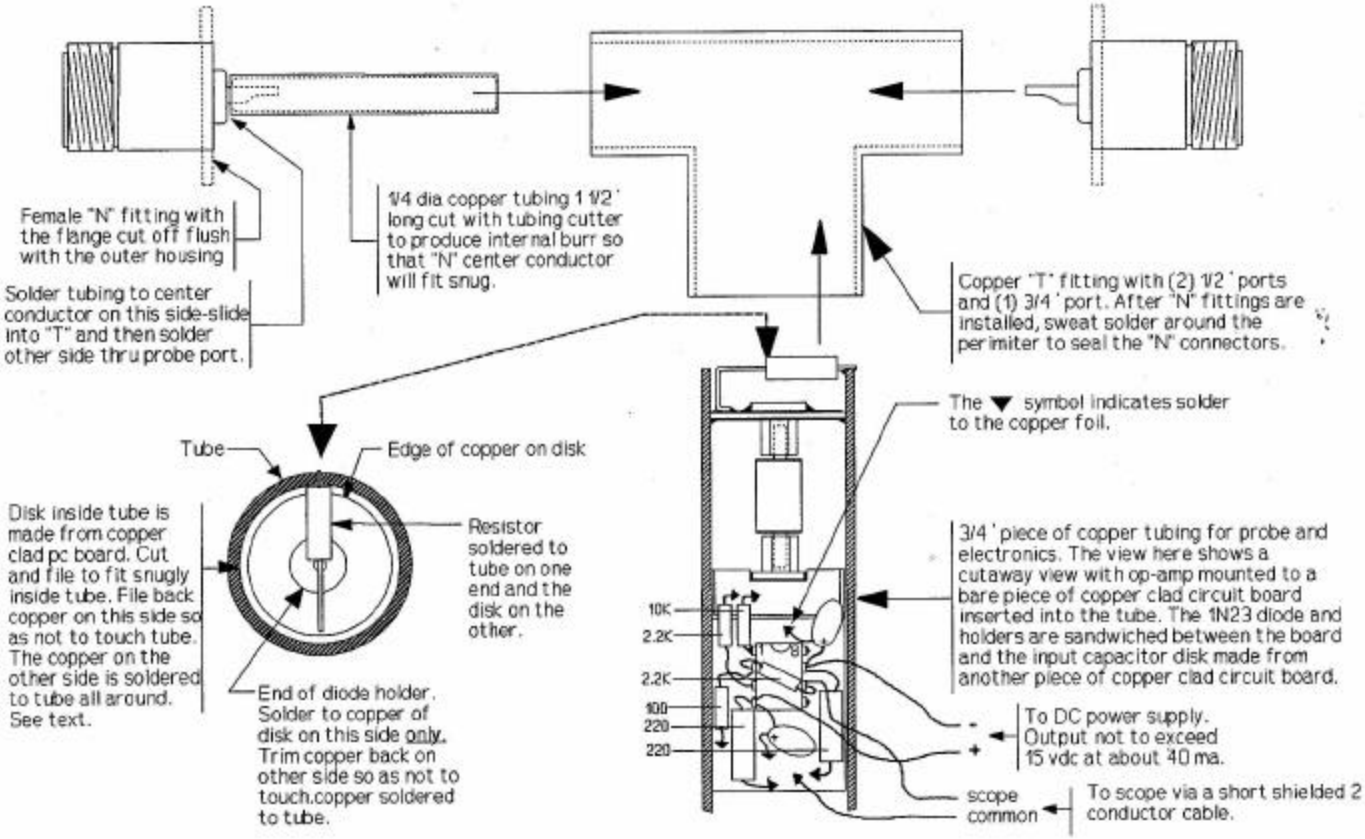


WA8RMC VIDEO SAMPLER

Schematic



Probe comstruction



Assembly notes:
Place disk ¼" inside tube with the trimmed edge out. To aid soldering, place 4 pennies in a stack on the table and place tube with disk over them. Press the disk tight against pennies to make sure it is centered. Then with a propane torch gently heat the tube and apply solder to the opposite side of the disk periphery to solder it to the tube. Insert the diode holder into the center hole in the disk and solder on the outside only. This forms a 20 pf capacitor. Next install the 150 ohm ½" watt resistor across the end of the tube and solder one end to the tube and the other end (bent at right angle) to the isolated part of the disk. Now build the op amp circuitry as shown in the detail. Solder the other diode holder to the end of the pcb but first make sure the diode will line up with the 2 holders before soldering. Make a copper cut across the pcb to isolate the holder from ground. Only the 2 resistors will connect here. When the board and wiring is complete, slide it into the tube and solder the pcb copper to the tube at the end to complete the job. Happy building. If you have trouble, I'll be glad to help.

Below are some pictures I took of the completed unit to prove that I **actually built one!!!**

Art...WA8RMC

NEW WORLD LAND ATV DX RECORD!

The contact between K5YWL in Harrison AR just south of Springfield, MO. and K8AEH near Columbus, OH is over 628 miles. This is a new land path ATV DX record. This is also the first Arkansas to Ohio ATV path. CONGRATULATIONS, WILBUR!!

A contact between WB0ZJP (west of St. Louis) and KA3FZF also broke the previous records of W0IMA in Moscow, IA and W3POS in Erie, PA and KB9FO, Des Plaines, IL and W2RPO east of Buffalo, NY.

Some of the out of state stations worked by Wilbur!

WJ9Z	St. Francis, Wis.
K9SM	Hillsboro, Ill.
N9AB	Mundelein, Ill.
W9MHZ	Ft. Wayne, Ind.
AA9IG	Peoria, Ill.
KA9TGX	Lafayette, Ind.
N9LBN	Milwaukee, Wis.
W9NTP	Waldron, Ind.
K5YWL	Harrison, Ark.!!!
KA9VXS	Lafayette, Ind.
KA3IBD	Saegertown, Pa.

WB0ZJP	St. Louis, Mo.
N8TSM	Lansing, Mich.
KA8VSV	Detroit, Mich.
KA3FZF	Monroeville, Pa.
N8AW	Jackson, Mich.
W8AHY	Lansing, Mich.
W9LPR	Milwaukee, Wis.
WD9ASI	Chicago, Ill.
N8TBM	Lansing, Mich.
WA4GSS	Ashland, Ky.
K9SM	Hillsboro, Ill.

from ATVQ magazine vol 8 #1

K8AEH, FOG, WIFEY AND HAM ATV...

CQ DX FOG . . .
REPORT FROM COLUMBUS,OHIO
DEC. 26-27, 1994

Twas the day after Christmas, and all the excitement was over! We throught. It's Monday, good day to sleep til noon at least. However, there may be a little something you have to do first. So it's out of bed, one eye open, as you make a momentary stop in the bathroom on the way to the kitchen. With a fresh cup of coffee in one hand, and a piece of toast in the other, for no reason at all you make your way to the front door. Standing there in your bare feet, and your nose pushed up against the cold glass, you open your other eye and wow!!! What is this . . . P3 fog. This can only mean one thing; could this be the lucky day? When the light pole down the street is no longer visible . . . That's P5 fog for sure. Just to check it out, you push open the front door, bare feet and all, to see if you can still see the top of your 70 foot tower. Oh! No! Did someone borrow the antennas while we were sleeping, or is the top of the tower really disappearing in the fog! This is getting exciting. Anyone who ever worked ATV DX before knows. After standing there in the cold too long, gazing up with your neck all bent back, can cause a person to start seeing things that may or may not really exist. Like strange call signs darting around through the fog. Look at this, they are starting to line up, trying to get in the antenna . . . Better get back in the house, el quicko. Tough decisions to make. Time to build a fire in the bottles. The fun has begun! You start turning knobs and throwing switches, even the ones you use to know what they were really used for.

Sure enough, the guys in Dayton, Cincinnati and Indiana were already into it with Michigan, Illinois and Wisconsin. Later the fog really started rolling in and the band was open.

The P1 signals started turning into P3, P4 and even out of state P5. Around 11 p.m., it was QRM on 439.25 ATV. Just turn the antenna almost any direction and there were signals, all over the place. KA3 from Pittsburgh, PA. W4s out of Wheeling, West Virginia from the East. WB0s from Missouri, K5s from Arkansas, N9s out of Chicago, Ill. and WJ9s from Milwaukee, Wis. What a day this has been, and it was getting even better. There were so many stations, you couldn't work them all. There was so much excitement, you had no idea when you ate last and it had been so long since you had to go to the bathroom, it doesn't seem to make any difference anymore.

The two meter volume is wide open so you won't miss anyone calling you in the pileup. This went on all day through midnight til past 4:00 in the morning. A lot of the camera film was wasted on P1 and P2 pictures while the band was just starting to get hot, having no idea it would be getting better later. At 3:00 in the morning, where do you get more film?? Well, I can assure you one place I highly do not recommend! That's from Wifey . . . The XYL's name is Joy, however, at 3:00 a.m., you best change that to "sweetheart" if you ever want to work any more ATV DX in this lifetime. So we sneaks into the bedroom and started to shakin the bed and callin out "sweetheart, I need film bad."

I can assure you that was one big mistake. As soon as we detected some movement, we backed up about three feet and glad of that. Wifey came up out of that bed like a rocket headin fer outer space. Sounded like she hit her head on the ceiling. I knew better than to stick around and find out, for I was hot footin it down the hall, and she was right on my heels, preachin words from a dictionary I never knew existed, and definitely can't repeat. After three passes through the kitchen and two more through the living room, she finally came out of the shock of being rudely awaken. I said, "please, Hon!" All I wanted was more film. She yanked open the hutch drawer and threw her camera at me. It went off when I caught it, now only two shots left. Better than nothing. After Wifey sound tested the bedroom door, we photographed and worked two more Michigan stations before going to bed at 4:30 a.m. Z Z Z Z Z Z.

What--a--day this ATV DX'in could make a guy tired! Just to kind of assure you, we know what DX'in is all about. We run a full 1KW on 439.25 Mhz ATV with a pair of 4CX250B's with its own video and audio modulator, driven with a 50 watt 2C39 exciter. The antenna is an 88 element J beam at 70 feet, and dual two stage Gasfet preamp.

Wilbur...K8AEH (from ATVQ magazine vol 8 #1)

NEW MEMBER SECTION

We want to welcome the following new members to our group. They're the ones who will hopefully become more interested in this hobby and provide active support toward this segment of Amateur Radio!!!
The following list contains the new entries since the last newsletter.

KB8TRP Tom Flanagan Columbus Ohio
KB8WBK Dave Hunter Pataskala Ohio
N8KQN Ted Post Columbus Ohio
N8OCP John O'Bryant Columbus Ohio
W6ORG Tom O'hara Arcadia Calif.

UPCOMING HAMFESTS

Dayton Hamvention April 28, 29, 30.
Dayton Ohio

MEMBERSHIP DUES WERE DUE IN JANUARY

The yearly membership dues were due in January. If you haven't sent them in please do so at this time. If you can't remember if you had or not, look at your address label. If it indicates 12/94, this is the last newsletter you'll receive. Help support this newsletter and send in your $10.00 dues to Bob Tournoux KF8QU to the address detailed later in this newsletter. Thanks.

WANTED!!! HAMS INTERESTED IN PUBLIC SERVICE ATV

Our club has been approached by public service groups asking if we could provide portable ATV coverage of some of their activities. This would include Marathon races, parades, sports activities and the like. We ask "Is there anyone interested in helping out by providing either equipment or manpower". Join us at the Tuesday nite NET at 9:00 pm on 147.45 Mhz to discuss this possible upcoming opportunity. If there is enough interest, we'll pursue it further. However, we need more than one or two people to support this. Feedback needed...Is it a good idea?...Bad idea?...Suggestions invited!!!

THE INTERNET...ARE THERE ANY SURFERS OUT THERE?

Recently I have been spending some time "surfing" the INTERNET. That is, I've browsed through the files there enough to discover that I've not discovered much yet. Boy, is there a lot of information!!! Much of it, in my opinion is just plain junk but just because I'm not interested in some of it doesn't mean that others would likewise follow suit. Among some of the more interesting items is a large section on ham radio (too vast to describe here) but I haven't found anything on ATV yet. How about starting something? Maybe we can talk to the ham radio club at The Ohio State University (who supports a bulletin board there) to include an ATV section. How about it Larry, (N8SFC) could we put up the ATCO newsletter?

Another area of interest is the Ohio State University supported global weather service which contains many maps of weather cover over the northern hemisphere. A few nights ago I found the main satellite USA photo that was only a few minutes old. For those with the capability, look at HTTP:\\ASP1.SBS.OHIO-STATE.EDU for these pictures.

By the way, I have an EMAIL address reachable on the Internet via Compuserve and would love to receive future ATCO articles this way! Hint-Hint. It is TOWSLEE@MT-TWO.MHS.COMPUSERVE.COM for those interested. If we have a number of us on the Internet or other reachable node, why don't we list our address so we can receive mail this way? Anyone game? I'm willing to publish the list.

Art...WA8RMC

BUILD INTERDIGITAL FILTERS FOR ATV

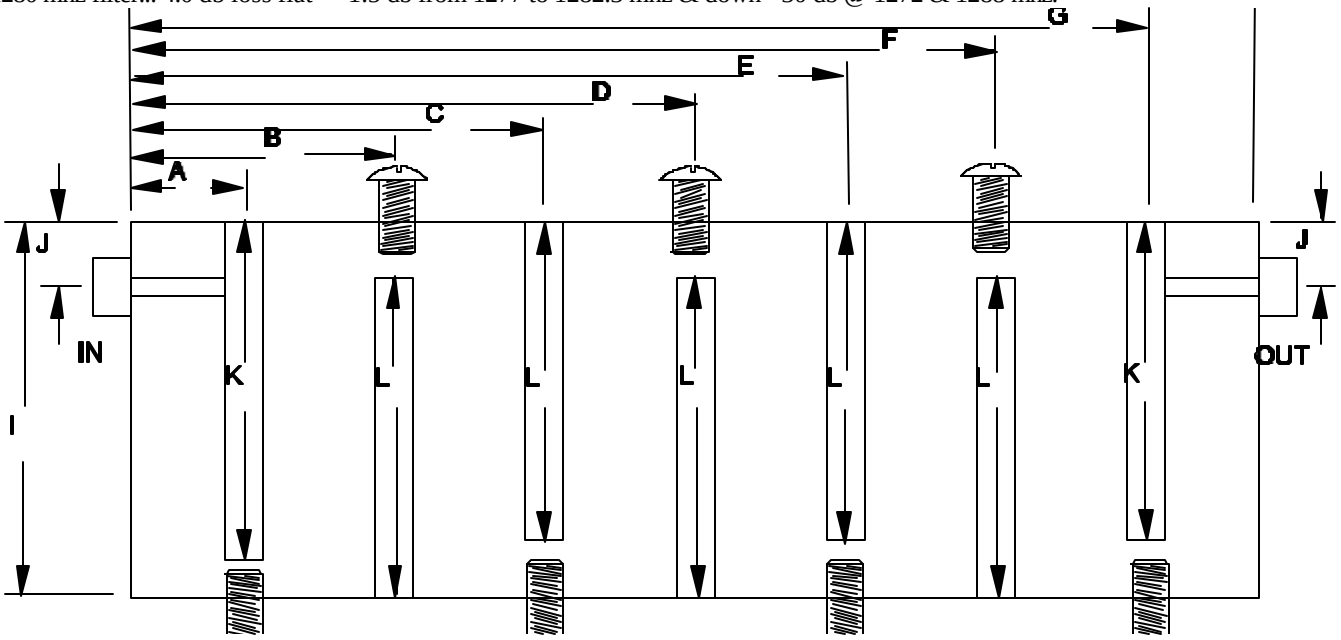
OK.. I did say that I'd publish something in this issue about my interdigital filter experiences. Well here goes.

First let me come right out and say "these are not construction projects for everyone". Quite bluntly, they're a ##%&*# to construct **correctly** and even worse to tune up. With the proper equipment they're probably a breeze...but not many of us have a machine shop along with expensive network analyzers. Nevertheless I managed to get both the 439 and 1280 mhz filters working. The 439 filter was the easiest to tune but 2 days of diddling with the 1280 mhz unit failed to produce the optimum adjustment (I don't have a sweep or spectrum analyzer). I got there once but just one more tweak destroyed it and was never able to get it back quite as good. I had to settle for about 4 db loss thru the unit. The 439 unit tuned better producing about 1¼ db loss with about a 6 mhz bandpass. Here are some notes for the brave soles who just want to prove that they can do it.

1. Built it with at least _" thick aluminum or copper for all sides and top.
2. If possible weld (aluminum) or solder all seams.
3. If a screw together approach is done be sure to have a screw at least every inch.
4. A screw **must** be placed opposite every internal rod.
5. Hold dimensions to at least 1/32" tolerance.
6. Allow for some way to adjust the length of the rods slightly.
7. The "I" dimension below is the free space ¼ wavelength center frequency of the filter.

I built both filters with ¼" aluminum for the sides and ends with _" aluminum for the top and bottom. Tom KA8ZNY was kind enough to weld all seams (very professional job by the way - unlike a commercial filter we bought for 427 mhz) except for the top which I put together with 4-40 screws every inch around the periphery. The rods were _" dia anodized aluminum (439 mhz) and ¼" (1280 mhz) purchased at the hardware store. the adjustment screws in each case were ¼-28 bolts thru tapped holes in the sides. The electrical results follows:

439.25 mhz filter... 1.2 db loss flat +- 0.5 db from 438.5 to 443.7 mhz & down >30 db @ 435 & 447 mhz.
1280 mhz filter... 4.0 db loss flat +- 1.5 db from 1277 to 1282.3 mhz & down >30 db @ 1272 & 1288 mhz.



	A	B	C	D	E	F	G	H	I	J	K	L	M
439 Mhz 0.50	3.58	7.34	11.29	15.24	19.00	22.07	22.57	6.69	0.57	6.25	6.15	2.50
1280Mhz O.50	3.40	6.80	10.36	13.91	17.32	20.22	20.72	2.30	0.19	2.02	2.00	2.00

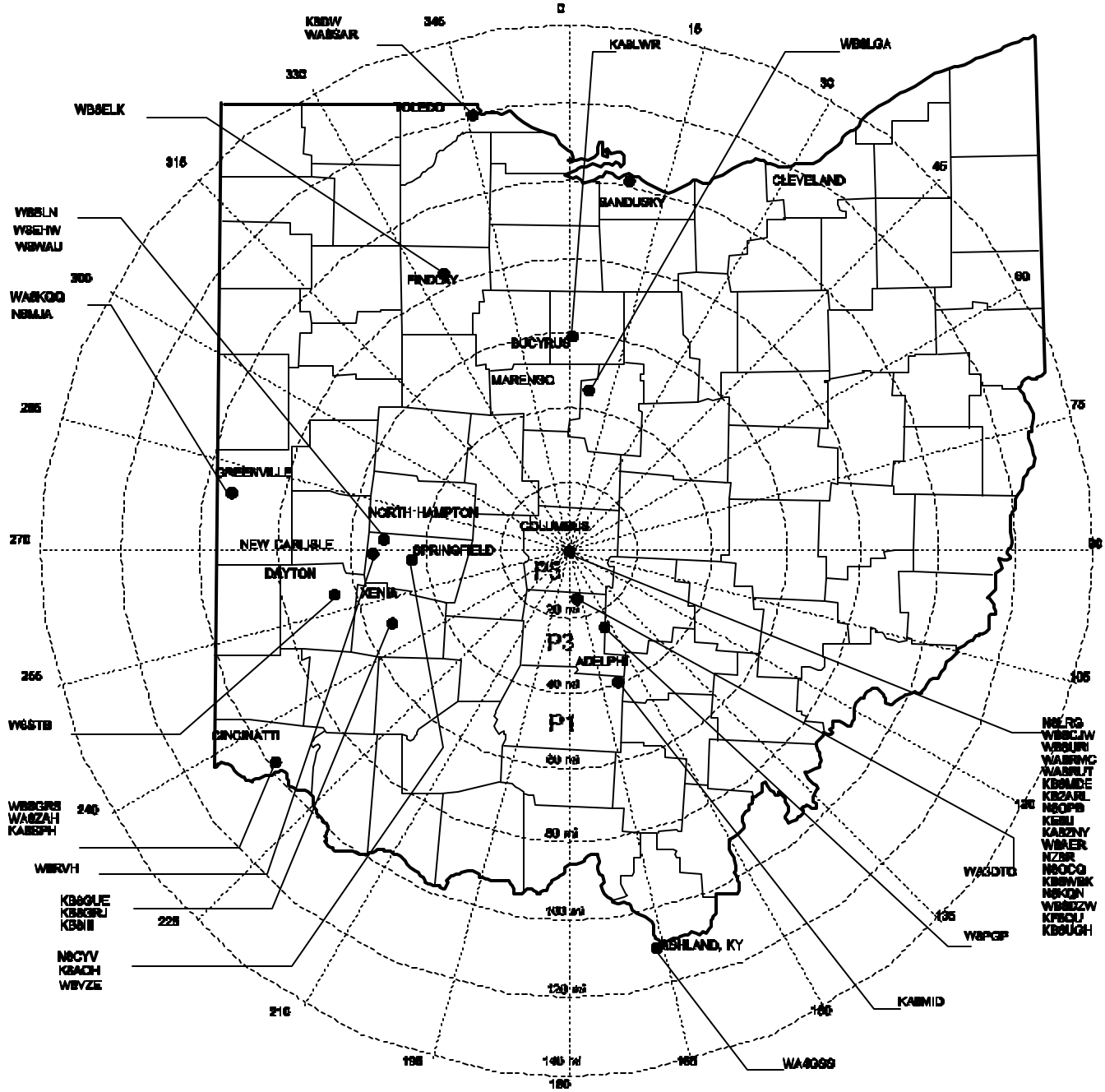
Note: dimension M is the total interior height of the filter. The rods are located halfway between this point.

If anyone has had construction experiences with filters of this type, I would like to hear from them.

Art...WA8RMC

ATV LOCATOR MAP

Below is an Ohio map complete with counties, main cities, beam heading (from Columbus) and all of the hams known to have had video on the air recently. Please report anyone that has had video on and seen recently. If video is not reported for a given individual in about a year, I will remove them from the map. Let's see if we can make Ohio near the top for ATV activity. The map also contains mile circles with approximate P levels expected. Generally the signal drops by 1 P unit each time the distance is doubled if all other factors remain unchanged. The P numbers are typical reported values under average (non band open) conditions.



ATCO REPEATER TECHNICAL DATA SUMMARY

This space of each publication of the ATCO Newsletter will include the technical information of our repeater. Each time a new feature is brought on line it will be added here. Use this "table of information" as a quick reference for up/down access codes as well as some of the more important parameters of our system.

Main repeater:

Location: Downtown Columbus, Ohio

Coordinates: 82 degrees 59 minutes 53 seconds (longitude)
39 degrees 57 minutes 45 seconds (latitude)

Elevation: 630 feet above average street level
1460 feet above sea level

Transmitters: 427.25 mhz AM modulation and 1258.25 mhz FM modulation
vestigial sideband filter in output line of 427.25 & 1250.25 transmitter
Power - 50 watts average 80 watts sync tip (427.25) 15 watts (1250.25)

Transmit antenna: 427.25 mhz - Dual slot horizontally polarized 7 dbd gain major lobe north
1250.25 mhz - Single slot horizontally polarized 3 dbd gain major lobe west

Receivers: 147.45 mhz for F1 audio input control of touch tones
439.25 mhz for A5 video input
910.25 mhz for A5 video link data from remote sites
1280.25 mhz for F5 video input

Receive antennas: 147.45 mhz - Vert. polar. Hi Gain "Comet" 12 dbd (also for 446 mhz output)
439.25 mhz - Horiz. polar. dual slot 8 dbd gain major lobe south
910.25 mhz - Vert. polar. DB Products 10 dbd gain
1280.25 mhz - Horiz. polar. single slot 3 dbd gain major lobe ?

				UP	DOWN
Input control:	Major Touch tones:	beacon (10 min)	*439	*22	
		regional weather radar	697	#	
		CMH airport radar(5 min)	264	#	
		User repeat 1 minute		*45	*22
		Touch tone pad tester		#0	#5
		Manual mode		#77	*22
		NASA Select		*70	*20
		5 second ID		#9	*22
		Bulletin board		285	#

Remote sites: Airport radar at Port Columbus (910.25 mhz link output 8 watts)
NASA select at KA8ZNY QTH (910.25 mhz link output 10 watts)
Aux link at WA8RUT QTH (910.25 mhz link output 1 watt)
Aux link at WB8CJW QTH (910.25 mhz link output 1 watt)
Aux link at WA8RMC QTH (910.25 mhz link output 5 watts)

ATCO MEMBERSHIP INFORMATION

Membership in ATCO (Amateur Television in Central Ohio) is open to any licensed radio amateur who has an interest in amateur television. The annual dues are $10.00 per person payable on January 1 of each year. Additional members within an immediate family are included at no extra cost.

ATCO publishes the ATCO newsletter quarterly in January, April, July, and October. The newsletter is sent to each member without additional cost.

The membership period is from January 1ST to December 31ST. New Members will receive all ATCO newsletters published during the current year prior to the date they join ATCO. For example, a new member joining in June will receive the January and April issues in addition to the July and October issues.

Your support of ATCO is welcomed and encouraged.

ATCO CLUB OFFICERS

President: Art Towslee WA8RMC
V.President: Ken Morris WA8RUT
Treasurer: Bob Tournoux KF8QU
Secretary: Rick White WA3DTO
Corporate trustees: Same as officers

Repeater trustees: Art Towslee WA8RMC
Ken Morris WA8RUT
Dale Elshoff WB8CJW
Statutory agent: Rick White WA3DTO
Newsletter editor: Art Towslee WA8RMC

ATCO MEMBERSHIP APPLICATION

RENEWAL O NEW MEMBER O DATE _____
OK TO PUBLISH PHONE # IN NEWSLETTER YES O NO O HOME PHONE _____
NAME _____ CALL _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

FCC LICENSED OPERATORS IN THE IMMEDIATE FAMILY
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COMMENTS_____
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ANNUAL DUES PAYMENT OF $10.00 ENCLOSED CHECK O CASH O
Make check payable to ATCO or Bob Tournoux & mail to:
Bob Tournoux KF8QU
3569 Oarlock Ct
Hilliard, Ohio 43026

ATCO TREASURER'S REPORT - de KF8QU

CASH BALANCE on 1/10/95 (12/31/94 balance was $901.56).....	$ 851.95
RECEIPTS (dues).....	$ 160.00
OTHER INCOME (bank dividend).....	$ 4.59
MISC AUDIT CORRECTION.....	$ 9.33
EXPENDITURES (film and processing.....	$(15.40)
BALANCE (as of 4/10/95).....	$1010.47

ATCO MEMBERS AS OF 10 APRIL 1995

K8AEH	Wilbur Wollerman	1672 Rosehill Road	Reynoldsburg	Ohio	43068	866-1399
W8AER	Dave Sears	1678 Kaiser Dr	Reynoldsburg	Ohio	43068	861-0904
KB2ARL	Dave DiGiuseppe	2081 Elmore Ave	Columbus	Ohio	43224	478-4539
WB4BBF	Randall Hash	212 Long Street	Bluefield	Va.	24605	
WB8CJW	Dale Elshoff	8904 Winoak Pl	Powell	Ohio	43065	766-5823
N8CYV	Blaire Standley	721 West North St	Springfield	Ohio	45504	
K8DW,W8FB	Dave & Paul Wagner	2045 Maginnis Rd	Oregon	Ohio	42616	419-691-1625
WA3DTO	Rick White	5314 Grosbeak Glen	Orient	Ohio	43146	877-0652
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	Ohio	43026	876-6033
W8EHW	Foster Warren	124 East Clark St	No. Hampton	Ohio	45349	
WA8EOY	John Schlaechter	3199 Lewis Rd	Columbus	Ohio	43207	491-4470
KB8EWX	Cris Bauer	6227 Arapahoe Pl	Dublin	Ohio	43017	761-3567
NK8F,N0IKJ	Rich & Ruth Budd	734 Hager Court	Gahanna	Ohio	43230	471-5354
N8FFO	Edward Hauff	2716 Columbus Ave	Columbus	Ohio	43209	253-5794
KB8GRJ	Adrian Oakes	155 Lower Hillside Dr	Bellbrook	Ohio	45305	
WA4GSS	Ron Curry	229 West Green Hill Rd	Ashland	Ky.	41101	606-928-6672
KA8HAK	Jim Reese	1106 Tonawanda Ave	Akron	Ohio	44305	
K8JGY,KA8WGX	Fred & Martha Yost	234 Schofield Rd	Gilbert	SC.	29054	
N8KQN	Ted Post	1267 Richter Rd	Columbus	Ohio	43223	
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	Ohio	45331	513-548-2492
WB8LGA	Chuck Beener	2548 State Route 61	Marengo	Ohio	43334	419-864-7224
N8LMI,N8SIR,KB8UVK	Phil,Jim,Phil jr Buckholdt	153 East Bergey St	Wadsworth	Ohio	44281	
N8LRG	Phillip Humphries	3226 Deerpath Drive	Grove City	Ohio	43123-4100	871-0751
WD8LXX	Rob Peebles	PO Box 1334	Dublin	Ohio	43017	
KA8MID	Bill Dean	PO Box 458	Adelphi	Ohio	43101	
KB8MDE	Shaun Miller	3469 Oakcrest Rd	Columbus	Ohio	43232	238-0918
WD8OBT	Tom Camm	1634 Dundee Court	Columbus	Ohio	43227	860-9807
N8OCP	John O'Bryant	3139 ElPaso Drive	Columbus	Ohio	43227	274-5410
N8OCQ	Robert Hodge	3689 Hollowcrest	Columbus	Ohio	43223	875-7067
N8OPB	Chris Huhn	146 South Hague Ave	Columbus	Ohio	43204	
W6ORG	Tom O'Hara	2522 Paxton Lane	Arcadia	Cal	91007-8537	818-447-4565
WB8OTH	Perry Yantis	1850 Lisle Ave	Obetz	Ohio	43207	491-1498
KE8PN	James Easley	1507 Michigan Ave	Columbus	Ohio	43201	
W8PGP,WD8BGG	Richard, Roger Burggraf	5701 Winchester So. Rd	Stoutsville	Ohio	43154	614-474-3884
KF8QU	Bob Tournoux	3569 Oarlock Ct	Hilliard	Ohio	43026	876-2127
N8QLD	Rick Callebs	P.O. Box 266	Jackson	Ohio	45640	
NZ8R	Greg Radcliff	1763 Hess Blvd	Columbus	Ohio	43212	
WA8RMC	Art Towslee	180 Fairdale Ave	Westerville	Ohio	43081	891-9273
WA8RUT,N8KCB	Ken & Chris Morris	3181 Gerbert Rd	Columbus	Ohio	43224	261-8583
W8RVH	Richard Goode	9391 Ballentine Rd	New Carlisle	Ohio	45334	513-964-1185
WD8RXX	John Perone	3477 Africa Road	Galina	Ohio	43021	
WA8SAR	Gary Obee	3691 Chamberlain	Lambertville	Mich	48144	
N8SFC	Larry Campbell	316 Eastcreek Dr	Galloway	Ohio	43119-8914	
KB8TRP	Tom Flanagan	1751 N. Eastfield Dr	Columbus	Ohio	43223	272-5784
WA8TTE	Phil Morrison	154 Llewellyn Ave	Westerville	Ohio	43081	
N8TUU	Maxine Duemmel	3488 Darbyshire Dr	Hilliard	Ohio	43206	876-5986
KE8U	John Greene	7585 Central College Rd	New Albany	Ohio	43054	855-1475
KB8UGH	Steve Caruso	39 South Garfield Ave	Columbus	Ohio	43205	461-5397
WB8URI	William Heiden	4435 Kaufman Rd	Plain City	Ohio	43064	614-873-4402
WB8VJD	Rick Morris	3830 Doyle Street	Toledo	Ohio	43608	419-261-8583
W8WAU	Jake Fuller	PO Box 117	No. Hampton	Ohio	45349	
KB8WBK	David Hunter	45 Sheppard Dr	Pataskala	Ohio	43062	
KA8ZNY,N8OOY	Tom & Cheryl Taft	386 Cherry Street	Groveport	Ohio	43125	836-3519
N8ZTL	Gregory MacCartney	3469 Oakcrest Rd	Columbus	Ohio	43232	

ATCO Newsletter
c/o Art Towslee-WA8RMC
180 Fairdale Ave
Westerville, Ohio
43081

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REMEMBER, YOUR MEMBERSHIP DUES.

DON'T FORGET OUR NET AT 9:00PM ON TUESDAY NIGHT.