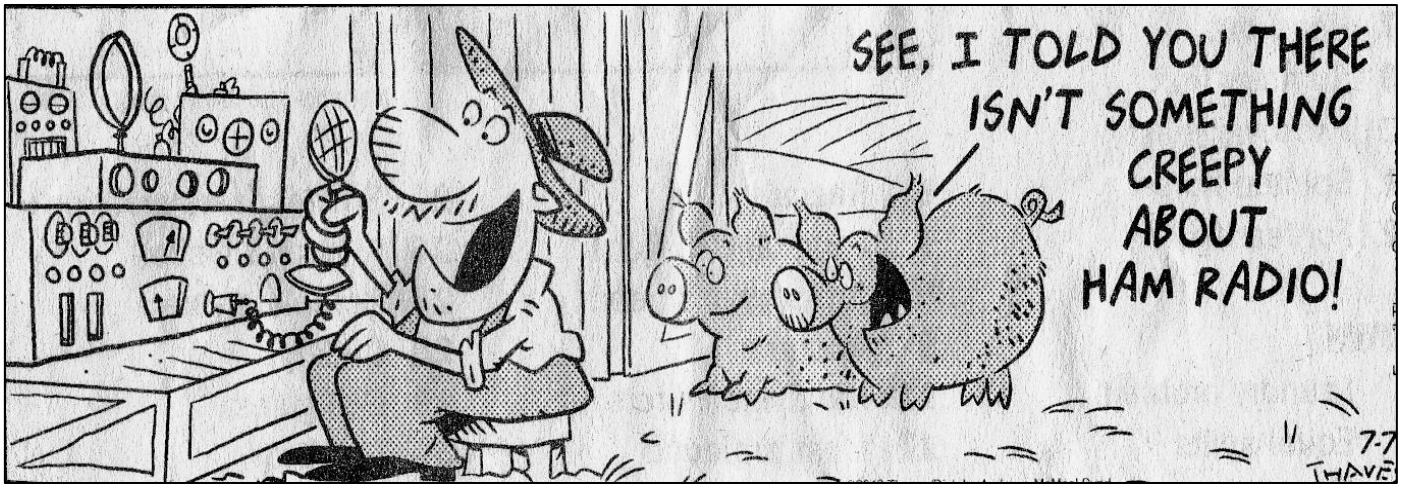
ATCO NEWSLETTER

VOLUME 35 NUMBER 4 **October 2018**

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

ATCO SPOTLIGHT TOPIC

Thanks to Beasley, K6BJH (SK) and ATVQ Magazine for allowing us to share his cartoons. For the complete book on "The Best of Beasley" go to the ATVQ Magazine web site (http://atvquarterly.com/) available for purchase.



ACTIVITIES ... from my Workbench

Hello again, folks! Well, the Ohio State Buckeyes surprised us again and this time not in a happy way. Let's mop up our tears, move on and hope they improve so they will win the rest of their games. Nuf said about that! Turning to other topics, I've got a lot of leaves to rake since the wind storm last night but for now, down to Ham topics.

The item I've been focusing on lately is the re-work of the two 427/439 MHz slot antennas installed at the repeater in 1993. Yes, they've been in operation for about 25 years now. The plastic Mylar radomes have finally deteriorated and partially vaporized into the atmosphere some time ago so repair is long overdue. I have now repaired both, re-installed the transmit antenna and will have done the same to the receive antenna hopefully by the time you read this….weather permitting. I'm scheduled to go there on Monday afternoon to accomplish the task. The transmit antenna has a gain of about +7 ½ dBd but has some -3dB sidelobes so I pointed the front lobe due west to help KB8YMQ and the people in the Dayton direction. The receive antenna gain measures about +5 ½ dBd but with a more circular pattern. It is within 2dB all the way around. I have no idea why. In any case, I'm not going to tear it apart to find the reason. Case closed.

Next, the 1288MHz DVB-S receiver has a bad right channel audio output. I found that when I tried to tie the output into the 147.48 audio lines and found a shorted audio line on it. It shorted the 147.48 audio when connected. Dale wants to use the 1288 DVB-S receiver audio to reset the controller parameters after a scheduled power shutdown every Monday morning. He'd program his computer to do that automatically. I have a spare good receiver that I will take with me on the next repeater trip. (If we ever re-work the repeater controller, which I'd like to do, we could possibly add a UPS power supply so manual reset is not needed). If I do this with the same priority that I put on the antennas, the whole system will be obsolete first!!!

OK, another issue popped up. We don't normally look at the 1258 MHz analog signal, at least I don't, so I didn't notice that the signal has decreased in strength significantly. Joe, KC8YPD, usually monitors this output and said he can barely see the signal. I agree with him as it is only about P1 here. At least the signal is there so the issue may be either the power amp or antenna. I hope the problem is the amplifier because I'm not excited about climbing across steel girders to get to the antenna. More info when I can inspect it.

There has been a discussion about adding a roof camera again. The severe weather group said they definitely would use it if we did that. They said that before so I would need more assurances that they need it before I go to the trouble. If I DO add a roof cam. I would make it a hi-def unit and tie it into the mesh system there. More discussion is needed because it would be a lot of work. Another cable roof penetration would be a big deal with the building maintenance personnel.

That's about it for this time. Don't forget the Fall Event this coming Sunday. Also, I'll terminate the Ham equipment bidding sometime Saturday evening so last-minute bids can be received. I'll then freeze the bidding and announce the winners at the Fall Event. I'll bring any unbid items with me to raffle off at that time. Oh yes, I have a number of ARRL Ham books that I'll raffle off too including a 2016 hard bound copy of the ARRL Handbook.

See you at the Fall Event,
,…WA8RMC

BAOFENG – IN TROUBLE AGFAIN!

WOW! I own one of these. It's great considering I only paid $25.00 new for it. However, if the output quality is outside the specified limits… maybe not. This is a good example of the Chinese dumping that president Trump is talking about. When I get time, it seems like a good idea to connect it to my spectrum analyzer for a spectral purity check. My guess is that it will not be good. More details later. WA8RMC

FCC Cites Baofeng Importer for Illegally Marketing Unauthorized RF Devices. The FCC has issued a Citation and Order Citation to Amcrest Industries, LLC(formerly Foscam Digital Technologies, LLC), an importer and marketer of popular and inexpensive Baofeng hand-held transceivers, alleging that the company violated FCC rules and the Communications Act by illegally marketing unauthorized RF devices. The FCC asserts that Amcrest marketed Baofeng model UV -5R- series FM hand-held radios capable of transmitting on "restricted frequencies." The Baofeng models UV-5R and UV-5R V2+ were granted an FCC equipment authorization in 2012 to operate under Part 90 Private Land Mobile Radio Service (Land Mobile) rules. "Under § 2.803 of the Commission's rules, an entity may not market a device that is capable of operating outside the scope of its equipment authorization," the FCC said. "RF devices that have been authorized under Part 90 rules, such as the model as issue, must operate within the technical parameters established in those rules." The FCC also maintained that the UV-5R 2+ is capable of operating at 1 W or 4 W, while the Part 90 Equipment Authorization limits the power output to 1.78 W. Amcrest conceded that the units were capable of operating on restricted frequencies but told the FCC that, per discussions with the manufacturer, were "only capable of operating at 1 W, the FCC said. The company instructed the manufacturer to fix the problem and later confirmed with the manufacturer that all Amcrest inventory on order and in the future, would operate only on 145-155 MHz and 400-520 MHz While the Citation does not mention Amateur Radio, the UV-5R series radios can be programmed in a channelized configuration to function on 2-meters and 70-centimeters. According to the Citation, Amcrest had added a warning in its user manuals and marketing and sales materials implying that the UV-5R V2+ could operate on unauthorized and restricted frequencies, including Part 87 Aviation Services frequencies, Part 80 Maritime Services frequencies, and frequencies reserved for federal government use. The FCC said Part 90 radios that permit the operator to use external controls to program and transmit on frequencies other than those programmed by the manufacturer are "generally prohibited." Amcrest told the FCC that it had ceased marketing four models in the Baofeng UV-5R series "a few years ago," but it did not remove them from its website until last February. Numerous online retailers continue selling UV-5R series radios for less than $25, with some ads indicating that these are "Ham" equipment. Amcrest Industries, LLC, which owns and operates Baofeng radio US, is an import, distribution, and marketing company based in Houston, Texas. It also sells hand-held transceivers under its own label. "While we recognize Amcrest's efforts to date to achieve compliance with the Commission's rules, the company must nonetheless ensure the version of the UV-5R V2+ it is marketing operates only on frequencies specified in its Equipment Authorization," the FCC said in its Citation. The FCC directed Amcrest "to take immediate steps to come into compliance with the Commission's equipment authorization rules and cease marketing unauthorized RF devices in the United States." Amcrest could face fines of nearly $20,000 per day if it fails to comply.

More Discussion on Uncertified Imported VHF/UHF Transceivers.

ARRL has taken a minor exception to the wording of a September 24 FCC Enforcement Advisory pertaining to the importation, marketing and sale of VHF and UHF transceivers and is in discussion with FCC personnel to resolve the matter. The Enforcement Advisory was in response to the importation into the US of certain radio products that are not FCC certified for use in any radio service, but identified as Amateur Radio equipment. “While much of this equipment is actually usable on Amateur bands, the radios are also capable of operation on non-amateur frequencies allocated to radio services that require the use of equipment that has been FCC-certified,” ARRL said. “Such equipment is being marketed principally to the general public via mass e-marketers and not to Amateur Radio licensees.” ARRL said the upshot is that the general public has been purchasing these radios in large quantities, and they are being used on the air by unlicensed individuals. “Radio amateurs have complained of increased, unlicensed use of amateur allocations by people who are clearly unlicensed and unfamiliar with Amateur radio operating protocols,” ARRL said. But while it supports the general tenor and intent of the Enforcement Advisory, ARRL said it disagrees with the FCC on one point. “In several places, the Enforcement Advisory makes the point that ‘anyone importing, advertising or selling such noncompliant devices should stop immediately, and anyone owning such devices should not use them,” ARRL pointed out. “The Advisory broadly prohibits the ‘use’ of such radios, but our view is that there is no such prohibition relative to licensed Amateur Radio use — entirely within amateur allocations — of a radio that may be capable of operation in non-amateur spectrum, as long as it is not actually used to transmit in non-amateur spectrum. ARRL has had extensive discussions about this issue with FCC Wireless Bureau and Enforcement Bureau staff, and those discussions are ongoing. “It is important to protect the flexibility of the Amateur Service as essentially an experimental radio service, but it is also very important to stop the unlawful importation and marketing of illegal radios in the United States and the use of those radios by unlicensed persons,” ARRL maintained. “We will keep our members informed as our discussions with FCC on this subject continue.”

DATV-EXPRESS REPORT FROM GERMANY

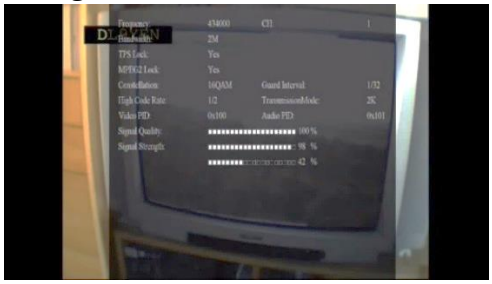
Art, I just want to let you know, that I managed it to receive the DVB-T Signal from my DATV-Express transmitter with my HiDes HV-120 Receiver after firmware update. Next step is to try some of my preamps, because it needs a lot of power on the input to show a picture! Best regards, **Ralf.**

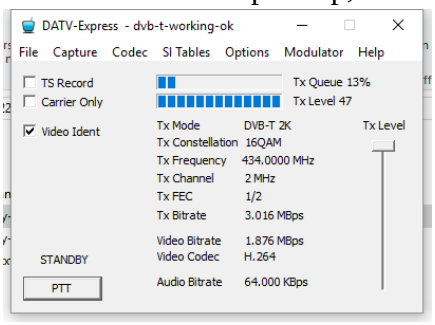
Ralf, that is good news. I know the board can transmit DVB-T but only at low symbol rates due to the USB2 throughput limitation. If you will translate the German story into English for me, I would like to publish it in our ATCO Newsletter. Thanks for the information, Regards, **Art Towslee WA8RMC**

Art, the weather is changing from a very hot and dry summer to autumn, good conditions for translating my website with www.deepl.com to English. Best regards**, Ralf**

The local ATV relay is in maintenance mode and I have time for tinkering. Ideal conditions to take another attempt for DATV in DVB-T. On Ham Radio 2017, I bought the HiDes HV-120-DCA after a successful test at the exhibition stand. Further attempts in the Shack were successful. DVB-S and S2 ran great - switch on and go.

DVB-T proved to be a challenge. Today I simply downloaded the latest firmware and updated the HiDes RX. Then I read the manual again. And see there: The new firmware has brought then also the setting Country: ATV-2/3/4M. Then the transmitter configured. Click on the PTT Button and ran a scan and it's on: Next task is a preamp, because the high bandwidth of the receiver is not very sensitive. DL9YEN





DAYTON ATV ACTIVITY UPDATE

Art,
ATV is picking back up in the greater Dayton are. W8GUC re-started the Wednesday evening net on 144.340, and its second week had both analog and digital ATV check-ins through the repeater, plus six check-ins via the BATC stream. The net is on 144.340 FM Wednesday evenings at 8:30 pm local Dayton time. I stream it from https://batc.org.uk/live/ah2ar

Also, there are three other hams on the cusp of getting their ATV stations going here locally. The growth can definitely be attributed to DVB-T activities.
Cheers,
Dave P AH2AR

BOULDER TV Repeater's REPEATER - July, 2018

We had a successful ATV BBQ/Potluck in June to welcome Mike, WA6SVT, to town. It was our first ever social, face-to-face, get-together of the Boulder area TV hams. As a result, I see us coming together more as an informal club. I would thus like to start a newsletter for us to share items of mutual interest. Hence this first issue. To keep costs to Zero, it will be strictly in electronic, .pdf format and distributed via e-mail. I solicit input from all of you as what you would like to see in the newsletter.

ATV-BBQ: In June, I got word from Mike Collis, WA6SVT, that he and his family were taking a cross country trip to visit family in the mid-west and he would like to stop by Boulder on their way back home to S. California. Mike is a broadcast engineer for the CBS anchor station in Los Angeles. He is the former technical editor of our national ATV magazine, Amateur Television Quarterly. He is also the driving force and guru of the Amateur Television Network (ATN) in the south-west USA.

Knowing Mike would be passing thru Boulder, I felt this would be an ideal opportunity for him to meet the Boulder ATV community. Thus, Janet and I invited the group to our QTH for a pot-luck / BBQ. It was held on Saturday evening, the 16th of June. The weather was threatening earlier in the afternoon, but was perfect for our BBQ. We had a great turnout of hams and spouses with about 24 in attendance. Unfortunately, I forgot to take a group photo. (next time).

I asked Mike to give us an informal talk about ATN. Everyone came away from it with a great appreciation of the extremely complex inter-linked ATV repeater network, Mike and his fellow hams in California, Nevada and Arizona have but together. We also gained a better appreciation of the unique RF issues and challenges they faced in a major metropolitan area like Los Angeles. We realized we are lucky in Boulder being able to do some DTV technical things that would be impossible to do in RF saturated LA.

BCARES & TV: BCARES has sent out a call for ATV volunteers to help out again this summer with the Dead & Co concerts. These are the BIG rock concert events this summer in the CU football stadium. There will be two concerts held on Friday and Saturday nights, 13th & 14th of July. BCARES has assisted the CU Police Dept. with crowd security for these Dead & Co concerts for the past two summers. It is a long work assignment starting at 3 in the afternoon and lasting until about midnight. The rock concert crowd will be a considerably different clientele than seen at CU football games. It consists of a lot of really old, tie dyed, pot-head, hippies, plus younger ones also. Matt, K0DVB, says "The cameras will be run outside the stadium only - so gas masks are not required!" Use

your imagination for what gas will be present. The rock music sound inside the stadium is deafening and it is impossible to hear your HT, even with headphones, while inside the stadium.

BCARES will be staffing a couple of portable TV camera/transmitters outside the stadium monitoring the crowds coming in and out of the stadium. The pictures will be received in the CU police command post. BCARES is now using hi-definition, digital, DVB-T transmitters on 70cm. They have the capability of using up to four transmitters simultaneously on all four adjacent channels, (57-60). BCARES has their own TV equipment and volunteers do not need to bring any TV equipment, just your hand-held, 2 meter, radio, your BCARES badge, hat and shirt. CU PD supplies box lunches for volunteers. For the rock concert, Matt prefers experienced and trained ATV operators.

BCARES will also be providing similar TV coverage for all of the CU home football games. BCARES has been providing this service to CU since 1995. Game dates are: 9/15, 9/28, 10/6, 10/27, 11/10 & 11/17. If you can help BCARES for either the rock concerts and / or the football games, please contact Matt Holiday, K0DVB, the BCARES video coordinator. His e-mail is:
matt4etc@mac.com

REPEATER STREAMING: For the past year, Don, N0YE, has been doing streaming on the internet of the Thursday afternoon ATV nets. His streams have been done from his home QTH using the program VLC. To view them, you need to also use VLC on your home PC and connect directly to Don's URL. (contact Don for URL).

Recently, I signed us up to also do streaming from the British Amateur Television Club's (BATC) dedicated streaming server in the U.K. This streaming service is viewable on most devices, including PCs, tablets, mobile phones, etc. using most conventional browsers, such as Goggles Chrome, Explorer, Firefox, etc. It does however, require that you have installed Adobe Flash player on your device and also have it activated on the browser. The link to our stream is: https://batc.org.uk/live/kh6htvtvr While our repeater is outputting hi-definition, the stream is in 480P, 16:9 format. I am using the "combo" receiver to monitor the output of our repeater. I am using the composite video from the receiver going to an HP laptop computer via a composite to USB dongle converter. On the HP, I am running the program vMix to receive the video, add a PIP with ID, and stream it out to the BATC at 1Mbps. At this point in time, I am running the stream on a 24/7 basis.

Don, N0YE, is soliciting feedback from users on their relative experiences of receiving the two types of streaming, from his VLC URL and from BATC. Please send your comments to Don at: don80303@gmail.com

TV Repeater @ NCAR: The TV repeater has finally found a new, permanent, home. Since January, it has been transmitting from NCAR. Thanks go out to Don, N0YE, for pushing this and making it happen. Due to a lack of space on the NCAR tower, we were only able to install our Diamond X-6000 (2m/70cm/23cm) receive antenna at the base of the tower. There was no space available for our 70cm transmit antenna. Fortunately, the Boulder Amateur Radio Club (BARC) was willing to let us share rack space in the radio room and also their 70cm antenna which they use for their 448.90 MHz FM voice repeater. Don was able to build an antenna combiner network which allows our TV transmitter on 423MHz to share the same antenna with BARC's 70cm repeater.

From NCAR, the repeater has a commanding view out over the eastern prairie of Colorado. NCAR's elevation is 6,100 ft. plus the antenna's height is 120 ft. higher on the top of the NCAR south tower. For FCC and CCARC reporting our height above average terrain (HAAT) was a - 194 ft. This negative number was due to the shielding effect of the Flatiron mountains directly behind NCAR to the west. To the east, over the prairies, our effective HAAT is really about + 1000 ft.

We are running essentially QRP power. After our inter-digital channel filter, our RF output power in DVB-T service is only about 5 watts (+37dBm). Our ERP is about 50 Watts. Even with this low power, we have fantastic coverage up and down the Front Range of Colorado. The above 70cm transmitter coverage map was computed using the free, on-line, program, Radio Mobile. It assumes the receiving base station is using a simple, 6 element, 11dBi, Yagi antenna at a height of 30ft. If that station were to use a 10 watt, DVB-T transmitter on 70cm, the coverage into the repeater would be about the same. The green shaded area is for strong signal strength > -80dBm. The yellow shaded areas are for weak signals in the range -90dBm to -80dBm. The coverage area to the north extends all the way to the Wyoming border. To the north-east out past Greeley. On the east, the coverage extends out to the Denver International Airport (DIA). To the south almost to Castle Rock. We still need to run coverage tests with 30ft. Yagi's to confirm these predictions. Mobile field tests run last year, confirmed the mobile coverage maps, which predicted coverage out almost to Greeley.

HAM ITEM BIDDING - updated 10/21/18

Bids are accepted via E-mail at towslee1@ee.net or snail mail at 438 Maplebrooke Drive West, Westerville Ohio 43082. Please refer to the item by its number in the pictures. This started as a closed bid process but after further discussion with CORC, we changed to open bidding. CORC volunteered to help where they can, including advertising them in their Newsletter but all proceeds will go into the ATCO treasury. We'll keep the bidding open until the ATCO Fall event (Last Sunday in October or first Sunday in November) where we will announce winners. The following is the list by number.

Bids will be updated as required with the latest ones shown below. If yours is not shown or is incorrect, please let me know. I'm trying to keep everything correct but I could have misread or omitted something. If so, let me know.

ITEM	Description	Bid
1.	**STANDARD RADIO 2M FM RADIO.**	
2.	**ALINCO DR-1200 2M FM MOBILE RADIO.**	20
3.	**TYT TH-UV8000SE TRI BAND HAND HELD**	50
4.	**HY-GAIN CD-45-II ROTOR/CONTROL BOX.**	126
5.	**ASTRON Model RS-35A POWER SUPPLY.**	30
6.	**MFJ Model MFJ-815B SWR/WATTMETER.**	50
7.	**KENWOOD SM-230 STATION MONITOR.**	50
8.	**KENWOOD TS-870 HF TRANCEIVER.**	160
9.	**RAYTRACK Model DX2000L LINEAR Tx.**	175
10.	**KENWOOD Model SP-31 SPEAKER.**	50
11.	**BENCHER RJ-2 STRAIGHT KEY.**	35
12.	**BENCHER ST-2 PADDLE KEYER.**	30
13.	**VIBROPLEX VIBROKEYER DELUXE.**	40
14.	**DRAKE Model TV-1000 LO PASS FILTER.**	20
15.	**MFJ Model MFJ-486 MEMORY KEYER.**	15
16.	**MICRONTA FIELD STR./SWR METER.**	10
17.	**KENWOOD TH-75A HANDI-TALKIE**	50
18.	**MFJ 4 PORT MANUAL COAX SWITCH.**	10
19.	**DUMMY LOAD. "CANTENNA TYPE".**	5
20.	**DIAMOND X200A VERTICAL ANTENNA.**	45
21.	**HUSTLER 4-BTV VERTICAL ANTENNA.**	30
22.	**CUSHCRAFT A3S 3 EL. BEAM ANTENNA.**	
23.	**Total of items 5,6,7,8,9,10,15.**	1400
24.	**Argonaut MODEL 509 QRP Transceiver.**	
25.	**LDG RBA-4:1 and LDG RBA-1:1 Baluns.**	20
26.	**LDG Z100 autotuner. (Sells for $150 on Ebay)**	25

5. ASTRON Model RS-35A POWER SUPPLY.
12-14VDC output at 35 amps.

6. MFJ Model MFJ-815B SWR/WATTMETER.
1.8-30 MHz 2KW max. SWR 1:1 - 5:1. W/manual.

9. RAYTRACK Model DX2000L LINEAR Tx.
2000W out max SSB. Uses (2) 3-500 tubes. Tested output 1000W CW. Mfg. in 1980. Orig. manual. This is similar to Drake unit. Works with TS-870

8. KENWOOD TS-870 HF TRANCEIVER.
160-10M. 100W max. output. 12VDC 20 amps. DSP built in. Kenwood MC-90 mike & Orig. schematics.

7. KENWOOD SM-230 STATION MONITOR.
Bandscope /spectrum analyzer and signal monitor. 10 MHz Signal oscilloscope. Companion to TS-870.

10. KENWOOD Model SP-31 SPEAKER.
Hi & Lo audio filters for 400-3000Hz. 8-ohm input. 2 watts max. Unfiltered freq. resp. is 160Hz-7KHz. 2 audio source selection switch.

11. BENCHER RJ-2 STRAIGHT KEY.
Chrome base. Ball bearing pivots. Cable with 3.5MM plug. Like new condition.

12. BENCHER ST-2 PADDLE KEYER.
Chrome base. Single lever paddle. Cable with ¼" phone plug. Like new condition.

13. VIBROPLEX VIBROKEYER DELUXE.
Single lever paddle keyer. Jeweled spring-loaded pivots. Chrome top parts and base.

14. DRAKE Model TV-1000 LO PASS FILTER.
1000 Watt Max. Use for freq. below 30MHz. RG8 **t**wo-foot cable with SO239 connector

15. MFJ Model MFJ-486 MEMORY KEYER.
Grandmaster II unit. Includes "Ham-Key" paddle keyer and single key. 12VDC input. W/manual.

16. MICRONTA FIELD STR./SWR METER.
RANGE: 1 TO 1000 WATTS. SWR 1:1 to 3:1. Frequency: 3-30MHz.

17. KENWOOD Model TH-75A HANDI-TALKIE
Dual band 144/420MHz. With Kenwood KSC-14 dual charger and BC-9 wall charger. Includes (1) PB-6x 1600mAh & (2) PB-8xt 2000mAh batteries.

18. MFJ 4 PORT MANUAL COAX SWITCH.
4 position switch with lightning arrestor. Rated 2.5KW. SO239 unused connections are grounded.

19. DUMMY LOAD. "Cantenna type". Rating up to 1KW. In 1 gallon can with oil. No markings. Product type unknown. 2 ft. RG8 Cable W/SO239.

20. DIAMOND X200A VERTICAL ANTENNA.
144-146MHz 6dB gain. 440-450MHz 8dB gain.

21. HUSTLER Model 4-BTV VERTICAL ANTENNA.
(no picture)
Four band trap vertical omnidirectional antenna for 10 thru 40 meters. Mount on roof or pipe at ground level with addition of radials. Unit is dis-assembled and marked for re-assembly. Rated for 1KW operation.

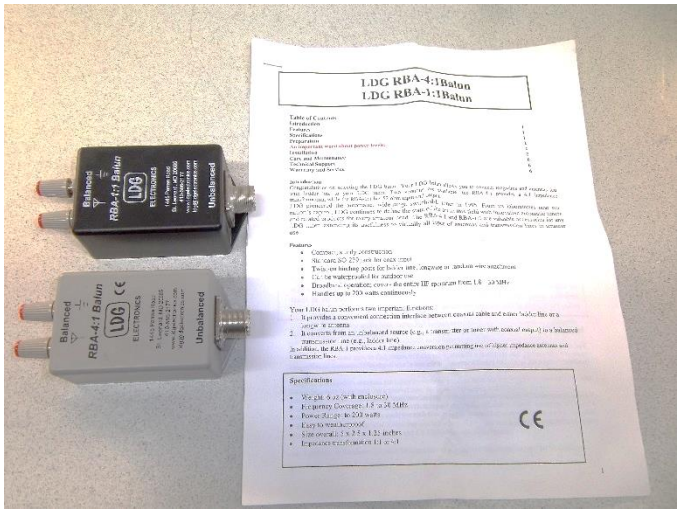
22. CUSHCRAFT Model A3S 3 EL. BEAM ANTENNA.
(no picture)
20-15-10 Meter 3 element horizontal beam antenna. (With addition of a clamp-on A743 add-on kit, 40 meters is covered). Beam is completely dis-assembled and all elements clearly marked with position markings for easy re-assembly without disturbing calibration.

24. Argonaut (TEN-TEC) QRP 3.5 to 30MHz 5-watt transceiver.

+12 to +14 VDC operation. Mic, manual and earphones included. SO239 50-75 ohm antenna jack.

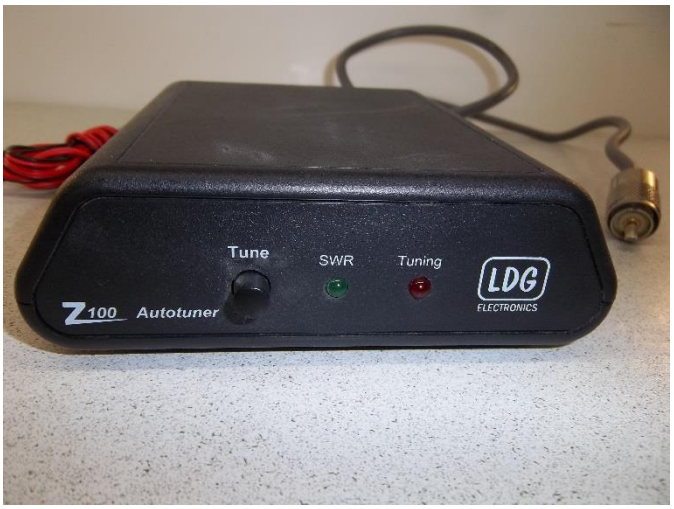
25. LDG RBA-4:1 and LDG RBA-1:1 Baluns.

Each balun rated for 200 watts max. For 1.8 to 30MHz operation. SO239 coax jack for input and binding posts for balanced output. Instruction manual included. Weatherproof plastic enclosure.



26. LDG Z100 Autotuner. (Sells for $150 on Ebay)

Microprocessor control, switched L tuning network
200 tune memories for almost instant return to previously tuned frequencies.
Antenna impedance: 6 to 800 Ohms (approximately 10:1 SWR, 3:1 on 6 meters)
Continuous coverage 1.8 to 54 MHz
Power range: 0.1 - 125 watts, 50 watts on 6 meters.
Latching Relays hold tuned setting indefinitely, even when power is removed
Tunes nearly any coax fed antenna. Use optional Balun for long wires.
Triple function tune control button
Tuning time: 1 to 6 seconds, 3 average (0.1 second minimum in memory mode)
DC power requirements: 7 to 18 volts DC @ 300 mA during tune



ATCO REPEATER SLOT ANTENNAS – Time for a rebuild.

It's been since November 1993 that the 427 and 439 slot antennas have been checked. They have been in operation for almost 25 years now and need some serious attention. The radomes I installed back then have deteriorated a few years back now exposing the active elements. I used a hard-coat Mylar then which lasted far longer than I had expected, but I've put off fixing that for too long now so a complete rework is in order. It isn't simple because it involves completely removing the antennas, disassembling them, creating new coax feed harnesses, sanding off the old radome material and cleaning connections. Considering the age, these antennas are in remarkably good structural shape. The mounting, although slightly loose, held up very well and posed no failure threat.

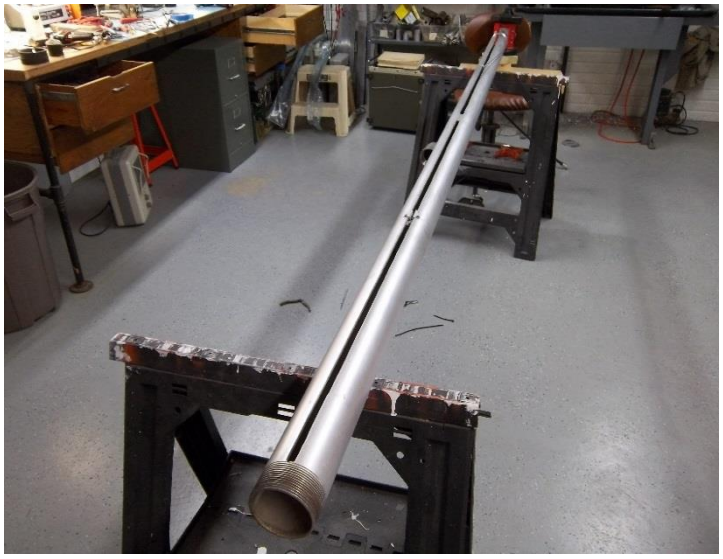
The "before" picture at the right is looking straight up at the "crow's nest" area surrounding the beacon light where the antennas are mounted on the right corner of the railing. The antenna pointing up is the transmit antenna and the one hanging down from the railing directly below it is the receive antenna. Removal was very easy which simply involved disconnecting the feedline, loosening the clamps and lowering them down to the roof below. Thirty minutes later we were loading the antenna in the car. (I repaired one antenna at a time).

So now the re-work begins. First, the 427 MHz transmit antenna was removed and disassembled. It is fabricated out of two thin-wall 3 7/8" OD 5-foot long tubes connected together with flanges in the center. I found that the old adhesive that held the original radome in place was extremely difficult to remove from the aluminum antenna tube. A picture of it is on the left. Notice the pieces of old radome material still wrapped around it. There was serious sanding to obtain a clean tube. Once cleaned, the two new RG11 feed coax lines were installed and attached to the feed points on the tube.

The picture on the right shows one of the two feed points where the shield and center conductor is fastened. It looks messy in the photo but was actually better in real life! Notice the two trim tabs connected to each side which tune the antenna for slot width variance compensation. They are bent in or out to maximize signal strength done with field testing. The black areas on each side of the slot are RTV beads to elevate the radome material about 1/8" above the slot. I found that if the radome material touches the slot it is detuned slightly. I found some black rubber gasket material for use on the receive slot antenna. Now, it's all together and re-installed at the

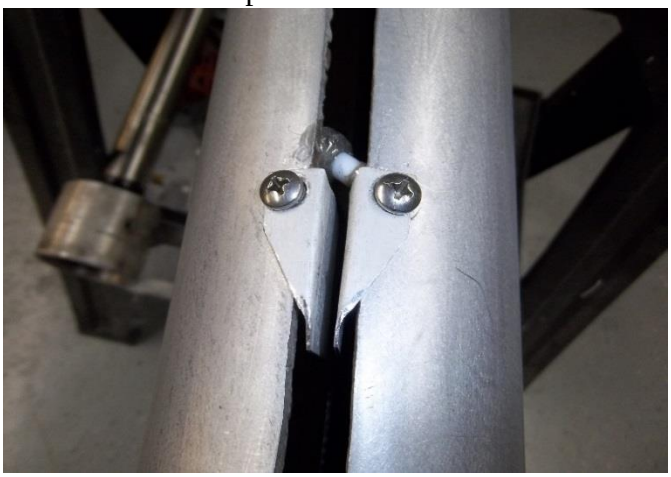
repeater as a receive antenna until I get the transmit antenna fixed. The tested gain is just over 7 dBd. Not bad. Side lobes are about -3dB which is a little worse than I had hoped for but winter is coming so it's a wrap.

Now for the receive antenna. It's a little different because it's made from a 10-foot piece of 3 1/2" aluminum electrical conduit. It comes in 10 foot sections with threads on each end, just perfect for attaching a coupling and reducer for mounting below the railing.



A picture of the tube after I cleaned it is right. It's on "saw horses" in my workroom with the feed cables already installed and ready for the end fittings. The feed point's a little different because of the thicker 3/16" pipe wall.

I re-made different feed point trim tabs this time to fit the thicker pipe. Since attaching the coax shield and center conductor is really difficult, I studied it and learned some from the difficulty I had with the transmit antenna. I fashioned a brass sleeve with protruding tab to which I soldered a brass 10-32 nut. I wrapped the sleeve around the end of the coax, folded the shield over it and soldered it to the sleeve. I solder plated the brass to prevent galvanic corrosion where it contacts the aluminum pipe. This worked great which helped prevent heating the coax and melting the insulation. The picture below shows the tabs.



Finally, since the center conductor of 75 ohm RG11 coax is small and fragile, I fashioned a small brass sleeve with an inside diameter slightly larger than the center conductor diameter with an OD slightly larger than that. I tinned the coax center conductor and applied solder to the sleeve ID then heated it and pressed it into the coax insulation about a ¼". That made a "pin" that protruded out of the end of the coax insulation to prevent breakage. A ground lug was soldered to the "pin". That's hard to describe but works well. I hope you can visualize the process! I wish I had thought of that when I was doing that with the transmit antenna. (I'm not going to take it down to fix now!!!).

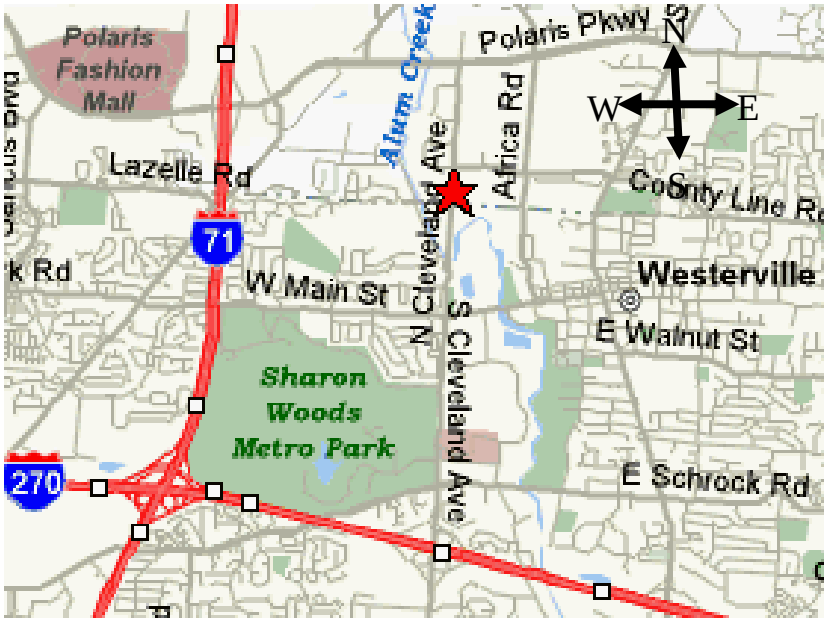
The picture at the right is the end of the pipe with coupling and reducer inside it to fit a piece of 1 ¾" stainless steel pipe which will attach to the railing post. The ½" Andrews superflex coax is inside the stainless pipe. (I know it's not a good idea to use Superflex Heliax coax for outside use but because of the close quarters inside the pipe, I had no choice).

That's it. Next is to go to the outside test range and set it up for the trim tab adjustments. Good news: just tested it on an open range and the gain circularity is within 2dB for all 360 degrees. However, the overall gain is only 5.5dBd. That's about 2dB less than I had expected but it's a compromise between more uniform gain and less overall gain. Not bad. I'm finished for this season!!!!
WA8RMC

ATCO

2018 FALL EVENT
12:00 PM Lunch/meeting
Sunday October 28, 2018
ABB PROCESS AUTOMATION
CAFETERIA
579 EXECUTIVE CAMPUS DRIVE
FOR MORE DETAILS, CONTACT
ART - WA8RMC 891-9273
LUNCH PROVIDED - DOOR PRIZES -
BRING A FRIEND AND SEE OLD BUDDIES
MINI HAMFEST - SHOW AND TELL

DIRECTIONS TO THE ATCO FALL EVENT



From I-70 WEST Bound:
Take I-270 Northbound around and turning to the west to Cleveland Ave. Exit north onto Cleveland Ave and travel north about 2 miles to Executive Campus drive. (It's the next street past Westar Crossing Street). Turn left (west) to the ABB building at the end of the street.

From I-70 EAST Bound:
Take I-270 Northbound around and turning to the east past SR 315 and past I-71. Get off on the Cleveland Ave second exit and travel north (to Westerville). Continue north on Cleveland past Schrock Road and then past Main Street. Continue north about ½ mile past Main Street to Executive Campus Drive. (It's the next street past Westar Crossing Street). Turn left (west) to the ABB building at the end of the street

From I-71 NORTH bound toward Columbus:
Drive through Columbus on I-71 to I-270 on the north side. Take I-270 east to the first exit, Cleveland Ave. Get off the Cleveland Ave second exit and travel north (to Westerville). Continue north past Schrock Road and then past Main street. Continue north about ½ mile past Main Street to Executive Campus Drive. (It's the next street past Westar Crossing Street) Turn left (west) to the ABB building at the end of the street.

From I-71 traveling SOUTH bound toward Columbus (North of I-270):
Exit the Polaris Ave exit and travel east about 1 mile to Cleveland Ave. Turn right on Cleveland Ave to Executive Campus Drive. Turn right again on Executive Campus Drive. ABB is on the right side of the street about half way around the semi-circle.

LOCAL HAMFEST SCHEDULE

This section is reserved for upcoming Hamfests. They are limited to Ohio and vicinity easily accessible in one day. Anyone aware of an event incorrectly or not listed here; notify me so it can be corrected. This list will be amended, as further information becomes available. To see additional details for each Hamfest, Control Click on the blue title and the magic of the Internet will give you the details complete with a map! To search the ARRL Hamfest database for more details, CTL click ARRLWeb: Hamfest and Convention Calendar …WA8RMC.

10/28/2018 | Massillon Hamfest

Location: Massillon, OH
Type: ARRL Hamfest
Sponsor: Massillon Amateur Radio Club
Website: http://www.w8np.org

11/03/2018 | GARC HAMFEST

Location: Georgetown, OH
Type: ARRL Hamfest
Sponsor: Grant Amateur Radio Club
Website: http://garcohio.net

11/17/2018 | Fort Wayne Hamfest & Computer Expo

Location: Fort Wayne, IN
Type: ARRL Convention
Sponsor: Allen County Amateur Radio Technical Society
Website: http://www.fortwaynehamfest.com

12/01/2018 | FCARC WinterFest

Location: Delta, OH
Type: ARRL Hamfest
Sponsor: Fulton County Amateur Radio Club
Website: http://k8bxq.org/hamfest

02/17/2019 | InterCity ARC Hamfest

Location: Mansfield, OH
Type: ARRL Hamfest
Sponsor: InterCity Amateur Radio Club
Website: http://www.iarc.club

01/27/2019 | Tusco ARC Hamfest

Location: Strasburg, OH
Type: ARRL Hamfest
Sponsor: Tusco Amateur Radio Club
Website: http://www.tuscoarc.org

TUESDAY NITE NET ON 147.48 MHz SIMPLEX

Every Tuesday night @ 9:00PM WA8RMC hosts a net for the purpose of ATV topic discussion. There is no need to belong to the club to participate, only a genuine interest in ATV. All are invited. For those who check in, the general rules are as follows: Out-of-town and video check-ins have priority. A list of available check-ins is taken first then a roundtable discussion is hosted by WA8RMC. After all participants have been heard, WA8RMC will give status and news if any followed by late check-in requests or comments. We usually chat for about ½ hour so please join us locally or via internet at https://batc.org.uk/live/. Click on WR8ATV.

ATCO TREASURER'S REPORT - de N8NT

OPENING BALANCE (07/22/18)	$ 1680.13
RECEIPTS(dues)	$ 10.00
PayPal fees	$ 0.59
CLOSING BALANCE (10/21/18)	$ 1689.54

ATCO REPEATER TECHNICAL DATA SUMMARY

Location:	Downtown Columbus, Ohio
Coordinates:	82 degrees 59 minutes 53 seconds (longitude) 39 degrees 57 minutes 45 seconds (latitude)
Elevation:	630 feet above the average street level (1460 feet above sea level)
TV Transmitters:	423.00 MHz DVB-T, 10 W contin, FEC=7/8, Guard=1/32, Const=QPSK, FFT=2K, BW=2MHz, PMT=4095, PCR=256, Video=256, audio=257
	427.25 MHz Analog VSB AM, 50 watts average 100 watts sync tip (cable channel 58)
	1258 MHz 40 watts FM analog
	1268 MHz DVB-S QPSK 20W continuous. SR=3.125MS, FEC=3/4, PMT=32, Video=162, Teletext=304, PCR=133, Audio=88, Service =5004)
	2397 MHz Mesh Net transceiver 600mw output (channel 1 -2). ID is WR8ATV-2
	10.350 GHz: 1 watt continuous analog FM
Link transmitter:	446.350 MHz: 5 watts NBFM 5 kHz audio. This input is used for control signals.
Identification:	423, 427, 1258, 1268 MHz, 10.350 GHz transmitters video ID every 10 min. with active video and information bulletin board every 30 minutes.
	423 MHz digital, 1268 MHz digital & 10.350 GHz analog - Continuous transmission of ATCO & WR8ATV with no input signal present.
Transmit antennas:	423.00 MHz - 8 element Lindsay horizontally polarized 6dBd gain "omni"
	427.25 MHz - Dual slot horizontally polarized 7 dBd gain "omni" major lobe east/west, 5dBd gain north/south
	1258 MHz - Diamond vertically polarized 12 dBd gain omni
	1268 MHz - Diamond vertically polarized 12 dBd gain omni
	2397 MHz - Ubiquiti dual polarity omni 13dBi gain slot for channel 1 -2 MESH Rx/Tx operation
	2397 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (Used for experimental Mesh operation)
	10.350 GHz - Commercial 40 slot waveguide slot horizontally polarized 16 dBd gain omni
Receivers:	147.480 MHz - F1 audio input with touch tone control. (Input here = output on 446.350)
	438.000 MHz - DVB-T QPSK, 2K BW. Receiver will auto configure for FEC's and PID's. (Input here = output on all TV transmitters)
	439.250 MHz - A5 NTSC video with FM subcarrier audio, **lower sideband**. (Input here = output on all TV transmitters)
	449.975 MHz - F1 audio input aux touch tone control. 131.8 Hz PL tone. (Input here = output on 446.350).
	1288.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters)
	1288.00 MHz - DVB-S QPSK digital SR=4.167Msps, FEC=7/8. PIDs: PMT=133, PCR=33, Video=33, Audio=49 (Input here feeds all TV transmitters and also goes directly to 1268 MHz DVB-S digital output channel 2.)
	2398.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters) (inactive at this time because of MESH on 2397)
	10.450 GHz - F5 video analog NTSC. (Input here = output on all TV transmitters)
Receive antennas:	147.480 MHz - Vert. polar. Diamond 6dBd dual band (Shared with 446.350 MHz link output transmitter)
	438.00/439.250 MHz - Horizontally polarized dual slot 7 dBd gain major lobe west (Shared with 438 & 439 receivers)
	1288.00 MHz - Diamond vertically polarized 12 dBd gain omni (shared with analog and DVB-S receivers)
	2398.00 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (inactive at this time because of MESH on 2397)
	10.450 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni

Auto mode Input control:	Touch Tone	Result (if third digit is * function turns ON, if it is # function turns OFF)
	00*	turn transmitters **on** (enter manual mode-keeps transmitters on till 00# sequence is pressed)
	00#	turn transmitters **off** (exit manual mode and return to auto scan mode)
	264	Select Channel 4 Doppler radar. (Stays on for 5 minutes) Select # to shut down before timeout.
	004	Select 10.450 GHz receiver. **(Always exit by selecting 001)**
	003	Select room camera **(Always exit by selecting 001)**
	002	Select roof camera. Select room cam first then 002 for roof cam. (**Always exit by selecting 001**)
	001	Select 2398 MHz receiver then 00# for auto scan to continue

Manual mode Functions:		
	00* then 1 for Ch. 1	Select 439.25 analog /438 digital receiver (if video present on digital, it is selected. Otherwise analog)
	00* then 2 for Ch. 2	Select 1280 digital receiver
	00* then 3 for Ch. 3	Select 1280 analog receiver
	00* then 4 for Ch. 4	Select 2398 receiver
	00* then 5 for Ch. 5	Select video ID (17 identification screens)
	01* or 01#	Channel 1 439.25 MHz scan enable (hit 01* to scan this channel & 01# to disable it)
	02* or 02#	Channel 2 1288 MHz digital receiver scan enable
	03* or 03#	Channel 3 1288 MHz analog receiver scan enable
	04* or 04#	Channel 4 2398 MHz scan enable
	A1* or A1#	Manual mode select for 439.25 receiver audio
	A2* or A2#	Manual mode select for 1288 digital receiver audio
	A3* or A3#	Manual mode select for 1288 analog receiver audio
	A4* or A4#	Manual mode select for 2398 receiver audio
	C0* or C0#	Beacon mode – transmit ID for twenty seconds every ten minutes
	C1* or C1#	C1* to turn off 438 MHz DVB-T Tx, C1# to enable it (Must be in manual mode to enable this function).
	C2* or C2#	C2* to turn off 423 MHz DVB-T Rx, C2# to enable it (Must be in manual mode to enable this function).

Note: The DVB-T Tx and Rx units can lock up when they lose video or see bad video. When this happens, power must be cycled. To do this select C1* or C2* to turn off power. A few seconds later select C1# or C2# whichever appropriate to restore power to selected unit. Wait about 15 to 30 seconds to see restored operation. (Example: To reset the DVB-T receiver enter C2*, wait a few seconds then C2#)

ATCO MEMBERS as of October 2018

Call	Name	Address	City		Zip
KD8ACU	Robert Vieth	3180 North Star Rd	Upper Arlington	OH	43221
KC3AM	Dave Stepnowski	735 W Birchtree Ln	Claymont	DE	19703
AH2AR	Dave Pelaez	1348 Leaf Tree Lane	Vandalia	OH	45377
W8ARE	Terry Meredith III	6070 Langton Circle	Westerville	OH	43082-8964
K9BIF	Charlie Short	415 West Pike Street	Goshen	IN	46527-0554
VK3BFG	Peter Cossins	14 Coleman Road	Melbourne	Au	03152
N9BNN	Michael Glass	6836 N. Caldwell Rd	Lebanon	IN	46052
WB8CJW	Dale Elshoff	8904 Winoak Pl	Powell	OH	43065
N8COO	C Mark Cring	2844 Sussex Place Dr.	Grove City	OH	43123
N8CXI	Garry Cotter	2367 Northglen Drive	Columbus	OH	43224
N3DC	William Thompson	6327 Kilmer St	Cheverly	MD	20785
K8DMR	Ron Fredricks	8900 Stonepoint Ct	Jennison	MI	49428-8641
W8DMR	Bill Parker	2738 Florbunda Dr	Columbus	OH	43209
WA8DNI	John Busic	2700 Bixby Road	Groveport	OH	43125
N8DUK	Ron Reynolds	2173 Noe Bixby Rd	Columbus	OH	43232-4131
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	OH	43026
KB8EMD	Larry Baker	4330 Chippewa Trail	Jamestown	OH	45335-1210
N8FRT	Tom Flanagan	6156 Jolliff St.	Galloway	OH	43119
W8FZ	Fred Stutske	8737 Ashford Lane	Pickerington	OH	43147
WA8HFK,KC8HIP	Frank & Pat Amore	P.O. Box 2252	Helendale	CA	92342-2252
W8KHP	Allen Vinegar	2043 Treetop Lane	Hebron	Ky	41048
WA8KKN	Chuck Wood	5322 Spruce Lane	Westerville	OH	43082-9005
WB9KMO	Rod Fritz	8334 E. Culver Street	Mesa	AZ	85207
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	OH	45331
WB8LGA	Charles Beener	2540 State Route 61	Marengo	OH	43334
W8MA	Phil Morrison	154 Llewellyn Ave	Westerville	OH	43081
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	OH	45660
N8NT	Bob Tournoux	3569 Oarlock Ct	Hilliard	OH	43026
W8NX, KA8LTG	John & Linda Beal	5001 State Rt. 37 East	Delaware	OH	43015
KB8OFF	Jess Nicely	1888 Woods Drive	Beavercreek	OH	45432
N0OBG	Jim Conley	33 Meadowbrook C C Est	Ballwin	MO	63011
W6ORG,WB6YSS	Tom, Maryann O'Hara	2522 Paxson Lane	Arcadia	CA	91007-8537
N8OCQ	Bob Hodge Sr.	3750 Dort Place	Columbus	OH	43227-2022
AE6QU	Ron Phillips	2227Via Puerta unit N	Laguna Woods	CA	92637
WA8RMC	Art Towslee	438 Maplebrooke Dr W	Westerville	OH	43082
W8RUT,N8KCB	Ken & Chris Morris	2895 Sunbury Rd	Galina	OH	43021
KB8RVI	David Jenkins	1941 Red Forest Lane	Galloway	OH	43119
W8RWR	Bob Rector	135 S. Algonquin Ave	Columbus	OH	43204-1904
W8RXX, KA8IWB	John & Laura Perone	3477 Africa Road	Galena	OH	43021
WA6RZW	Ed Mersich	34401 Columbine Trl West	Elizabeth	CO	80107
WA6SVT	Mike Collis	PO Box 1594	Crestline	CA	92325
KD8TIZ	Bob Holden	5161 Goose Lane Rd	Alexandria	OH	43001-9730
K8TPY, K8FRB	Jeff & Dianna Patton	3886 Agler Road	Columbus	OH	43219
NR8TV	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123
KB8UWI	Milton McFarland	115 N. Walnut St.	New Castle	PA	16101
WA8UZP	James Reed	818 Northwest Blvd	Columbus	OH	43212
KB9VGD	Gary Oaks	472 Storle Ave	Burlington	WI	53105-1028
KC8WRI	Tom Bloomer	PO Box 595	Grove City	OH	43123
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	OH	43224-3011
AC8XP,KE8GTT,KE8HPA	Troy,Seamus Bonte	5210 Smothers Road	Westerville	OH	43081
AC8YE	Larry Howell	1163 Cloverknoll Ct	Columbus	OH	43235-4008
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	OH	43064
KC8YPD	Joe Ebright	3497 Ontario St	Columbus	OH	43224
KD8YYP	Anna Reed	818 Northwest Blvd	Columbus	OH	43212
WB8YTZ	Joe Coffman	233 S. Hamilton Rd	Gahanna	OH	43230-3347
N8YZ	DaveTkach	2063 Torchwood Loop S	Columbus	OH	43229
W8ZCF	Farrell Winder	6686 Hitching Post Ln.	Cincinnati	OH	45230
N8ZM	Tom Holmes	1055 Wilderness Bluff	Tipp City	OH	45371

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 per person. Additional members within an immediate family and at the same address are included at no extra cost.

ATCO publishes this Newsletter quarterly in January, April, July, and October. It is sent to each member without additional cost. All Newsletters are sent via Email unless the member does not have an internet connection. Dues payments are as of the date paid and will expire on the same month/year on the due date year.

Your support of ATCO is welcomed and encouraged.

Membership expiration notices will be sent out via Email starting 30 days prior to expiration date.
NOTE: Dues records on your individual portion of the ATCO website are listed as the date money is received and shows due one year from that date.

ATCO MEMBERSHIP APPLICATION

RENEWAL ○ NEW MEMBER ○ DATE _____
CALL _____
OK TO PUBLISH PHONE # IN NEWSLETTER YES ○ NO ○
HOME PHONE _____
NAME_____
INTERNET Email ADDRESS_____
ADDRESS _____
CITY _____ STATE _____ ZIP _____-_____
FCC LICENSED OPERATORS IN THE IMMEDIATE FAMILY
_____
COMMENTS_____
_____
_____
ANNUAL DUES PAYMENT OF $10.00 ENCLOSED CHECK ○ MONEY ORDER ○

Make check payable to ATCO or Bob Tournoux & mail to: Bob Tournoux N8NT 3569 Oarlock CT Hilliard, Ohio 43026. Or, if you prefer, pay dues via the Internet with your credit card. Go to www.atco.tv and fill out the "pay ATCO dues" section. Alternately, you can use the ATCO web site www.atco.tv/PayDues.aspx directly. Credit card payment is made through "PayPal" but you DO NOT need to join PayPal to send your dues. Simply DO NOT fill out the password details and there will be no "PayPal" involvement.

ATCO CLUB OFFICERS

President:	Art Towslee WA8RMC	Repeater trustees:	Art Towslee WA8RMC
V. President:	Ken Morris W8RUT		Ken Morris W8RUT
Treasurer:	Bob Tournoux N8NT		Dale Elshoff WB8CJW
Secretary:	Mark Cring N8COO	Statutory agent:	Stan Diggs AA8XA
Corporate trustees:	Same as officers	Newsletter editor:	Art Towslee WA8RMC

NEW MEMBER(S)

Let's welcome the new members to our group! If any of you know anyone who might be interested, let one of us know so we can flood them with information. New members are our group's lifeblood so it's important we aggressively recruit new faces.
No new members this time.

ATCO Newsletter
c/o Art Towslee -WA8RMC
438 Maplebrooke Dr. West
Westerville, Ohio 43082

FIRST CLASS MAIL

REMEMBER...CLUB DUES ARE NEEDED.
CHECK THE
MEMBERS PAGE OF ATCO WEBSITE FOR THE EXPIRATION DATE.
SEND N8NT A CHECK OR USE PAYPAL IF MEMBERSHIP IS EXPIRED.