# ATCO NEWSLETTER

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## ATCO WA8RUT REPEATER UPDATE

Yes, we wouldn't let an ATCO newsletter go by without doing something to the repeater! I'm happy to report that the 446 MHz link is now operational. That and a number of additional items appear on the inside pages. Read on!

## ATCO HAM IN THE SPOTLIGHT

This month the ATCO Newsletter takes a peek at Ted Post N8KQN. Ted is one of our senior members but probably works at this hobby as hard as anyone else around. In addition to ATV, I know of at least two repeaters that he maintains in the 450 MHz band.
His hamshack is an outbuilding neatly located behind the garage which, as you can see, is very adequately equipped. Our hats are off to you Ted for supplying a superior ATV signal for us to watch. Keep it up!

## ACTIVITIES ..... from my workbench

OK, I guess it's time to generate another Newsletter. The last time I sat down to do this, the window was open to allow some fresh air in for brain stimulation(It didn't help much). Now, I'm all tired because I just finished shoveling about 10 inches of snow off the driveway. As I type, I'm thinking of the next hamfest. Stop daydreaming and work on the Newsletter. OK, I'll start now!!!
As you may be well aware, I'm always searching for ham related projects to create. I'm a builder as well as an operator so for the most part I'll be constructing while others are talking so a rather long list of construction projects should come as no surprise.

The long awaited shielded repeater transmitter is now installed. As you might remember, the transmitter was built inside an RF tight box in order to prevent desense to the receivers nearby. However, it did not go without problems. First, we found that the Mirage D1010 final amplifier was not constructed as I was informed. (The amplifier had to remain in service until we swapped parts at the site so I didn't have the luxury of building it into the box beforehand). I found the connectors on the opposite end than I had planned. Fortunately, I built the box large enough to allow the amp to slide around to fit existing cables. Besides that, the unit installed and worked very well. The desense apears to be gone but it's too early to say everything is OK. The 446.350 link transmitter in the same box was powered up and is now working well. We noticed a little desense into the 439.25 MHz receiver when the 446.350 MHz link transmitter is on but is not severe. A number of corrective options are available here. We need to monitor the signal strength for a while to determine if we can cut back the output power. It's now putting about 1 watt into the antenna and preliminary indications are that it can be reduced to at least 1/2 watt without any problems. Second, the internal cable from transmitter to cabinet bulkhead connector is about 3 feet of RG8 which can radiate within the cabinet because of the less than perfect shield. The next time we go to the repeater we'll replace it with some Andrews hard line. Hopefully, that'll reduce it to below the receiver threshold.

Check out the 446.350 link NBFM signal and report the quality. It's there to serve as a control signal for the remote sites so the user won't have to point his antenna at the specific site...only point it toward the main repeater. The repeater will then receive the 147.45 MHz signal and retransmit it out on 446.350 MHz. Therefore, each remote site has its receive antenna pointed toward the 446.350 MHz repeater output. This link has a secondary advantage. Since the 147.45 MHz signal is repeated in its entirety, it serves as a reliable monitor signal of 147.45 MHz when it is hard to hear the person direct but receives well at the repeater. At my QTH intermod is quite often a problem on 147.45 but not on 446.350!!!

When we installed the repackaged transmitter, we also took the opportunity to install a 920.25 MHz FMTV receiver. Since FM television is becoming popular, this provides a means to transmit FM ATV signals to the repeater. The receiver seemed to work OK but later analysis determined that it interferes too much with the 910.25 MHz link input so it is temporarily disabled until we can determine the cause and corresponding action required. Hopefully it will be up and running in the near future.

My next project is to find out why my own 439.25 MHz ATV signal is so bad. It started when my 10 year old 4CX250B tube in the final decided to retire in the RF tube graveyard. A new tube produced oscillations and suspecting a poor video modulator I decided to not only make the RF cavity better but also redesign the modulator. The reason that I'm here writing this article is evidence that the amplifier and new modulator is working fine! (See my modulator article later in this issue.)

The next project I'm working on is a computer VGA to NTSC video converter design. The parts are setting on the workbench waiting for me to dig into this project. I feel that it is a worthwhile project because it seems that most ATVers nowadays use or want to use their computer to generate their callsign and related graphics. Since most VGA/NTSC converters cost about $150 commercially, a unit that could be built for under $50 and work better than commercial units will be happily received. I found a manufacturer that makes a single chip IC that does the complete conversion and requires only about a half dozen extra parts (xtal, resistors and bypass capacitors). The chip only costs about $25!!! More on this next newsletter for I don't have enough time to complete it and report on it here.

About the only other thing that has happened around here is my purchase of a small milling machine. I've now got it cleaned up and operating so uhf cavities and interdigital filters will be much easier to construct in the future. This has been biting into my time but electrical construction should soon be back on track soon. More about my milling machine experiences when I have some to report.

That's about all for now. My antenna projects are on hold till the weather breaks so I feel that some well deserved home repair and improvement projects will fill the space for the next couple of months. More exciting stuff next issue.
Art...WA8RMC

**ATCO FALL EVENT MINUTES**

Our annual ATCO Fall Event was held on Sunday, November 5th. Although it was a very cold day we seemed to all have a good time. The attendance was somewhat lower than expected but about 23 brave souls decided to disregard the cold as a reason to stay home. Those who attended,were rewarded with a good time. It's always fun to have a good eyeball with friends. It's a good thing that I remembered to bring wood for the fireplace. It was well appreciated by all. Although the weather did not permit outside antenna comparisons, we found many things to talk about inside where it was warmer. The food provided by Rick WA3DTO was good and I helped by cooking brats on the charcoal grill outside. We had a number of door prizes which were passed out to the lucky winners. The prizes included donations from Universal Radio as well as a collection of TV goodies that were donated to the club by the Newark school television group. I hope that those B/W cameras get put to good use. The puzzle submitted to us by Bill Parker W8DMR was partially solved by Ted N8KQN so he got a little extra goody bag to take home. The attendees in random order are as follows: WA3DTO, N8OPB, KB8TRP, W8PGP, WA8TTE, N8CYV, N8KQN, W8STB, KA8MID, W8AER, N8TBU, N8OCQ, W8EHW, W8WAU, KF8QU, WA8RUT, K8AEH, WB8CJW, NZ8R, WB8URI, WB8DZW, KA8ZNY. and WA8RMC

Some pictures of the event are included below.


Art...WA8RMC

## DAYTON 96...IS IT TOO CROWDED?

Yes, I **do** feel that the Dayton hamfest is getting too crowded. However, I don't have a better idea so I'll leave it to those who have more to say about the subject. NO it's not too early to talk about Dayton but much more can be said at a later date. (Don't forget that to help get us away from the cold and rainy weather, they moved the dates into May two weeks. **YEA, RIGHT!** Maybe they should check with the Muirfield Golf Course Planning Committee). In any case, here is what a couple of us had to say about it.

"Because of the high cost (over $1,600) to "do" Dayton, the poor facilities, and the change in date that throws attendance into question, ATVQ will NOT "do" Dayton in 96. There will be NO ATV meeting at the Holiday Inn and we will NOT have a booth. We would like to pick an alternative hamfest to have a big ATV meeting each year. The table is open to suggestions. Perhaps one of the clubs would like to start it, say in Houston, Dallas, Orlando, Miami, LA, name it. Besides the unpredictable weather, hardly pleasant, they moved the date into May. Whether the high cost of hotel /motel rooms, meeting room, booth, food, and poor facilities at HARA (the bathrooms are awful, even the ventilators are in sad need of repairs, poor food service especially for vendors, always too hot or too cold, stuffy /smoky from the BBQ pits, too crowded in the aisles, and someone always parks their truck taking up 406 parking spaces instead of 1-2, etc.) will impact the move I don't know. Rather than take a chance we will pass this year and see how it develops. If Dayton 96 goes well, we will return in 97."

Henry...KB9FO

"After 18 straight years at the Dayton Hamvention, Maryann and I are taking a break and letting one of our dealers, Ed, WA6BFR, of Micro Video Products have all the fun. Ed specializes in R/C ATV and has a line of small cameras. So drop by booth 355 to see the P.C. Electronics ATV gear and Micro Video Products cameras and R/C stuff.

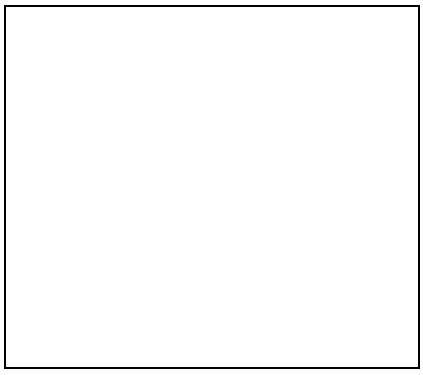
We have a time conflict with the Hamvention shift to mid May and also increased costs. It has also been so tough to get the extra production built, tested and shipped to Dayton that we are somewhat pooped out at the start of the show. We want to keep our reputation of always having shelf stock and shipping within 24 hours of a call even during April and May, but Dayton is like three weeks of sales in three days."

Tom...W6ORG

## A TREE ANTENNA?

The following article was found in an unidentified magazine which was quickly related to KF8QU's situation where he can't have any outside antennas because of housing development restrictions. Bob, this one's for you. Does it give you any ideas?

When a specialized radio carrier based in Denver decided to erect a radio tower on Monument Hill in El Paso County near Pikes Peak, it didn't want to ruin the pristine setting with a huge, skyline-splitting shaft. Instead the firm contacted a company that makes lightning and communication poles - and radio towers disguised as trees. "I had worked with them before and was aware that in the past they had made tree poles out of galvanized steel, piping, and epoxy resin" he said. "We called them up and asked them to make us a conifer tree". The El Paso County Commission loved the idea and the "tree" was erected in 1993. The structure houses a compartment at its base that contains radio equipment, while the wiring and cables are housed inside the hollow trunk. While these trees can cost almost five times as much as poles, they felt the price was right. "When you think about the legal and arbitrary fees that we would have had to pay to put a tower up, this is a lot cheaper" he says.



Bob, you now can go to work and secure the materials but I'd like to know what type of tree would look best in your back yard? This could open up all kinds of doors...how about a moose antler antenna, Bob?

Art...WA8RMC

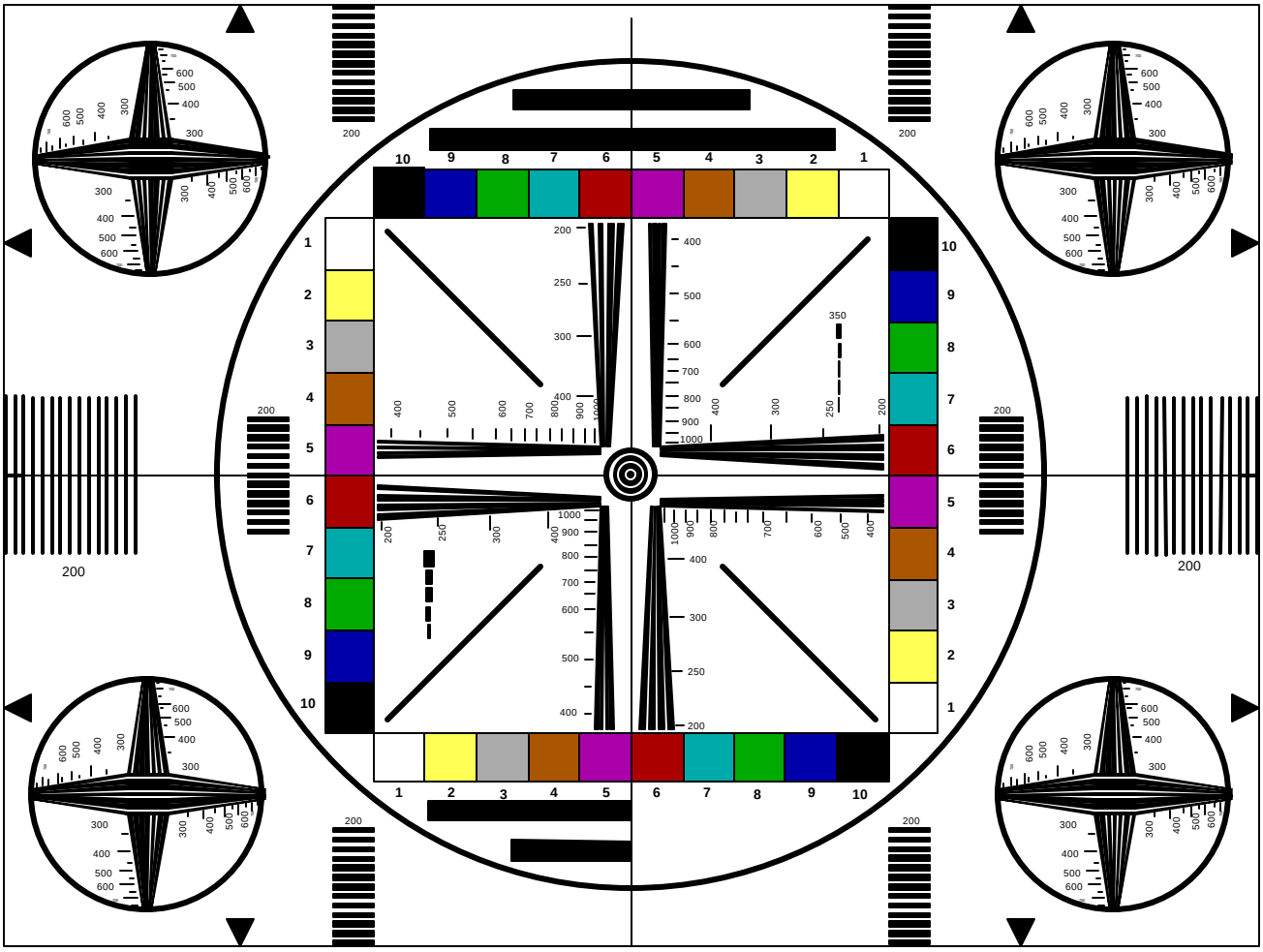
## SILENT KEY

It is with great sadness that we report that Dave Williams WB0ZJP died of cancer on 12/8/95 at the age of 42. Some of the local TV dxers remember Dave who gave us video contacts from the St Louis area. He was a long time ATVer who also worked DX on VHF, UHF and microwave bands. He was also a one time holder of the ATV dx record. He will be greatly missed.

As a tribute to Dave we would like to share with you one of Dave's contributions to ATV....his infomous P report chart which many of us have seen in ATVQ magazine as well as other publications in the past. Dave is well represented in the pictures which follow.

"The P level reporting system was origionally developed in England and eventually adopted by the rest of the world. Is's called P Level (for picture) and ranges from P0 (no picture) to P5 (closed circuit). P1 is visiable sync bars, P2 is lots of snow, P3 is some snow, P4 is nearly snow free and P5 is broadcast quality, closed circuit. You can also indicate color or sound as in , "Your signal is P4 with color and sound." Or "I'm getting a P3 with occasional color and no sound" etc. Snow is the word we use to indicate noise in the picture. The system is more subjective than scientific although P5 is about 200 microvolts whereas 1 microvolt is full quieting in FM mode".

**TEST PATTERN**



**SOLVE THIS PUZZLE!**

The puzzles presented last issue were not totally solved! N8KQN solved the first one shown below with the following answer: The letters actually represent the numbers **O**ne, **T**wo, **T**hree, **F**our, **F**ive, **S**ix, and **S**even. Then obviously the next three letters are **E, N** and **T**. Pretty simple now that the answer is shown, huh? Thanks Bill for the test of all our analytical abilities...WA8RMC.

An author named Clifford Stoll was shown a series of letters written on a blackboard in an office of the FBI. He was asked to determine the next letter in the series. After a brief moment he was able to provide it. Can you?
The letters on the blackboard are: O, T, T, F, F, S, S
Once you find the next letter in the series, finding the next two letters should be very easy.

OK. No one got the answer to this next one and Bill isn't telling except for the following clue: "One is just One One". My analysis of the first one proved I was looking too deep for a solution but a shallower approach still produces no results! Can any of you help? Let's not let Bill stump us again...WA8RMC.

After successfully solving the first puzzle Cliff was then shown a series of numbers on the blackboard. He was asked to determine the next number in the series but was unable to do so and it remains a mystery to this day. Can you help?

The numbers on the blackboard were 1, 11, 21, 1211, 111221
See if you can determine the next number in the series. Remember that your answer must explain the logic that validates how you arrived at the correct solution. Cliff will appreciate it.

Bill...W8DMR

## NEW MEMBER SECTION

Lets welcome the following new members to our group**!** Its a good start but we need more people interested in ATV. If any of you know someone who might be interested, let one of us know so we can flood them with information.

K8AOH Charley Tucker Springfield, Ohio
W8MTJ George Hoadley Newark, Ohio
KG8SN Paul Ernst Columbus, Ohio
KB8UU Bill Rose Columbus, Ohio
N8TBU Ed Lathum Galloway, Ohio

## HAMFEST CALENDAR

This section will be reserved for upcoming hamfests for as far in advance as we know about them. The listings will be limited to Ohio and vicinity and easily accessible in one day. I trust that anyone who is aware of an event that is not listed here or incorrectly listed will notify me so it can be corrected. The list will be amended as further information becomes available.

| LOCATION | SPONSOR | DATE |
|---|---|---|
| Nelsonville, Ohio | | Jan 21 |
| Mansfield, Ohio | Intercity Amateur Radio Club | Feb 11 |
| Toledo, Ohio | Toledo MRA | March 17 |
| Madison, Ohio | | March 24 |
| Medina, Ohio | Medina 2-M group | May 12 |
| Dayton, Ohio | Dayton ARC | May 17, 18, 19 |
| Youngstown, Ohio | Twenty Over Nine ARC | May 26 |
| Milford, Ohio | Milford ARC | June 15 |
| Van Wert, Ohio | Van Wert ARC | July 21 |
| Wheeling, W. Va. | Triple States ARC | September 15 |
| Cincinatti, Ohio | Greater Cincinatti ARC | September 22 |
| Berea, Ohio | Hamfest Assoc of Cleveland | September 29 |

## OHIO AREA ATV REPEATER LISTING

The following list is compiled from actual repeater sightings in the Columbus, Ohio area. We need to keep an up-to-date and accurate listing so the newer operators know what to look for when the band is open. Our repeater is obviously the best so I'll list it first.

| LOCATION | CALL SIGN | INPUT FREQ | OUTPUT FREQ | BEAM HEADING | NOTES |
|---|---|---|---|---|---|
| Columbus, Ohio | WA8RUT | 439.25 | 427.25 | ~ | A signal on any listed input causes |
| | | 910.25 | 1258.25 | ~ | an output on both listed |
| frequencies | | | | | |
| | | 1280 | | ~ | |
| Xenia, Ohio | KB8GRJ | 443.25 | 421.25 | 240 | *10 on 144.36 = tone up for 1 minute |
| Dayton, Ohio | W8BI | 439.25 | 426.25 | 250 | *10=ID, *71= bul board, on 147.45. |
| | | 1245 | 1287 | | |
| | | 1249.5 | 1291.5 | | |
| Lima, Ohio | WB8ULC | 439.25 | 421.25 | 315 | |
| Ashland, Ky. | WA4GSS | 439.25 | 421.25 | 180 | |
| Elizabethtown, Ky. | W4BEJ | 439.25 | 421.25 | 210 | |
| Bowling green, Ky. | W4HTB | 439.25 | 426.25 | 200 | |
| | | | 1280 | | |
| Weeling, W.Va | WB8QHO | 439.25 | 426.25 | 080 | |
| Acme, Pa | W3PVH | 439.25 | 421.25 | | |
| Pittsburgh, Pa | W3KWH | 439.25 | 426.25 | 090 | |

## INTERNET INFO

If you have access to the INTERNET, you may be interested to know of some of the HAM related information that is available. We've tried to start a list of interesting places to look in case you get in the "surfing" mood. If any of you find different places to look, I'd appreciate having the info passed on to me so I can include it in this list. The ATCO home page is updated periodically so be sure to check often for late breaking NEWS. The addresses listed below are case sensitive, so type exactly as shown below.
(If anyone has comments or would like additional listings contact me via EMAIL at towslee.@mt-two.mhs.compuserve.com)

| | |
|---|---|
| **http://psycho.psy.ohio-state.edu/w8lt** | Ohio State University W8LT radio statio.n. |
| **http://www.ualr.edu/doc/hamualr/callsign.html** | Search by call sign or name. |
| **http://asp1.sbs.ohio-state.edu** | Local & global weather map information (good detailed info) |
| **http://www.arrl.org** | ARRL home page |
| **http://www.acs.ohio-state.edu** | Ohio State University home page. Lots of neat stuff. |
| **http://psycho.psy.ohio-state.edu/atco** | ATCO home page. |
| **http://www.geopages.com/SiliconValley/1242** | East Tennessee ATV home page |
| **http:/www.portal.com/~jpawluk/KB6MMF.html** | California ATV home page |
| **http://www.ladas.com/ATN** | Amateur Television Network in Central and Southern California |
| **http://www.mindspring.com/~rwf/aatn1.htm** | Atlanta, Georgia ATV home page |
| **http://calvin.ksc.nasa.gov:1080/lisats.html** | NASA ATV home page |
| **http://www.stevens.com/HATS/home.html** | Houston Texas ATV home page |
| **http://geopages.com/SiliconValley/1242/wb7fid.html** | Salt Lake City Utah ATV home page |
| **http://www.prostar.com/~Richard.Keller/ham-tv.html** | Washington ATV home page |
| **http://www.arrl.org** | ARRL home page (not much now but they're new to the net) |
| **http://www.hayden.edu/Guests/AATV** | Phoenix Arizona Amateurs |
| **http://citynight.com/atv** | San Francisco California ATV |
| **http://www.njln.net/~magliaco/atv.html** | Brookdale ARC in Lincroft New Jersey |

The following address is helpful in searching for many different topics on the Internet. I have found it to be a very powerful search engine especially for ham radio and television topics. At any point when logged onto the Internet, type the following:
**http://www.yahoo.com/Entertainment/television/Amateur_television** for a listing of the available ATV home pages.
(The address of **http://www.yahoo.com** is the table of contents pointer for a vast variety of topics).

## HIGH LEVEL MODULATOR FOR ATV

It started out to be a routine change of the tube in my 4CX250 ATV transmitter. The output was very low and after over ten years of faithful operation, I wasn't too disappointed that it needed replacement. However, when I installed a **brand new** one in place of the one I believe I bought at a hamfest for under ten bucks, things didn't work quite right. Instability, oscillations and poor video reproduction were among a few of my surprises. At that point it seemed natural to blame the video modulator but from where I sit now, for the life of me, I can't figure out how I came to that conclusion!

My existing video modulator was built by myself in the sixties from a circuit design by Mike Talent. This circuit seemed to perform well till I converted from black and white to color. Then I realized that to transmit color I needed to include the color burst too. The poor video response (about 2 MHz) was responsible so I cobbled up the circuit and with the help of negative feedback, I was able to boost it enough to be acceptable. While I had the transmitter apart that seemed to be a good time to redesign it. Here goes!

The circuit shown on the following page is very similar to the original which is basically a good design. My circuit improves the gain, video response and the range of adjustment, allowing a wider variety of tube parameters to be accommodated. DC coupling is desirable throughout but some times it is not feasible. AC coupling was used on the input stage because the video comes from a remote source with grounds that may differ from this one. A video op-amp with current feedback was chosen for the first stage to keep it simple while maintaining a wide bandwidth at high gain. A gain of ten was selected because that was the practical limit in that device and that much was needed to allow low gain operation of the following transistor stages. The feedback resistors R1 and R2 must not only must maintain a ratio of 10:1 for a gain of 10 (R1/R2=1000/100=10) but also must be low value units (below 1K ohms) to maintain wide bandwidth characteristics. Since this op-amp has a maximum voltage rating of 25 volts, a voltage divider and filter was used derived from the -150 volt main supply as shown in the schematic. The video output from the op-amp is then DC coupled the next stage.

The next stage is a simple transistor circuit. A PNP transistor is needed here to perform the required DC level shift. This circuit is sensitive to stray capacitance so it is imperative that leads be kept short to preserve the bandwidth. Some stray capacitance is unavoidable, however, so some high frequency peaking is usually required. The 33pf capacitor across the 1k emitter resistor restores the slight high frequency rolloff to a flat condition to out past 6 MHz but the value may change with various circuit layouts. I recommend the user check the color burst amplitude of the transmitted and detected video at the transmitter output and select a value to provide the correct amplitude (see my line sampler circuit in the April 1995 issue of ATCO newsletter). This transistor has a gain of 3.3 which is determined by the ratio of the collector and emitter resistors. The inverted video signal at the collector is then passed to an emitter follower buffer transistor (unity gain) to prevent collector loading and loss of high frequency signals by the next circuit.

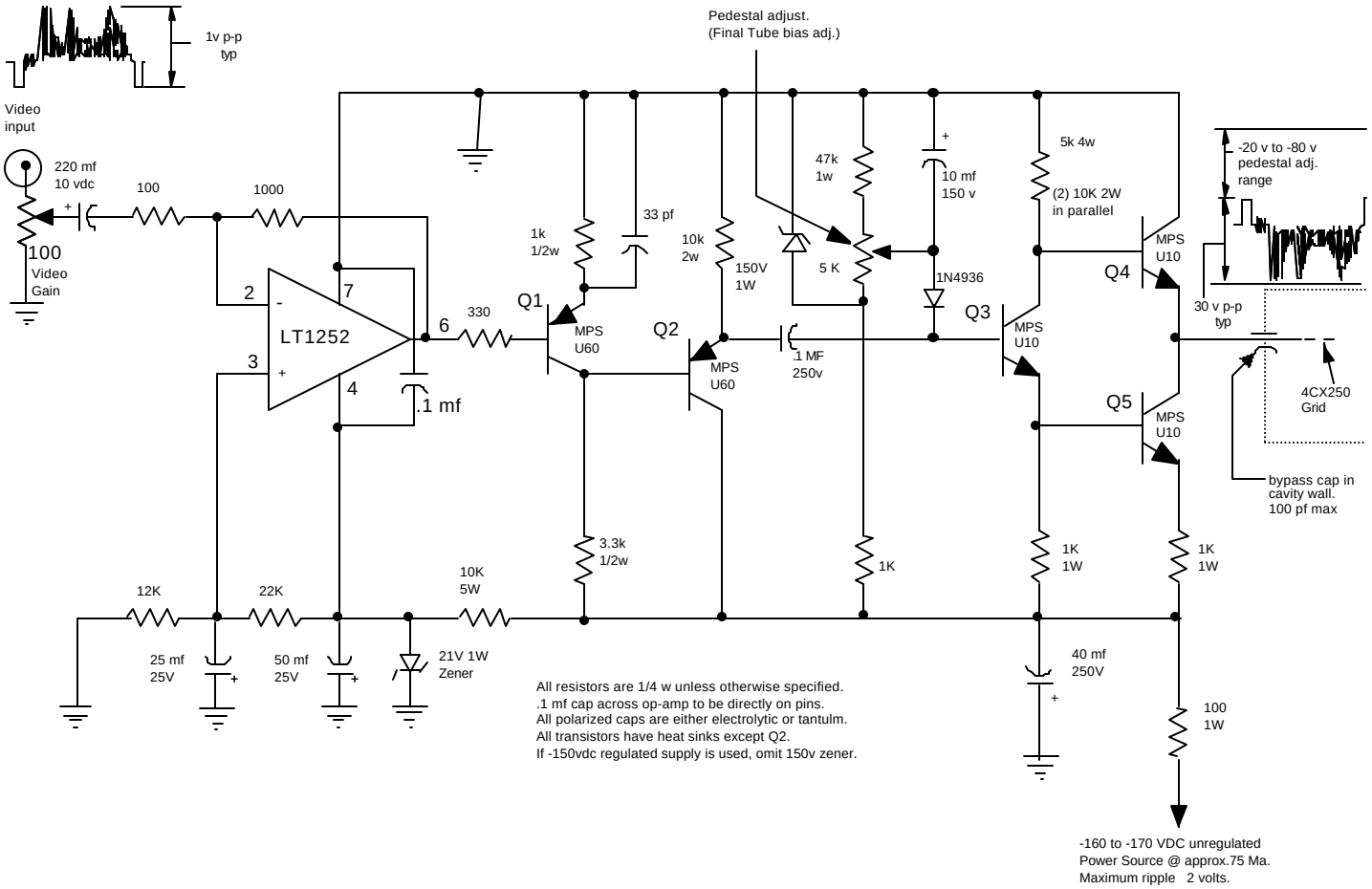
The input network of Q3 is a variable DC bias adjustment to set the DC operating point of the output and control the 4CX250 tube bias commonly referred to as the pedestal adjustment. The video has to be AC coupled at this point so it will "ride on top of " the DC bias. **IMPORTANT.** The diode in this circuit must be a fast switching type. Use a 1N4936 or similar. A standard 1N4004 will not be fast enough to follow the video properly. This transistor circuit has a gain of 5 (5000/1000) which is higher than required for the signal but needed to allow the DC portion of the output to be adjusted to within 25 volts of the power supply (-125 volts). This transistor also serves as the differential driver for the following two transistors.

The output transistor complementary pair Q4 and Q5 works quite well to drive the 4CX250 grid because it is a very low impedance circuit capable of driving high capacitance without bandwidth degradation. It accomplishes this because it is essentially an active driver for both positive as well as negative going signals . This is unlike Q1 which is only active in the ground driven direction and passive in the power supply direction (pulled to -150 volts by the 3.3k resistor).

The overall frequency response of the total circuit is essentially flat from about 20 Hz to over 4.5 MHz where rolloff starts. Useable bandwidth is beyond 8 MHz where it is only about 3 dB down at 6 MHz. I have noticed some small phase distortion starting at around 4 MHz but is not serious. After I have more time to *play with it*, maybe it can be improved upon. I'll publish improvements in future issues. Now that I mention improvements, I need to investigate the elimination of Q1 and Q2 and feed the op-amp output directly to Q3. There is actually just enough gain available to do this but didn't as yet because I don't know how much surplus gain is needed to accommodate other 4CX250 tubes.

The power supply is nothing special and does not have to be regulated. Almost anything that will source 160 to 170 volts at 75 Ma will do. Be sure that the overall ripple is less than about 1/2 volt p-p or it might show up in the video. If the builder wants to go as far as using an electronically regulated power supply, the zener across the pedestal pot can be omitted .

General comments: All transistors except the PNP buffer stage must have heat sinks. All transistors must have a gain bandwidth product of at least 40 MHz to function ideally and must have emitter/collector voltage ratings of at least 300 volts for reliability. I selected Motorola MPSU60 PNP and Motorola MPSU10 NPN units which turn out to be complementary pair devices used primarily in the RGB output stages of color television receivers. Also, they are plastic units with a tab for easy heat sinking. **CAUTION.** The tab is electrically connected to the collector necessitating the use of insulating washers! The Amplifier will supply at least 50 volts P-P video from a 1/2 volt P-P video input which is more than required for the 4CX250 tube. Mine needed about 25 volts P-P with about a -75 volt DC bias. Overall bandwidth exceeded 6 MHz which is more than broadcast requirements! The Linear Technology #LT1252 video op-amp is available from DigiKey for about $4.00. Happy building!!!




Oh by the way, after I built this I found that my real trouble with the 4CX250 amplifier was bad finger stock on the grid cavity cover and an under coupled output loop. Both are fixed now and the amplifier is working fine. It outputs about 50 watts average with 150 watts at the sync tip. I'm using 1500 volts @ about 150 Ma on the plate.

## ATV BALLOON LAUNCH WAS SUCCESS AFTER ALL!

Many of us knew that Ron WA4GSS had made a balloon launch on November 4,1995 and failed to recover it. Lost for all we knew. If so, that would have been a huge setback for not only would the equipment and thousands of dollars been lost but many hours of construction also. I was very happy to find out he finally got it back. Here is what Ron has to say about that day...WA8RMC.

I had tested the GPS receiver and TNC for almost a week prior to the launch to get everyone's packet ready. We had trouble seeing the balloon icon on the APRS map so we worked many days to figure that one out. Due to the 10 meter beacon interference with the rest of the equipment, it was left off the package. My goal was to test the GPS receiver and the pico packet TNC along with the High Technology MCM4 micro computer with the video overlay board which all worked. However, we missed checking to see if the 2 meter beacon was turned on. It wasn't.

The balloon launch lasted a little over two hours and because of the jet stream it out ran our chase teams. The chase team had tracked the balloon payload to within 10 miles of the actual landing site during the decent. With no tracking beacons to DF and many hams looking for two days straight in sub zero temperatures, it looked like I had lost the package forever. The following Sunday morning I got a call from a ham who said that the balloon package was found near Victor, W.Va. by a non ham while hunting on Saturday. Jim Rice KD4HPQ (launch engineer) and I went to pick up the package. It was like a family reunion. All the depression of the previous week was now gone. No more could of's or would of's but just lots of smiles.

I am planning to have three balloon launches in 1996. I have to figure out how to finance them as I spent way too much money last year out of my own pocket. I will warn you that balloon launches are habit forming and lots of fun".

Ron told me that because the 2 meter beacon wasn't on, tracking was difficult. Also, the 10 meter beacon being left off of the package was the reason they couldn't find it after landing. It was crucial because the radiated signal could have been detected even though the balloon landed in a gully and well below the horizon. I'm sure that it will be **included** on future missions.

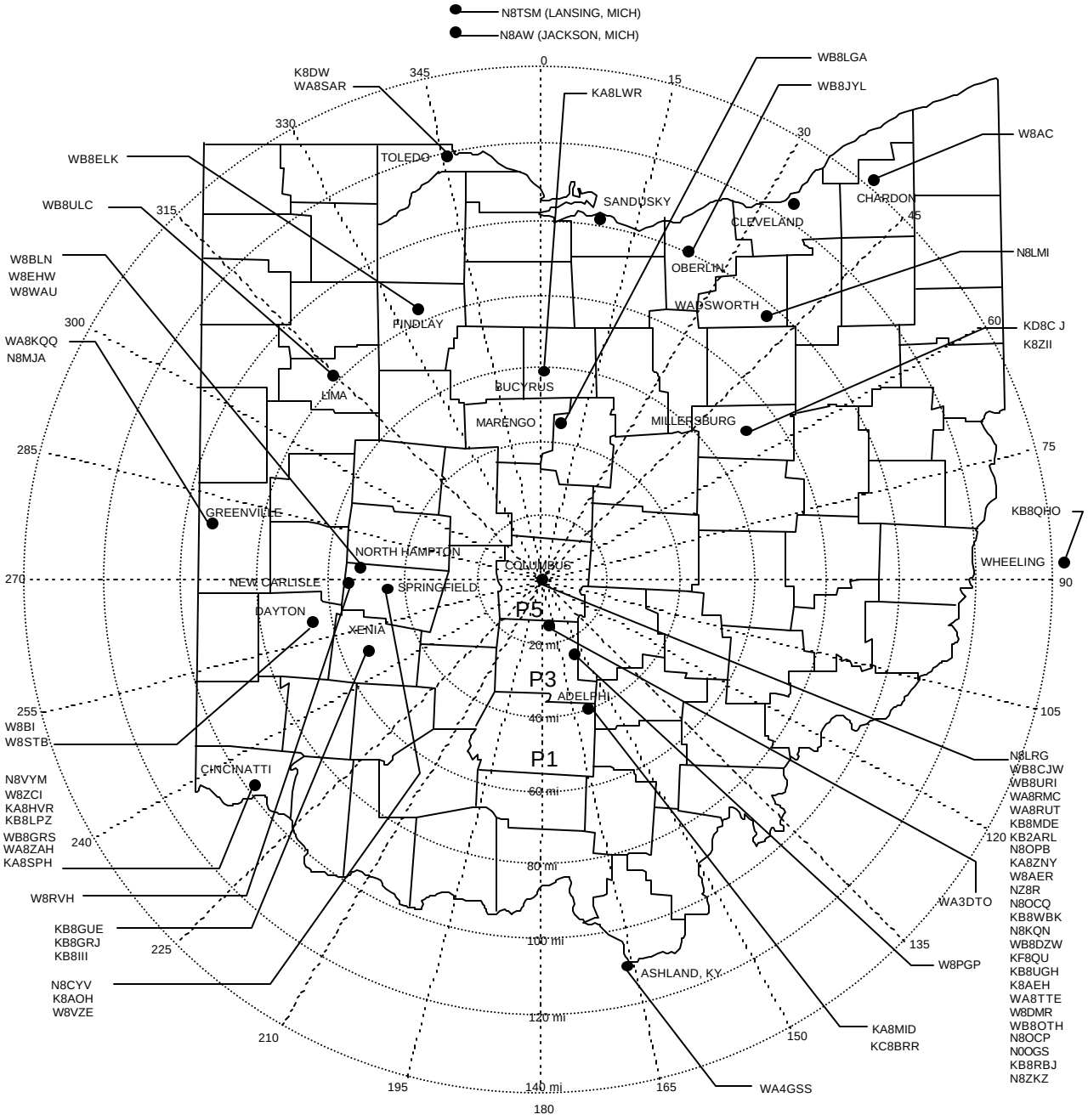
To illustrate the complexity of this package Ron reports that the following equipment was on board:

4 watt ATV transmitter @ 439.25 Mhz
Micro Computer Concepts controller
Pacomm Pico Packet TNC with second port option
VHF Engineering 2 meter transmitter @ 145.79 MHz
High Technology video overlay board
Dipole antennas for other equipment
10 meter CW trans. (left off of package due to QRM to ATV equip)
CCD color camera
Trimble GPS rec. with RS232 option and optional antenna
Radio Shack scanner receiver
High Technology MCM$ computer
Big Wheel ATV antenna
2 meter beacon transmitter @ 144.007 (not turned on)


Ron...WA4GSS

## 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. It also contains mile circles & 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 1250.25 MHz FM modulation
vestigial sideband filter in output line of 427.25 & 1250.25 transmitter
Power - 40 watts average 80 watts sync tip (427.25) 15 watts (1250.25)
Link transmitter - 1 watt NFM 5khz audio (446.350 MHz)

Transmit antenna: 427.25 MHz - Dual slot horizontally polarized 7 dbd gain major lobe west
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 with FM subcarrier audio
910.25 MHz for A5 video link data from remote sites
920.25 MHz for F5 video general purpose input (disabled at this time)
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 west
910.25/920.25 MHz - Vert. polar. dB Products 10 dbd gain
1280.25 MHz - Horiz. polar. single slot 3 dbd gain major lobe west.

| | | | UP | DOWN |
|---|---|---|---|---|
| Input control: | Major Touch tones: | beacon (10 min) | *439 | *22 |
| | | regional weather radar | 697 | # |
| | | *Local 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 | # |

* inactive at this time

Remote sites: *Local radar (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
_____
_____

COMMENTS_____
_____
_____
_____

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 (10/15/95) | | | $ 984.09 |
| RECEIPTS | (dues) | | $122.50 |
| OTHER INCOME (bank interest) | | | $ 6.99 |
| EXPENDITURES | (film and processing) | | $(7.62) |
| | (Fall Event food) | $(180.01) | |
| | (postage) ( $.32 x 60) | | $ (19.20) |
| BALANCE | (1/10/96) | $896.75 | |

## ATCO MEMBERS AS OF 10 JANUARY 1996

| | | | | | | |
|---|---|---|---|---|---|---|
| K8AEH | Wilbur Wollerman | 1672 Rosehill Road | Reynoldsburg | Ohio | 43068 | 866-1399 |
| W8AER | Dave Sears | 1678 Kaiser Dr | Reynoldsburg | Ohio | 43068 | 861-0904 |
| K8AOH | Charley Tucker | 4546 Laredo Street | Springfield | Ohio | 45503 | 513-390-0693 |
| 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 |
| N8FFO | Edward Hauff | 1001 Parkview Blvd Apt 330 | Columbus | Ohio | 43219-2273 | 253-5794 |
| KA8HAK | Jim Reese | 1106 Tonawanda Ave | Akron | Ohio | 44305 | |
| N8KQN | Ted Post | 1267 Richter Rd | Columbus | Ohio | 43223 | 276-1820 |
| WA8KQQ | Dale Waymire | 225 Riffle Ave | Greenville | Ohio | 45331 | 513-548-2492 |
| 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 |
| KA8MID | Bill Dean | PO Box 458 | Adelphi | Ohio | 43101 | 614-655-2454 |
| KB8MDE/N8ZTL | Shaun Miller/Greg MacCartney | 3469 Oakcrest Rd | Columbus | Ohio | 43232 | 238-0918 |
| W8MTJ | George Hoadley | 956 Miller Ave | Newark | Ohio | 43055 | 614-522-5069 |
| 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 Paxson 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 | 761 Standpipe Road | 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 | |
| KG8SN | Paul Ernst | 67 Richards Road | Columbus | Ohio | 43214 | 267-5758 |
| W8STB | John Hey | 894 Cherry Blossom Dr | West Carrolton | Ohio | 45449 | |
| KB8TRP | Tom Flanagan | 1751 N. Eastfield Dr | Columbus | Ohio | 43223 | 272-5784 |
| WA8TTE | Phil Morrison | 154 Llewellyn Ave | Westerville | Ohio | 43081 | |
| KE8U | John Greene | PO Box 64 | Presque Isle | Wi | 54557 | |
| 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 |
| KB8UU | Bill Rose | 2685 Kropp Road | Grove City | Ohio | 43123 | |
| WB8VJD | Rick Morris | 203 Merton Street | Holland | Ohio | 43528 | |
| W8WAU | Jake Fuller | PO Box 117 | No. Hampton | Ohio | 45349 | |
| KB8WBK | David Hunter | 45 Sheppard Dr | Pataskala | Ohio | 43062 | 927-3883 |
| KB8YMN | Mark Griggs | 2160 Autumn Place | Columbus | Ohio | 43223 | 272-8266 |
| KA8ZNY,N8OOY | Tom & Cheryl Taft | 386 Cherry Street | Groveport | Ohio | 43125 | 836-3519 |

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

**FIRST CLASS MAIL**

**DON'T FORGET OUR NET AT 9:00 PM ON TUESDAY NIGHT ON 147.45 MHZ**
**ITS DUES TIME GUYS! HELP US OUT BY SENDING IN YOUR $10 DUES NOW. THANKS!**