

ATCO NEWSLETTER

VOLUME 30 NUMBER 2

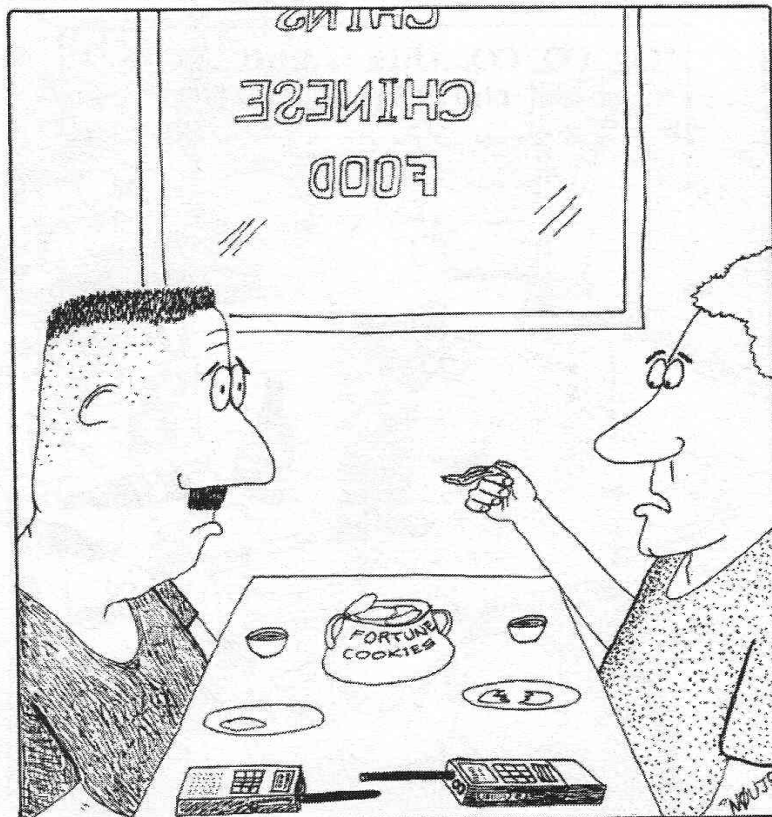
April 2013

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)
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ATCO SPOTLIGHT TOPIC

Thanks to Greg Trook N0UJR for allowing us to share one of his cartoons. See also <http://incolor.inetnebr.com/n0ujr/>.

Noujr And His Friends 37



It says your ATV transceiver will go bad in three weeks.



ACTIVITIES ... from my “UP TO SPEED” Workbench

Well, I'm up to my ### in yard work at this time. The garden needs roto-tilling and the grass needs some more fertilizer but here I am, writing the ATCO Newsletter! Actually I kind of like it but we really need more people to generate material so it will be easier to assemble. How about finding a funny ATV related sign somewhere or maybe a “what is this picture” contest? We all know who has the messiest ham shack so that's no fun. Have I missed anything? Let me know.

There has not been much happening in the ATV arena lately. I haven't been to the repeater all winter and I think that's a record. I'm happy to report that there is nothing “broke” at this time. However, now that I've said that, guess what happens?

The 427 MHz transmit and 439 MHz receive antennas at the repeater really DO need attention this summer. Both have been in service for over 10 years and the plastic radome has deteriorated and fallen off of both. That leaves an open area for bugs and rain. I'm looking for volunteers to help as it's not a one man job. We'll talk more about that at the Spring Event this Sunday.

My tower is now up and functional. The City inspector has given me the final approval so I can now work on it and arrange the antennas as I see fit. I've been hesitant to do that before approval because final approval was contingent upon me using antennas that didn't create more than a 3 square foot wind load. I'm at that limit. In retrospect, when the inspector came out he said he trusted my judgment and didn't even look at the details including the grounding arrangement. I wanted to press him for some tips but resisted because I know what happens when I talk too much. Therefore, I let him ask the questions to which I gave short direct answers. That's a good strategy. I DID ask him if my grounding for lightning was sufficient. He responded saying he didn't know....that's not his area of expertise! Strange, but I decided to keep quiet after that.

So, now you may notice my workbench is labeled differently.

I still need to work on the Jones Road site to make the camera I installed there last fall operational. It's been a busy winter so I didn't get to the 1280 MHz amplifier retrofit needed there yet. The Comtech boards in it need to be updated and the wiring reworked to operate in a mode that will support the camera function. Not a lot of work but it's still undone.

That's about it for now. Don't forget the Spring Event in the ABB cafeteria in Westerville this Sunday starting about noon with trunk sales in the parking lot. After that a free lunch is provided followed by a business meeting and door prizes. **THE DOOR PRIZES WILL BE SUPER THIS TIME SO YOU DON'T WANT TO MISS IT.** There will be a number of oscilloscopes for the taking. See you there.

...73, WA8RMC



THE TOWER IS UP!

The tower is up, for me at least. Finally, after winter work, my Ham tower is now firmly in place, operational and City approved. Because of local restrictions, I wanted to make it as pleasing to the surrounding neighborhood as I could. The City of Westerville said they'd approve a tower no higher than 50 feet including antennas so after studying possible locations, I decided upon a spot at the house south side closest to the trees in my yard. That's the most hidden location when the leaves are fully out. Also, that has the highest roof exposure so I could bracket the tower at 22 feet. That makes it REAL easy to service as I can stand on the roof and have antennas at waist level.

I decided upon a two section 25 ft. per section tower so the outer section can be fixed to the house. The inner section can be raised about 20 feet giving me a 45 foot tower fully extended. Because I intend to raise it only when operating and keep it retracted the rest of the time, the cabling presented a problem. I solved it by using 7/8" Heliac to the top of the lower section and clamping the cables there. The rest of the line is LMR400 looped down about 10 feet which allowed it to stretch straight when the top section is extended. That's the best I could do from a cable standpoint. After calculating the total loss, it is not worse than at my old location. (The 45 foot tower here with the Heliac/LMR400 combination is just about equal to the attenuation of the old 80 foot tower fed entirely with 7/8" Heliac). I actually should GAIN reception signal here because it's about 75 feet higher in overall elevation.

The pictures below illustrate how the tower installation looks fully retracted. Now I can move on to different projects!!!!



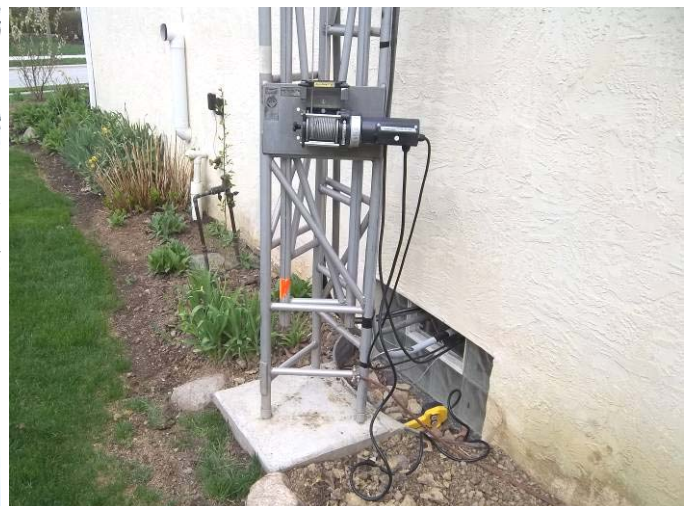
This is the south house side view showing the tower fully retracted. The antennas are top to bottom: 10GHz dish and feed, 1280MHz loop yagi, 439MHz M² 21 element yagi.



This shows the house bracket to tower connection points. The rotor is partially viewable at center top.

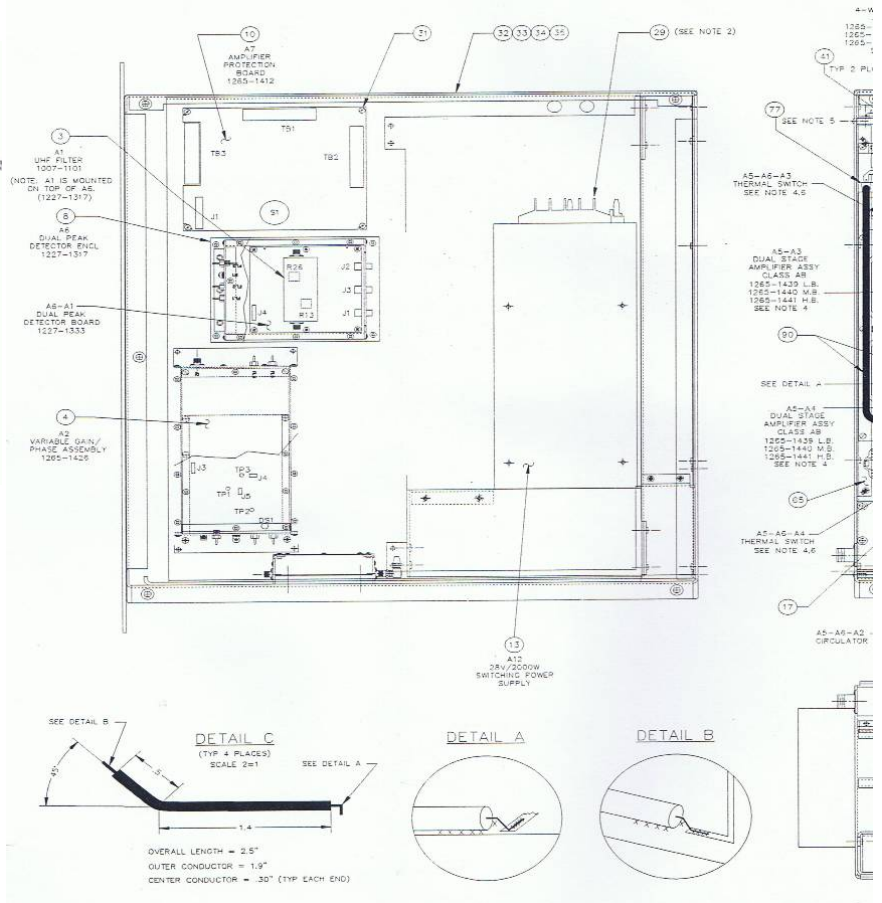
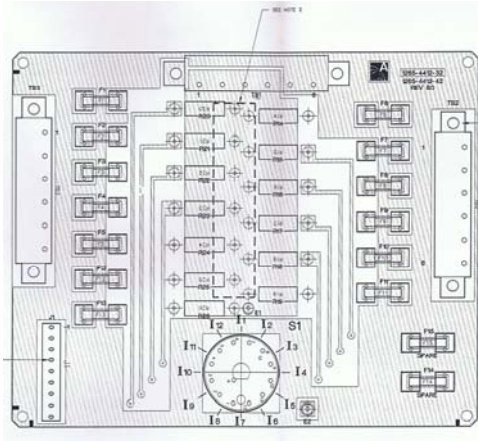


This shows the way I loop the coax lines that get extended when the tower is fully up. It's still early to tell if they will ever get caught on the tower end while extending or retracting.
...WA8RMC



Here's the electric winch mechanism. It is controlled by the up/down buttons on the yellow housing at lower center. Later, I'll move the control inside after I have a way of knowing where the tower position is remotely. (A TV camera pointed at a marked tower section may work).

Here is some info for power up and check out.



On board A7 the one with all the fuses.

Pull out all fuses but F1 and F13

Put a fifty ohm load and watt meter on the single stage Amp Driver . at J2 A4--A1 or at J1 A4--A3 .

Apply 220 volts and turn on unit to standby.

Make sure that +12 volts is at J6 pin 3 of the amp control board.

J4 pin 1 should be 0 volts. (Standby mode) Just the fan on the power supply should come on.

Apply 12 volts key power to DB9 connector Pin 7 to pull the Enable relay you added to the circuit.

That puts -12 volts to J4 pin 1.

All fans should be running. Yes it makes a lot of noise. There should be 28 vdc on the output of the power supply.

Put RF around 15mw to BNC connector at top rear chassis RF B&C input connector.

With RF applied and Amp enabled . All the fans should be running.

Look at your watt meter and then adjust the two cap on the UHF RF filter A1 for max output.

Adj input cap on single Amp for max power the adj output cap for max output.

When I adj the cap the output caps were in the correct tuned location all ready.

It should reach more than 10 watts . I got 19 watts at J2 A4--A1.

At around 10 watts the front panel over drive LED should come on.

From this point on , do all Amp adjustments only with the LED over drive off but still reading RF output.

turn off AC power

Adj of Dual Stage Amp.

reconnect the single Amp output.

Connect the RF load /watt meter to the output of the Dual stage Amp. at J2 or J5 . I used J5

Install F1, F2 & F3 on fuse board A7

Turn on AC power

Enable Amp.

Apply RF power to BNC input.

Adj input caps and the output caps for Max output power of dual stage Amp

. When you adjust the input caps you'll want to adj the caps so the inputs are with the max capacitance but still be in tune.

If you peek the input caps with peek or with less capacitance The Over load LED will be on with only about 1/3 of the output power.

It will take a little playing with but it's not to hard.

You end output of the Dual stage amp should be around 80 watts at J2 A4--A2. Most of them reach 90+ watts to 150 watts.

That is the end of the Low power RF stages adjustments.

remove the RF power, turn unit off

The Big amp Check out and Adjustments.

The last few for the setup of the amp.

If you have the PN 1294-1114 amp you need to add this next AGC parts.

You'll need to add a small PC board Pot to J3 pin 1 and pin 2. This is for AGC of the amp.

You can use a pot in value from 1K to 10K. If you use a let say a 1k then you need to put a resistor of around twice the value in line with the +12 volt source. 1K pot use 2.2K fixed and with a 5K pot use a 10K fixed.

The connection go as follows.

One end of fixed resistor to +12 volts. the other end of fixed resistor go to CW end of pot.

The pot wiper goes to pin1 of J3.

The CCW of the pot goes to pin 2 of J3 it is ground.

This is all done on the Controller board that's located behind the front panel.

The pot should give you 0 to 3 volt output to the AGC input to the control board.

You should start with the pot at 0 volts out and turn it up if the more output as needed.

At 3 volts it gives you the most gain . As you lower the voltage the more drive you need to drive the amp to full power. So that you can use this AGC pot to allow you to not only to control the amp output but all so allow you to have a larger amount of input power. I think the input power will be able to for full output power from 30mw to 150mw of power or maybe even higher power. like 250mw.

DON'T RUN MORE THAN 500 CW WATTS OUTPUT FOR ANY LENGTH OF TIME. IT WILL BLOW A 7amp FUSE.

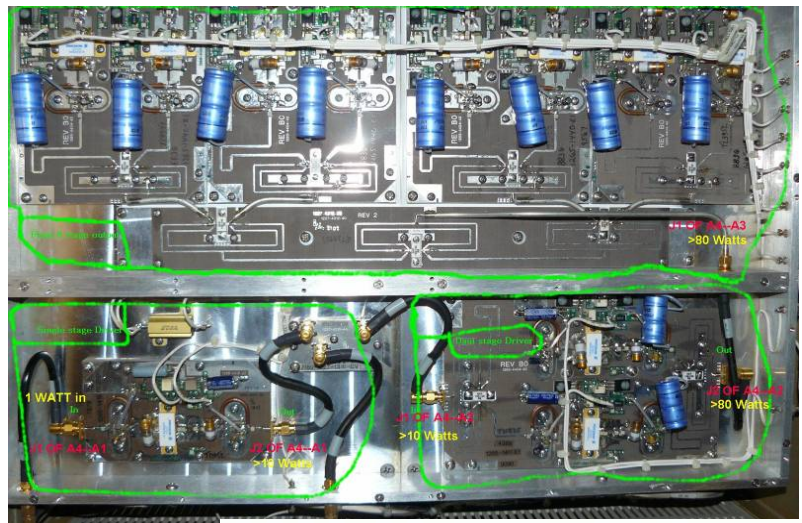
The output stages is 8 stages you can start out with adjusting the variable caps to max capacitance then back off about 1 turn. That will get you close to max output.

When you turn the variable caps do the input to a stage first then tune the output caps of that stage.

I ran the amp at around 200 watts to do that tune up. After you are happy with the tune up turn up the power to 350 watts re-tune all the output caps and then the input caps again. Use the AGC pot to control the output power of the amp.

All tuning of the output stage is done with no Video. We used 439.25MHz and tested it on 434MHz with same output results.

On the bottom left of this output stage is a Circulator that's tuned for the old TV frequency. Remove it and replace with directional coupler KS-21603L21 or like coupler This will give the Amp shutdown RF power with high SWR.



2-kW UHF Solid State Transmitter Chapter 5, Detailed Alignment Procedures

Output connections:

Remove Circulator. It's on the wrong Frequency. Replace with a RF Coupler. We used a KS-21603L21 on Ebay for around \$20. The Coupler will have to be mounted outside the Amp. The output hard line on the amp can reach the outside where the old Circulator connector was. You'll need to connect the coupler reverse RF -40db connection to J3 of the output amp connection. It will take a 36 inch long SMA to SMA cable. Meter adjustments: See page 5-12 and 5-13 for the adjustments 5.4.8. With no video adjust output for 350 watts then set R2 of controller board for meter reading of 100% front panel output power meter. With no video just RF carrier . The meter is peak reading meter any video will make read sync tip power. Follow the adjustments for the SWR setting I haven't done this yet. Plan to do some day. Note: All adjustments of the output stages are done in CW mode and with the switch on the controller board in the up position. The down position is for manual adj of the amps output There is no safety or auto gain control in this mode. Use only for testing the amp. With the switch down you can use R16 to adjust the amps output power in that mode. It is useful for setup of the amp.

....WB8LGA
Charles A Beener

To adjust the idling currents, no RF applied to the tray, of the devices on (A5-A4) the amplifier board, connect a voltage meter across E1 and E2 on the amplifier protection board and move switch S1 to the I9 position; adjust R106 for a reading of 3.0 mV or 1 mV digital. Move switch S1 to the I8 position and adjust R206 for a reading of 3.0 mV or 1 mV digital.

Connect a sweep test signal to J1, the RF input jack of the UHF amplifier tray. On (A5-A4) the amplifier board, tune capacitors C105 and C205 for peak output power and then tune C119 and C219 for peak output power with a flat-frequency response and minimum current.

To adjust the idling currents, no RF applied to the tray, of the devices on (A5-A5) the amplifier board, connect a voltage meter across E1 and E2 on the amplifier protection board and move switch S1 to the I11 position; adjust R106 for a reading of 3.0 mV or 1 mV digital. Move switch S1 to the I10 position and adjust R206 for a reading of 3.0 mV or 1 mV digital.

Connect a sweep test signal to J1, the RF input jack of the UHF amplifier tray. On (A5-A5) the amplifier board, tune capacitors C105 and C205 for peak output power and then tune C119 and C219 for peak output power with a flat-frequency response and minimum current.

5.4.9 (A5-A6) 4-Way Combiner Assembly, Channels 14 to 26 (1265-1428, low band/1265-1429, mid band/1265-1430, high band; Appendix D)

This assembly contains (A5-A6-A1) a 4-way combiner board. There are no adjustments to the board.

5.4.10 (A5-A6-A2) Circulator

There are no adjustments to the circulator.

5.4.11 (A6-A1) Dual Peak Detector Board, Single Supply (1227-1333; Appendix D)

The dual peak detector board is mounted in (A6) a dual peak detector enclosure. There are no adjustments to the board.

5.4.12 (A7) Amplifier Protection Board (1265-1412; Appendix D)

There are no adjustments to this board.

5.4.13 (A8) Amplifier Control Board (1265-1414; Appendix D)

To check the operation of the overdrive circuit, increase the gain pot of the UHF amplifier tray to approximately 110%. The Overdrive LED DS2 should light and the output power should not increase above the 110% level. If the LED does not light, adjust the overdrive threshold as needed.

5.4.14 (A12) +26.5V/2000W Switching Power Supply

This switching power supply does not contain any customer-repairable items. If the power supply should malfunction, do not attempt to repair the power supply without first consulting the Acxera Field Support Department. The power supply is adjusted to provide an output of +26.5VDC.

5.4.15 Calibration of Output Power and VSWR Cutback

Place a wattmeter and dummy load of at least 600 watts at the output of the tray that is to be calibrated and switch the front panel meter to the % Output Power position. Preset R16, manual gain, on (A8) the amplifier control board fully CCW. Move switch S1 on the amplifier

PIZZA, PIZZA, PIZZA!

It's late January, Christmas and New Year are behind us, we've lost all (well, most) of that extra holiday weight gain and we're ready for Pizza. This seems like a good time to get together again as "cabin fever" has either caught up with us or will do so very soon. As we all know, Pizza delays that or maybe eliminates it all together. You be the judge. That's my theory and I'm sticking to it!

Whatever the reason, it's always good to get together and socialize. The result was a Pizza party at Tommy's Pizza in Dublin on January 29th. We had about 25 in attendance, a good showing. As the pictures show, all had a very good time.



LIGHTNING PROTECTION PROCESS: Parts 2,3 and 4

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The Lightning Protection Process, Driving the Ground Rod by Corey Miller KE6YHX

In the last article, I described the making of the PolyPhaser panel. Needed next was a ground line large enough to absorb a lightning-strike. As Dennis Kidder explained, 0000 welding cable suits this task, and an 8-foot, copper-clad ground rod provides a suitable ground.

With the PolyPhaser panel attached to the inside wall, and the feed-lines rerouted from the window and through the wall pass-through, the welding cable was in-place and ready for the ground rod... Driving the ground rod into the dry, stony soil was a two-person task, so Russ, KE6ZIL, helped. For lightning protection, 0000 welding cable must be used, and the ground rod must be located at least four feet from the foundation of the house. The eight foot- long copper-clad steel ground rod was found at McFadden-Dale in Santa Ana. Before starting, a 3/4-inch, 5-inch-long pipe and matching end-cap was bought from Home Depot, and a 20-pound sledgehammer from McFadden-Dale. Russ dug a pit one foot deep, as seen in picture 1, and we found that the rocks below necessitated an off-center driving location. We pulled the ground rod out of the pit a couple times in doing this. Russ - KE6ZIL digging a pit 5 feet from the foundation. Before driving the ground rod, a point was ground on the end with a bench grinder, nearly, but not entirely sharp. The rocks in the ground would flatten a sharp point immediately anyway. This took about fifteen minutes. (As always, safety glasses are a must.) The hole was filled with water and the ground was soaked while grinding the point. The pipe and end cap was placed on the top of the ground rod to absorb the blows. (see photo 2) We found that the end opposite the point that was ground on the rod was considerably tapered to start out with, and would have been a better end to grind; the flatter end would have held the sledgehammer blows better. As it was, two plumbing end caps were cracked-through, and the second cap was left nearly busted-through until the end.

In the middle of driving the ground rod, at least one stone was broken through where pulling it would have been difficult, and it angled about 10 degrees in a couple different directions as it slid past stones. It is recommended to not hold the ground rod vertical in the last three feet, or it will bend and become undriveable. Due to the proximity to the fence, we had to forego this recommendation, as seen in picture 3. Russ suggests using a lighter sledgehammer to get good swings with it. We were able to drive in the ground rod five-and-a-half feet to the surface of the ground before it bent. The two-and-a-half feet that remained was cut off with a power grinder, leaving an inch or two above-ground to prevent excessive corrosion of the welding cable; this went considerably faster than grinding the point with the bench grinder. Rocking the power grinder from side-to-side helped to keep it from binding. The burrs that remained were then lightly ground off. Russ - KE6ZIL and Corey - KE6YHX driving the ground rod.

I ordered the CadWeld One-Shot and the flint igniter from Gordon Electric Supply online. At one point, I found that the concave steel disc that directs the flow of molten welding material had dislocated, but Woody at G.E.S. said it should work fine anyway. I found that the concave steel disc was dislocated an angle that nearly matched the tilt of the driven ground rod. So it was for the best.



Russ - KE6ZIL getting ready to drive the ground rod.

The CadWeld Process CadWeld One-Shot GR1161L:

The model number specifies the size of CadWeld crucible, both the size of rod to be welded to, and the size of cable (solid or stranded) to weld to it. The letters specify the configuration: single cable, double, etc. (see Figure III.1) The Welding Material and Starting Material are in the same vial. The Starting Material is removed from the bottom by pressing or tapping on the plastic container to loosen it, but don't open the vial until you are ready to pour.



Figure III.1: The CadWeld GR1161 parts.

I received the CadWeld with the concave steel disc dislocated. (see Figure III.2) If there are problems with the order, it is advisable to include jpg's of the damage or problem in an email. Do this immediately after full inspection.

Note, the metal sleeve goes in the side of the crucible,

and sometimes falls out. Simply place it back in to sheath the cable before placing the crucible on the rod. Because of the placement of the metal sleeve as a stopper for the crucible, and the shock of driving the rod, the crucible must be placed on the rod after driving the rod into the ground. Simply grind off any deformed metal before placing the crucible. If better instructions than those included for any CadWeld product are



Figure III.2: The concave steel disc had dislocated, but was not a problem.

needed, they can be downloaded from the Erico web site (www.erico.com), in Adobe pdf format. On their main page, click on Library, enter: LT30323, and select "CadWeld" and "Instructions" from the pop-up menus. Note: the file may need an upgrade of Adobe Reader from the Adobe web site, and there is a license agreement to do that. The Flint Igniter is not returnable. The Cad- Weld GR1161L and Flint Igniter T320 are \$15.83 from Gordon Electric Supply, Kankakee, IL. UPS Ground Shipping to Orange, CA is \$10. (I am not an employee of Gordon Electric Supply.)

The CadWeld Process:

The next day, I started the CadWeld procedure. Both the rod and cable must be cleaned before placing the crucible. This is done with a blowtorch to remove liquid residue, and a wire brush to remove the resulting oxidation. The cable was trimmed to-length and the insulation was cut far enough back on the welding cable to place the conductor all the way into the side of the crucible. Even though the cable is stranded, and was kept covered with insulation, a blowtorch was used to clean it and the strands were scrubbed; this was done by brushing it in one direction with a wire brush on all sides, until the copper was light in color. The end of the ground rod was torched and scrubbed about a half-of-an-inch down on the sides, and on top. A butane mini-torch and a brass brush from Harbor Freight were used to do this. Next, the CadWeld crucible was twisted onto the end of the ground rod; the rubber grommet on the bottom of the crucible held it in place. The conductor sleeve was placed all the way into the side, and the conductor hole was positioned on the side to where the cable was to come off of the ground rod. The crucible was placed on the ground rod with the rod's end stopping on the sleeve. Then, the welding cable was sized-up to the sleeve, and it was found to be a little too large for it, so some strands were trimmed off



Figure III.3 shows ignition.

rod. Then, the plastic vial was opened over the crucible, and the welding material was poured into the middle of the concave steel disc. Three quarters of the starting material fell out with it, from a quarter-

around the sides of the cable. A CadWeld with a larger sleeve may have been called for here.

After that, the cable was pushed into the sleeve; a few strands got pushed back outside the sleeve, but I did not try to correct this. Following the instructions, the ceramic piece was dropped into the crucible with the steel disc facing concave-up,

the displacement aligned with the tilt of the ground



Figure III.4: The completed weld. Also seen in the pit are the water-softener salt pellets.

sectioned portion of the bottom of the vial, but I continued and placed the lid on the crucible. The remaining quarter of the starting material was tapped out into the opening. Fortunately, this was enough for ignition. After getting ready with gloves and safety glasses, I took the flint igniter and aimed the vent on the top of the end of it at the opening of the crucible, pulled the trigger, and ignited the starting material. There was about a second delay before the welding material flashed. I glanced at the crucible when it did this, but was far enough away for the light to not cause any permanent eye damage. The material in the crucible smoldered for a minute or two, and the crucible was tapped-away with a hammer. Figure III.4 shows the welding process was a success. To increase the ground's conductivity, water softener salt pellets were poured into the pit around the ground rod; this can be covered with soil.

New PL-259s and Shortening the Feed Lines

In this final part, installation of the coaxial cable and connectors will be discussed.

Introduction:

Previously I described the making of the PolyPhaser grounding panel, the ground-rod installation, and the CadWeld placement and ignition procedure. This completed the basic requirements for lightning protection. Now, to finish-off the setup, I needed to shorten two of my feed lines that were coiled between the wall pass-through and the panel. (see Figure IV.1) This was the last step in organizing and grounding the feed lines, and protecting my rig... I find the following procedure to be adequate for my application. The items needed include: paste flux for electronics, a soldering gun, a clip stand to hold your work, nippy cutters, a cable stripper, an insulation cutter, a wire brush, .062 solder, a ruler or small

measuring device, and a PL-259 connector with an RG-8X reducer (UG-176). Also, a mat to protect the surface you're working on, some 99% alcohol, and rubber gloves may help. First, snip the cable to length, and slide on the reducer (RG-8X is just large enough to hold it without tape); be sure the large-end is facing back from the end. Next, strip the outer insulation 3/4-inch from the tip, comb the braid straight with the wire brush, and slide the reducer under the braid to the end of the outer insulation. Then, fold back, comb, and trim the braid to 3/8-inch around the reducer. Strip the inner dielectric to 5/8-inch from the tip, and gently twist the tip if the center-conductor is multi-stranded. While tinning the braid and center-conductor is recommended, I find it to be difficult, and unnecessary if you have a good eye and paste flux. The next step is to place the connector over the end of the cable. Be careful to pass all the strands of the center-conductor through the center-hole in the connector; this is where a good eye is needed. Then, unscrew the outer ring back from the end, slide it back and tape it. Hold the connector straight and screw the reducer into the back of the connector. The braid should show through the side-holes. Soldering the connector is next. With a stand, mat, and soldering gun set up, clip the assembly or cable to the stand, with one of the side holes facing up. Then, take a toothpick or small screwdriver and scrape some paste flux into the hole. Bend and fold the tip of some solder, snip off a small piece, and place it in the hole. Then, with the soldering gun pre-tinned and cooled, press the leading edge onto the side, near the hole, and pull the trigger. As soon as the solder starts to melt into the hole, turn the tip of the soldering gun on its side, and wipe the solder flat, pulling it off the connector. Repeat for each of the side-holes. The last thing to solder is the center-conductor. Angle the tip of the connector so the opening is facing up, and point it slightly higher than horizontal. As with the side-holes, scrape some paste flux into the tip, and place a small, folded piece of solder into it. Then, press the leading edge of the soldering gun into the tip, and pull the trigger. Hold it long enough for the solder and flux to flow, and adhere to the tip. If you need to, snip the solder on the tip of the connector, so it goes into the matching SO-239 easily. Any solder that gets onto the threads of the connector, or that gets in the way of the outer ring can be snapped or scraped off. Also clean off any flux residue. Slide the outer ring and screw it all the way onto the connector. Plug in the cable and tune the radio with an antenna tuner. If a good amount of white noise and stations tune-in on the receiver,

other stations can hear you transmit, and if you have good SWR, the connector is a success. I used this procedure for both my 80-meter feed-line, and my seismometer antenna feedline, both successfully. (The results are shown in Figure IV.2): the 80-meter connector third-down, and on the right of the PolyPhaser, the seismometer connector sixth-down and on the right.) While I decided to forego tinning the tip and braid of the end of the cable, and did not use intensive diagnostics in testing the results, doing so may be advantageous in your application. Lastly, I plan on buying a couple of "F" connector PolyPhasers (IS-75F-C1) for my two TV coax leads to complete the lightning protection project.

...*Good Luck 73, Corey Miller*



Figure IV.1 Before: I located the PolyPhaser panel above a bookcase, next to the wall pass-through. The Ham Shack is down and off to the left. The 80-meter and seismometer feed lines are long and unwieldy.

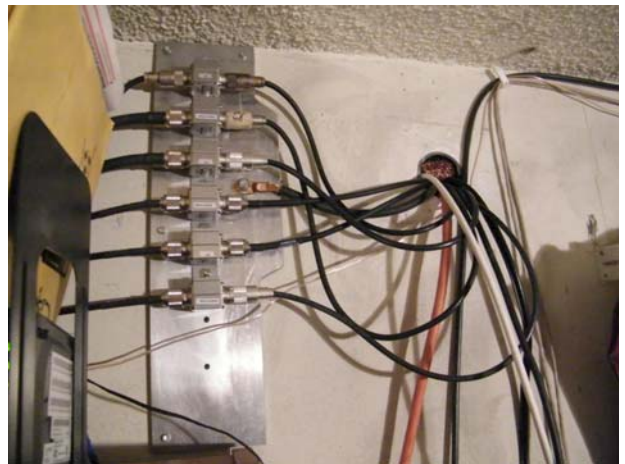


Figure IV.2: After: New PL-259s on shortened feed-lines make for a neat and organized setup.

MINDBENDER

From the Agilent Newsletter March 2013.

OK, it's not directly ATV related but let's keep our minds fresh by trying to solve things like this. WA8RMC

Bill and Ted race each other in a 100 yard dash. Bill wins by 10 yards. They decide to race again, but to make things fair Bill starts 10 yards behind Ted. If they both run exactly the same speed as before, who wins the race?

CTRL click on "Solution" for the [Solution](#).

ARRL UHF/MICROWAVE BAND PLAN COMMITTEE SEEKS INPUT ON 6 AND 3 CENTIMETER BANDS

Last year, in recognition of the need to update the published band plans for our UHF and microwave bands, the ARRL Board of Directors formed the UHF/Microwave Band Plan Committee to develop revised national plans for the amateur bands between 902 MHz and 3.5 GHz. After receiving extensive user input, the committee completed its task and the resulting band plans were approved by the Board in July 2012.

In order to do this effectively, we need to know how various segments of these bands are now being utilized around the country. You can help us by sharing what you know about local usage in your area and by asking other users whom we may not have reached -- both individuals and groups -- to do the same.

Benefits of Band Plans

The FCC has left management of our highest bands to the Amateur Radio community. It's up to us to promote activity on our bands and to minimize possible conflicts among incompatible uses. The increasing interest in microwaves for communication and experimentation -- along with advances in technology and the proliferation of new digital modes -- presents exciting opportunities for amateurs. Band plans should provide room for existing applications, for experimentation and for new uses and technologies.

Regulators are under pressure to find room for ever-expanding commercial and consumer technologies, and our slices of spectrum are at risk from such pressure. While our 5 and 10 GHz allocations are not under imminent threat from the government's National Broadband Plan, sharing our collective internal knowledge of current practices and planned applications around the country is still beneficial in many respects.

The Update Process

The purpose of these band plans is not to tell you what to do or where to do it. Rather, it is to share information about how you are using our bands now and about future plans and projects that will make use of them. Thus, the first and most important step is to collect information from you so that we have a better picture of the various uses and projects going on around the country. We know that practices may differ from one geographic region to another, often driven by local conditions or needs. We also recognize constraints that will prevent one plan from fitting every user group. Our current band plans defer to the formal determinations by regional frequency coordinating bodies.

After gathering data, we will evaluate the range of uses and draft a revision for each of the bands under consideration. Those drafts will be published for your review and comment and amended as necessary, after which the proposed plans will be brought to the ARRL Board of Directors for final approval.

What We Need From You

You may know other amateurs or groups who are using -- or have plans to use -- the 6 and 3 centimeter bands. Please share this request for input with them and encourage them to respond. We're not tallying "votes," so collective input from user groups will be more helpful and faster to compile than multiple copies of the same data from individual group members.

During our work on the 33, 23, 13 and 9 centimeter bands, we also invited input concerning the 6, 3 and 1.25 centimeter bands for our later use. If you have already responded concerning these bands, we thank you for doing so. You do not need to submit your comments again, as we have them already compiled and will consider them during this round of the committee's work.

If you have not previously submitted comments concerning our 6 and/or 3 centimeter allocations, we would like to hear from you. We ask that you use the forms below to record your own input, whether as an individual or representing a group, and use the accompanying reply format in order to help speed the compiling of the responses. Use a separate page for each band for which you wish to provide input. If you feel the need to provide more lengthy explanations or discussion, please see "Submitting Additional Information" below.

- **Column 1:** The general frequency range of each activity, in decimal megahertz.
- **Column 2:** The mode or modulation type employed, using common descriptors such as FM voice, ATV or video, high-speed data, weak-signal digital or FCC designators.
- **Column 3:** The approximate bandwidth (in kilohertz) of an individual signal and the number of simultaneous signals needed to perform the function or application.
- **Column 4:** A description of the function or activity, such as repeater control, D-STAR data link, satellite input/output, real-time video, voice repeater output, EME or weak-signal terrestrial.
- **Column 5:** Whether the activity is current ("C"), under development ("D") or proposed for the future ("F").
- **Column 6:** Reasons for selecting a specific band or segment for the activity and/or any conditions that would preclude

conducting the activity in another segment of the same band or on a different band, such as operating limits of modified commercial gear, noise between xxx and yyy MHz from adjacent non-amateur bands, frequency restrictions faced by operators in other countries / regions, unique propagation characteristics or existing satellite frequencies.

Submitting Additional Information

We also welcome comments you think would be helpful in completing our work. If, for example, you have specific knowledge as to trends in the use of adjacent non-amateur bands or expansion by primary users where we are secondary that may impact the future use of our bands, please share it with our Microwave Band Plan Committee as a separate narrative.

Please submit your response [via e-mail](#) or [via an online form](#) by January 14, 2013. If you have questions about the reporting format, you may direct them to the same e-mail address.

Thank you for helping us to collect this important information.

...Rick Roderick, K5UR ARRL Microwave Band Plan Committee Chair

ARRL UHF/MICROWAVE BAND PLAN COMMITTEE NOW SEEKS COMMENTS ON DRAFT 5 AND 10 GHZ NATIONAL BAND PLANS

TAGS: [active participation](#), [amateur bands](#), [arrrl board](#), [ARRL Executive Committee](#), [Band Plan](#), [Band Plan Committee](#), [band plans](#), [centimeters](#), [committee](#), [compatible frequency](#), [GHz](#), [ghz bands](#), [local conditions](#), [major concerns](#), [MHz](#), [regional frequency](#), [respective regions](#), [user community](#), [various types](#)

03/19/2013

Last year, the ARRL UHF/Microwave Band Plan Committee prepared -- and the ARRL Board of Directors approved -- [updated national band plans for the amateur bands between 902 MHz and 3.5 GHz](#) after receiving extensive and helpful input from the user community. Last year, after the ARRL Executive Committee extended the Committee's charter to include the 5 and 10 GHz bands, it [solicited additional input](#) concerning usage on those two bands.

The Committee has prepared draft band plans for 5 centimeters (5.650-5.925 GHz) and 3 centimeters (10-10.500 GHz). Please look over the drafts (*see below*) and let the Committee know if you have any major concerns. Please submit your comments via [e-mail](#) by April 30, 2013. As a reminder, the purpose of these band plans is twofold: To share information about how our bands are being used, and to suggest compatible frequency ranges for various types of applications. The Committee recognizes that local conditions or needs may necessitate deviations from a band plan, and regional frequency coordinating bodies may recommend alternatives for use in their respective regions. We appreciate the active participation of the user community as we work to complete our update of these band plans.

Rick Roderick, K5UR Chairman, ARRL UHF/Microwave Band Plan Committee

FCC SEEKS TO REASSESS RF EXPOSURE LIMITS

On March 27, the FCC released a *First Report and Order, Further Notice of Proposed Rulemaking* and a *Notice of Inquiry* (ET Docket Nos. 13-84 and 03-137). The documents seek to reassess the FCC's RF exposure limits and policies, as well as to propose changes to the FCC's rules regarding human exposure to RF electromagnetic fields. These proposed changes would affect the Amateur Radio Service (Part 97) rules.



In its *Notice of Inquiry*, the FCC included clarifications related to the application of occupational exposure limits for devices and at fixed transmitter sites. The FCC noted that it "should be helpful to licensees to codify our earlier adopted policy with regard the use of occupational/controlled limits at Amateur Radio stations." This policy was first established in the *RF Report and Order of 1996*, but it was not incorporated in the rules at that time. It allows amateur stations to be evaluated "with respect to occupational/controlled exposure limits, as long as appropriate training and information has been provided to the amateur licensee and members of his or her immediate household. Other nearby persons who are not members of the amateur licensee's household must be evaluated with respect to the general population/uncontrolled exposure limits."

"The ARRL has an RF Safety Committee, consisting of experts in the field," explained ARRL Chief Executive Officer David Sumner, K1ZZ; "The committee members, as well as Board members and staff are reviewing the lengthy document and will formulate a response." Read [more](#).

Electronic Code of Federal Regulations

As of October 9, 2012, the e-CFR resides at: www.ecfr.gov. e-CFR Data is current as of April 2, 2013

Existing Radiofrequency radiation exposure limits.

The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in § 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of § 2.1093 of this chapter. Further information on evaluating compliance with these limits can be found in the FCC's OST/OET Bulletin Number 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation."

NOTE TO INTRODUCTORY PARAGRAPH: These limits are generally based on recommended exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP) in "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," NCRP Report No. 86, Sections 17.4.1, 17.4.1.1, 17.4.2 and 17.4.3. Copyright NCRP, 1986, Bethesda, Maryland 20814. In the frequency range from 100 MHz to 1500 MHz, exposure limits for field strength and power density are also generally based on guidelines recommended by the American National Standards Institute (ANSI) in Section 4.1 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1-1992, Copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017.

Table 1—Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

Note 1 to Table 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

Note 2 to Table 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

[61 FR 41016, Aug. 7, 1996]

REAL NEAT RF COVERAGE TOOL

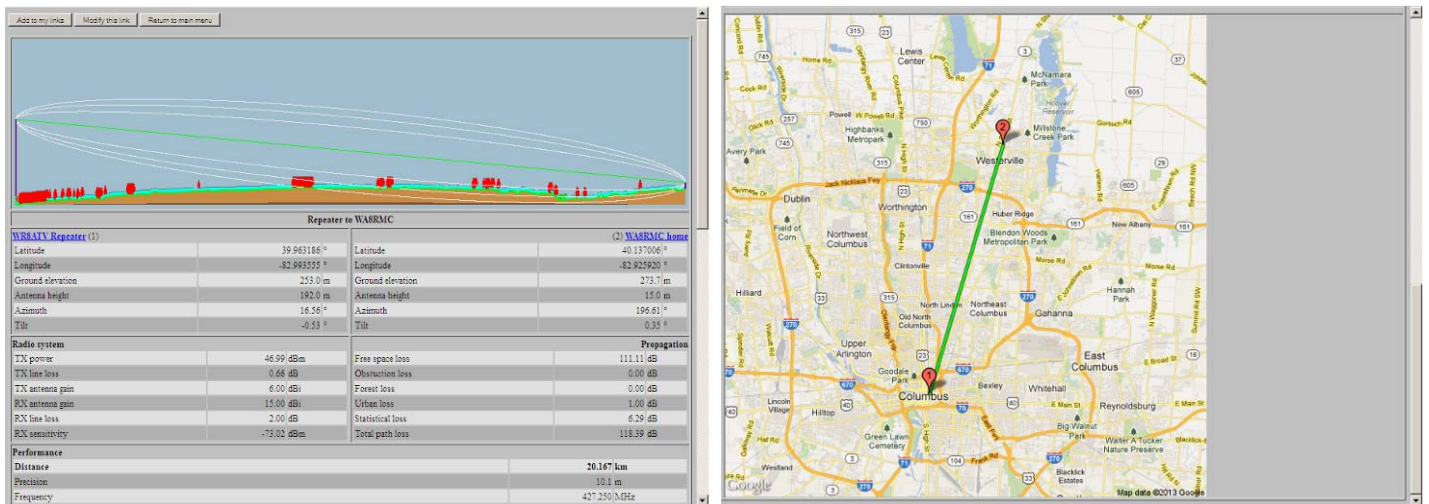
I stumbled across a real neat web site that will give a picture of an antenna coverage pattern taking into account elevation, terrain and other phenomena affecting the atmospheric signal attenuation. You enter the specifics of your antenna along with data from another site and the program will plot the path between the two and give real coordinates between them along with a terrain profile. Signal attenuation data is included.

I'm sure there are other sites that do a similar job but this one seems to be the easiest to use and gives good data. Just remember, it's created with the broadcaster in mind in order for them to approximate their coverage area. The antennas that can be selected are all omni-directional types so you have to take that into consideration when viewing the coverage plots. Also, all height data is in meters so get out your calculator when entering your tower height. (meters = feet x 0.3048) As a reference I entered the repeater 427MHz data below so you can see that expected coverage area. That's very realistic because our antenna is omni-directional and typifies a commercial 4 bay bow tie antenna.

You have to register to their site but I see that as no big deal. You can then collect various plots and store them in your own account. Start at <http://www.nautel.com/support/technical-resources/rf-toolkit/> then go to the RFTOOLKIT section. WA8RMC

To begin using the radio coverage tool, set up a new transmitter site in the 'New Transmitter Site' menu. You can now create a coverage study at this site by selecting 'New Coverage plot' or 'New point-to-point link' and specifying your transmitter and antenna details and submitting (to create a new link you will need to create two transmitter sites). Saved coverage studies and links can be found in the 'My Coverage Plots' and 'My point-to-point link' menus. Your coverage studies will automatically be saved in your account.

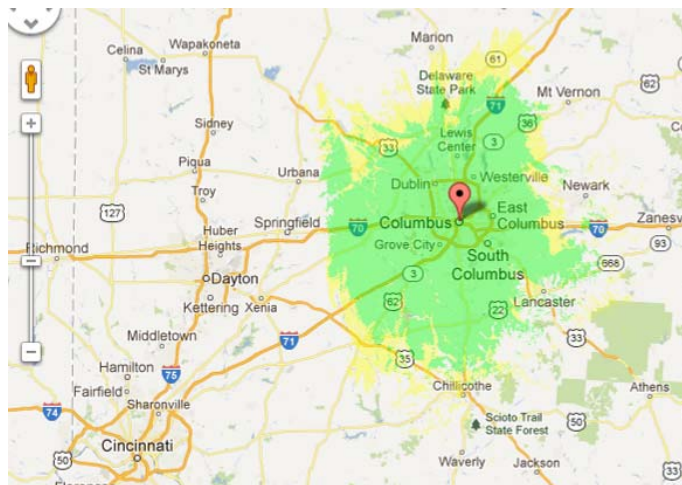
The radio coverage tool is intended to aid broadcasters in analyzing the approximate coverage with various transmitter sites, power levels, antenna heights and antenna gain. While the coverage tool is based on the well proven Longley Rice modeling techniques, and publicly available SRTM terrain data, it cannot be guaranteed and Nautel cannot assume any liability for the results. Further, the coverage tool is not meant to be a replacement for coverage studies and other work done by professional consulting engineers. Please consult with a qualified engineer before applying for your license or ordering your equipment.



Above is the RF path between the ATCO repeater and my house. This is the direct path between the repeater and me. The distance, direction and attenuation data is included in the chart to the left. The red objects are expected buildings and or trees between us. The direct and Fresnel zone paths are indicated also.

On the right is the coverage plot of the repeater 427MHz transmitter. The green area is the main coverage and yellow indicates the "fringe" zones.

Our coverage is greater than I expected to see.
...WA8RMC



ATCO 2013 SPRING EVENT

12 Noon – SUNDAY (For hamfest)

(Lunch starts about 12:30 PM)

April 21, 2013

**ABB PROCESS AUTOMATION CAFETERIA
579 EXECUTIVE CAMPUS DRIVE, WESTERVILLE**

FOR MORE DETAILS, CONTACT

ART – WA8RMC - 891-9273

LUNCH PROVIDED – DOOR PRIZES

BRING A FRIEND AND SEE OLD BUDDIES

MINI HAMFEST – SHOW AND TELL

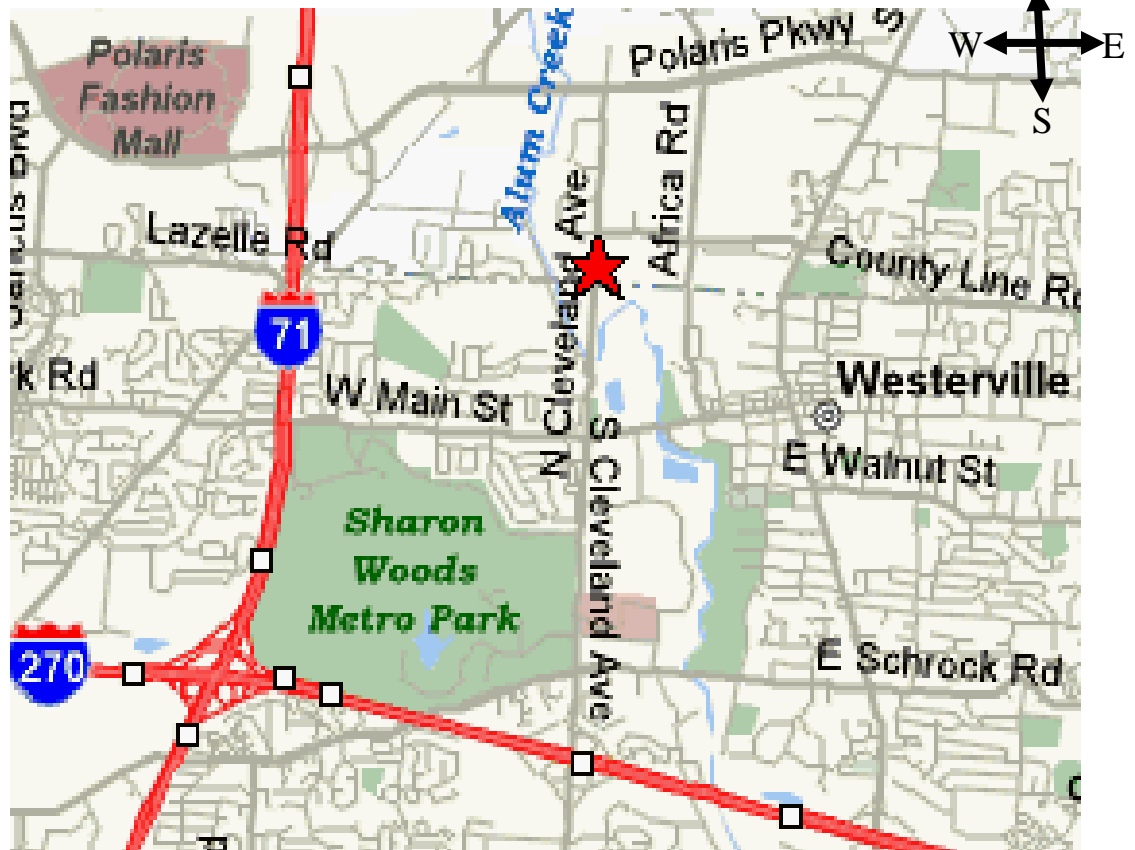
DIRECTIONS TO THE ATCO EVENT

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.

CONSTRUCTION ARTICLE INDEX

The following list is an index of all construction related material that has appeared in the ATCO Newsletter since its inception in the early '80's. This is a handy reference for that particular construction article that you knew existed but didn't want to wade through each issue to find it. All Newsletters below are also listed in order in the ATCO homepage under "Newsletters". CTRL Click on www.atco.tv. Once you locate the Newsletter section, the displayed list can then be re-sorted as needed by clicking on the "date" in the header.

...Bob N8OCQ

Issue	Page(s)	Article
Vol 1 II	5	439 Beam
Vol 2 I	4	439 Beam
Vol 2 II	8,9	439 Parabolic Ant
Vol 2 II	9	Video Modulator
Vol 2 III	7	1296 Ant 45 Ele loop yagi
Vol 2 III	10	RF Power Indicator (in-line) for 1296 MHZ
Vol 2 SE	2,3	Diode Multiplier for 23 CM
Vol 2 SE	4,5	1296 MHZ 10 Watt Solid State Linear Amp
Vol 4 I	3	RF/Video Line Sampler
Vol 4 II	3	P-Unit Meter
Vol 4 II	7,10,11	UHF Gated Noise Source
Vol 4 II	12	420 - 450 Broom Handle Rhombic Ant
Vol 4 III	4,8	25 Element 1.26 Loop Yagi
Vol 4 III	6	Video Modulator (Tube Type)
Vol 5 I	3	Video Modulator One Transistor
Vol 5 II	4,7	900 MHZ Yagi Ant
Vol 5 II	6	Video Modulator for 2C39 Final
Vol 5 III	3	440 MHZ Hidden Transmitter Finder
Vol 6 I	3	Video Line Amp
Vol 6 I	8	25 Ele 910 MHZ Loop Yagi
Vol 6 II	4,6,7	Microwave Oven ATV Xmitter
Vol 6 II	5	Matching a Quad Driven Ele
Vol 6 II	8	Power Divider for 33CM
Vol 9 III	5,7	16 Ele Loop Yagi for 439.25 MHZ
Vol 10		No Articles
Vol 11 II	4,5,6	439 48 Ele Collinear Ant
Vol 11 III	7	1280 MHZ Cavity Filter
Vol 12 I	6,7,8	439 & 1200 Horz Polarized Mobile Ant
Vol 12 II	5,6,7	ATV Line Sampler
Vol 12 II	10	439 & 1280 Interdigital Filter(s)
Vol 12 III	6,7,8	439 Cheap Attic Ant
Vol 13 I	9, 10	High Level Modulator for ATV
Vol 13 II	5	VGA to NTSC Converter for Computer
Vol 13 III	9, 10	AM Video Modulator
Vol 13 III	4	1200 MHZ Transistor Linear Amp
Vol 13 III	6	900 & 1200 MHZ Loop Yagis
Vol 14 III	8	439 31 Ele Yagi
Vol 14 III	12, 13	1250 MHZ FM ATV 3 Watt Xmitter
Vol 15 I	16	427.25 Horz J-Pole Ant
Vol 15 II	14	2400 MHZ Loop Yagi
Vol 15 III	8	Wavecom Modification
Vol 15 III	12,13,14	2.4 Gig Antenna's
Vol 16 II	20	2.4 Gig Helix Ant
Vol 16 III	4	1280 MHZ Loop Yagi
Vol 17 I	14, 15	Video Amp (Multi Output)
Vol 18		No Articles
Vol 19 III	4	Pwr Supply for 28 Volt Ant Relay
Vol 20 III	9, 10	Video Sampler
Vol 21 II	4	RF Pwr Amp for 900/1200 MHZ
Vol 21 II	14	10-14 Volt Doubler for 28 Volt Ant Relays
Vol 21 III	5	S-Video To Composite Adaptor
Vol 21 III	3,4	Video Noise Rejection Amp
Vol 21 III	14,15,16 ,17	"S" Meter For Comtech Boards

Vol 22 I		No Articles
Vol 22 II	10	1260 MHZ Cavity Filter
Vol 22 III		No Articles
Vol 22 III		No Articles
Vol 23 I		No Articles
Vol 23 II	5,6	Linear 60 Watt For 70CM
Vol 23 II	8,9	Video Modulator Update
Vol 23 III		No Articles
Vol 23 III		No Articles
Vol 24 I	13	RF Sniffer For 2.4 GIG
Vol 24 II		No Articles
Vol 24 III	3	Quantum 1500 Rec Tuner Mod
Vol 24 III	9	Battery Recharge Ckt
Vol 25 I		No Articles
Vol 25 II	6,7	Comtech TX Module Improvement
Vol 25 III	11	Comtech TX Module Improvement Correction
Vol 26 I	6	Isolator (Circulator) Mod. 850 To 1260 MHZ
Vol 26 II	5,6	Comtech 1200 MHZ rec. module improvements
Vol 26 III		No Articles
Vol 26 III	9	Remote Touch Tone Decoder For Your Shack
Vol 27 I	10	ATV Low Pass Filter (427 Mhz)
Vol 27 II	15	PictureTel Camera Data Cable Wiring
Vol 27 II	10	ATV Low Pass Filter (427 Mhz)
Vol 27 II	15	PictureTel Camera Data Cable Wiring
Vol 27 III		No articles
Vol 27 III		No articles
Vol 28 I	11	Super 1280 MHZ amplifier
Vol 28 II		No articles
Vol 28 III		No articles
Vol 28 III		WB8LGA Antenna switching system
Vol 29 I		No articles
Vol 29 II		1280 MHZ Hi Gain Panel Antenna
Vol 29 III		No articles
Vol 29 III		No articles

This is the complete list for construction articles shown in past ATCO newsletters. The page numbers listed may not match the actual page in the Newsletter. They are the numbers shown in the PDF file. Some early issues are missing. Art did not have a copy of every year. This list is complete through Volume 29 III.

...Bob N8OCQ

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. Get to work guys!

...WA8RMC

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.

04/20/2013 | [Jackson County ARC Hamfest](#)

Location: Jackson, OH

Type: ARRL Hamfest

Sponsor: Jackson County ARC

04/28/2013 | [Athens Hamfest](#)

Location: Athens, OH

Type: ARRL Hamfest

Sponsor: Athens County Amateur Radio Association

Website: <http://ac-ara.org/>

05/17/2013 | [Dayton Hamvention](#)

Location: Trotwood, OH

Type: ARRL Hamfest

Sponsor: Dayton Amateur Radio Association (DARA)

Website: <http://hamvention.org>

06/01/2013 | [Fulton County ARC Hamfest](#)

Location: Tedrow, OH

Type: ARRL Hamfest

Sponsor: Fulton County Amateur Radio Club

Website: <http://k8bxq.org>

06/15/2013 | [MILFORD HAMFEST](#)

Location: Milford, OH

Type: ARRL Hamfest

Sponsor: Milford Amateur Radio Club

Website: <http://www.w8mrc.com>

07/20/2013 | [NOARSFEST](#)

Location: Elyria, OH

Type: ARRL Hamfest

Sponsor: Northern Ohio Amateur Radio Society

Website: <http://www.noars.net>

07/21/2013 | [Van Wert ARC Hamfest](#)

Location: Van Wert, OH

Type: ARRL Hamfest

Sponsor: Van Wert Amateur Radio Club

Website: <http://w8fy.org>

INTERNET ATV HOME PAGES (list verified 01/21/12)

Domestic homepages

http://www.atco.tv	Ohio, Columbus, homepage (ATCO)
http://www.w8bi.org/atv/atvresources.html	Ohio, Dayton ATV group (DARA)
http://www.citynight.com/atv	California, San Francisco ATV
http://atn-tv.org/ATN.htm	California, Amateur Television Network in Central / Southern
http://members.tripod.com/silatvg	Illinois, Southern, Amateur Television group
http://www.ussc.com/~uarc/utah_atv/id_atv1.html	Idaho ATV
www.bratsatv.org	Maryland, Baltimore Radio Amateur Television Soc. (BRATS)
www.qsl.net/k7atv/	Salem, Oregon Amateur Television Associations-Salem
http://www.qsl.net/kd2bd/atv.html	New Jersey, Brookdale ARC N2SMT/R repeater
http://www.ipass.net/~teara/menu3.html	North Carolina, Triangle Radio Club (TEARA)
http://www.oregonatv.org	Oregon, Portland OATVA ATV Association W7AMQ/R repeater
http://members.bellatlantic.net/~theoikat/	Pennsylvania, Phila. Area ATV W3PHL repeater
http://www.hotarc.org/atv.html	Texas, WACO Amateur TV Society (WATS)
www.qsl.net/ww7ats	Washington, Western Washington Television Soc. (WWATS)
http://www.shopstop.net/bats/	Wisconsin, Badgerland Amateur Television Society (BATS)
http://www.kcatvg.org	Kansas, Kansas City ATV Group WR0ATV repeater (KCATVG)

Foreign homepages

http://atv.hamradio.si	Slovenia ATV
http://www.batc.tv	British ATV club (BATC)
http://www.batc.org.uk/cq-tv	British ATV Club and CQ-TV Magazine

Misc other ATV related sites

http://www.atv-tv.org	The Amateur Television Directory
http://www.atn-tv.org	Amateur Television Network
http://www.atvquarterly.com	Amateur Television Quarterly Magazine
http://gb3lo.camstreams.com	"GB3LO" Repeater Camstream westoft, UK
http://www.ham-radio.com/sbms	"SBMS" San Bernardino Microwave Society
http://www.qsl.net/kc6ccc/	"METS" Microwave Experimenters Television System
http://www.icircuits.com/store/index.html	Intuitive Circuits ATV products
http://www.atvresearch.com/	ATV Research Co, cameras & related security products
http://www.downeastmicrowave.com/	Down East Microwave, UHF/Microwave parts
http://www.directivesystems.com/	Directive Systems, UHF/VHF/Microwave antennas
http://www.m2inc.com/	M2 Antenna Systems
http://www.hamtv.com/	PC Electronics, ATV equipment

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 checkin requests or comments. We usually chat for about 1/2 hour so please join us locally or via internet if you can.

ATCO TREASURER'S REPORT - de N8NT

OPENING BALANCE (01/18/13).....	\$2023.08
RECEIPTS(dues).....	\$ 164.00
Pizza Party @ Tommys Pizza.....	\$ (128.55)
Re-incorporation fee, Sec State of Ohio.....	\$ (25.00)
Paypal fee.....	\$ (2.93)
CLOSING BALANCE (04/18/13).....	\$2030.60

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 average street level (1460 feet above sea level)

TV Transmitters: 427.25 MHz VSB AM mod, 1258 MHz FM mod, 1268 MHz QPSK digital, 2433 MHz FM mod, and 10.350 GHz FM mod.
(multipole filters in output lines of all transmitters)
Output Power - 427.25 MHz: 50 watts average 100 watts sync tip
1258 MHz: 40 watts continuous (Analog ATV)
1268 MHz: 20 watts continuous DVB-S (QPSK) DATV SR=3.125Msps, FEC=3/4, 2 video channels.
(PMT PID:32, Video PID:162, Teletext PID:304, PCR PID:133, Audio PID:88, Service ID:5004)
2433 MHz: 15 watts continuous
10.350 GHz: 1 watt continuous
Link transmitter - 446.350 MHz: 5 watts NBFM 5 kHz audio

Identification: 427, 1258, 1268, 2433, 10.350 GHz transmitters video identify every 15 min. with ATCO & WR8ATV on 6 different screens.
1268 MHz digital & 10.350 GHz analog - Continuous transmission of ATCO & WR8ATV with no input signal present.

Transmit antennas: 427.25 MHz - Dual slot horizontally polarized "omni" 7 dBd gain major lobe east/west, 5dBd gain north/south
1258 MHz - Diamond vertically polarized 12 dBd gain omni (Analog ATV)
1268 MHz - Diamond vertically polarized 12 dBd gain omni (Digital DVB-S ATV)
2433 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni
10.350 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni

Receivers: 147.480 MHz - F1 audio input with touch tone control. (Input here = output on 446.350)
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).
1280.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters)
1280.00 MHz - DVB-S (QPSK) digital SR=4.167Msps, FEC=7/8, PCR PID:33, Video PID:33, Audio PID:49
This input feeds all transmitters and also directly to 1268 MHz digital output channel 2. Therefore, 1280 DATV input and
439 or 2398 can be ON at the same time. (Input here = output on all TV transmitters)
2398.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters)
10.450 GHz - F5 video analog NTSC

Receive antennas: 147.480 MHz - Vert. polar. Diamond 6dBd dual band (also used for 446.350 MHz link output)
439.250 MHz - Horizontally polarized dual slot 7 dBd gain major lobe west
1280.00 MHz - Diamond vertically polarized 12 dBd gain omni
2398.00 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni
10.450 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni

Auto mode	Touch Tone	Result (if third digit is * function turns ON, if it is # function turns OFF)
Input control:	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 up for 5 minutes) Select # to shut down before timeout.
	697	Select Time Warner radar. (Stays up till turned off). Select # to shut down.
	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 for auto scan to continue

Manual mode Functions:

00* then 1 for Ch. 1	Select 439.25 receiver
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 (6 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 1280 MHz digital receiver scan enable
03* or 03#	Channel 3 1280 MHz analog receiver scan enable
04* or 04#	Channel 4 2398 MHz scan enable
A1* or A1#	Manual mode select of 439.25 receiver audio
A2* or A2#	Manual mode select of 1280 digital receiver audio
A3* or A3#	Manual mode select of 1280 analog receiver audio
A4* or A4#	Manual mode select of 2398 receiver audio
C0* or C0#	Beacon mode – transmit ID for twenty seconds every ten minutes
C1* or C1#	C1* to disable 427 MHz transmitter, C1# to enable it
C2* or C2#	C2* to disable 1268 MHz digital transmitter, C2# to enable it

ATCO MEMBERS as of April 2013

Call	Name	Address	City	St	Zip	Phone
KD8ACU	Robert Vieth	3180 North Star Rd	Upper Arlington	OH	43221	614-457-9511
KC3AM	Dave Stepnowski	735 W Birchtree Ln	Claymont	DE	19703	
AH2AR	Dave Pelaez	1348 Leaf Tree Lane	Vandalia	OH	45377	
W8ARE	Larry Meredith III	6070 Langton Circle	Westerville	OH	43082-8964	
KC8ASF	Tom Pallone	3437 Dresden St.	Columbus	OH	43224	614-268-4873
WB4ATV	Don Coy	489 Crystal Lake Drive	Melbourn	FL	32940	
NN8B	Don Kemp	6384 Camp Blvd.	Hanoverton	OH	44423	
KC8BTX	Dudley Field	357 N. Ridge Heights Dr	Howard	OH	43028	
W6CDR	Wynn Rollert	1141 Pursell Ave	Dayton	OH	45420	937-256-1772
WB8CJW	Dale Elshoff	8904 Winoak Pl	Powell	OH	43065	614-210-0551
N8COO	C Mark Cring	2844 Sussex Place Dr.	Grove City	OH	43123	614-836-2521
N8CXI	Garry Cotter	2367 Northglen Drive	Columbus	OH	43224	
N9CX	Bill Erwin	231 Gateside Ct.	Gahanna	OH	43230	
WB8CXO	Mike Young	289 Gayload Dr	Munroe Falls	OH	44262	
N8CZO	Mike Flaharty	1025 Josiah Morris Road	London	OH	43140	
N3DC	William Thompson	6327 Kilmer St	Cheverly	MD	20785	301-772-7382
WA8DNI	John Busic	2700 Bixby Road	Groveport	OH	43125	614-491-8198
K8DMR	Ron Fredricks	8900 Stonepoint Ct	Jennison	MI	49428-8641	
K8DW	Dave Wagner	2045 Maginnis Rd	Oregon	OH	42616	419-691-1625
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	OH	43026	614-405-1710
KC8EVR	Lester Broadie	108 N Burgess	Columbus	OH	43204	
WA8FLY	Rod Shaner	16012 London Rd.	Orient	OH	43146	740-279-3614
N8FRT	Tom Flanagan	1751 N Eastfield Dr.	Columbus	OH	43223	
W8FTX	George Biundo	3675 Inverary Drive	Columbus	OH	43228	614-274-7261
WB2FVE	Craig Blaine	1195 Hooverview Drive	Westerville	OH	43082	614-891-5378
W8FZ	Fred Stutske	8737 Ashford Lane	Pickerington	OH	43147	
KB8GHW	Mike Amirault	5560 Refugee Rd.	Baltimore	OH	43105	614-859-7005
WA8HFK,KC8HIP	Frank & Pat Amore	3630 Dayspring Dr	Hilliard	OH	43026	614-777-4621
W4HTB	Henry Cantrell	905 Wrenwood Dr.	Bowling Green	KY	42103	270-781-9624
WG8I	Chris Vojsak Sr,	3536 W Henderson Rd	Columbus	OH	43220-2232	614-203-6000
WB2IIR	Michael Anthony	370 Georgia Drive	Brick	NJ	08723	
N8IJ	Dick Knowles	1799 Homeward Ave	Lima	OH	45805	419-231-7277
W8KHP	Allan Vinegar	2043 Treetop Lane	Hebron	Ky	41048	
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	OH	45331	937-548-2492
N8LRG	Phillip Humphries	3226 Deerpath Drive	Grove City	OH	43123	614-871-0751
WB8LGA	Charles Beener	2540 State Route 61	Marengo	OH	43334	
KA8LWR	Mel Alberty	1645 Olentangy Road	Bucyrus	OH	44820	419-468-2971
KD8KDM	Mike Bowlus	127 W. Plum St. PO box 221	Saint Paris	OH	43072	
W8MA	Phil Morrison	154 Llewellyn Ave	Westerville	OH	43081	
KA8MFD	Ross McCoy	227 S Boundary St PO Box 9	Edison	OH	43320	
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	OH	45660	
N8NT	Bob Tournoux	3569 Oarlock Ct	Hilliard	OH	43026	614-876-2127
WU8O	Tom Walter	15704 St Rt 161 West	Plain City	OH	43064	614-733-0722
N0OBG	Jim Conley	33 Meadowbrook C C Est	Ballwin	MO	63011	
N8OCQ	Bob Hodge Sr.	3750 Dort Place	Columbus	OH	43227-2022	
KB8OFF	Jess Nicely	742 Carlisle Ave	Dayton	OH	45410	
W6ORG,WB6YSS	Tom, Maryann O'Hara	2522 Paxson Lane	Arcadia	CA	91007-8537	626-447-4565
KE8PN	James Easley	1507 Michigan Ave	Columbus	OH	43201	614-421-1492
W8PU	Gary Poland	3347 S.R. 28	Midland	OH	45148	
W3RCJ	Thomas Farrell	1912 Burnwood Road	Baltimore	MD	21239	
WA6RCW	Ed Mersich	34401 Columbine Trl W	Elizabeth	CO	80107-7866	
WA8RMC	Art Towsee	438 Maplebrooke Dr W	Westerville	OH	43082	614-891-9273
W8RRF	Paul Zangmeister	10365 Salem Church Rd	Canal Winchester	OH	43110	
W8RRJ,W8WTB	John Hull	580 E. Walnut St.	Westerville	OH	43081	614-882-6527
W8RUT,N8KCB	Ken & Chris Morris	2895 Sunbury Rd	Galina	OH	43021	
W8RVH	Richard Goode	9 Master Street Apt A	Springfield	OH	45504	937-478-6488
W8RQI	Ray Zeh	2263 Heysler Rd	Toledo	OH	43617	
KB8RVI	David Jenkins	1941 Red Forest Lane	Galloway	OH	43119	614-878-0575
W8RWR	Bob Rector	135 S. Algonquin Ave	Columbus	OH	43204-1904	614-276-1689
W8RXX,KA8IWB	John & Laura Perone	3477 Africa Road	Galena	OH	43021	614-579-0522
W8SJQ	Rocky Eramo	795 Riverbend Ave	Powell	OH	43065	614-207-2740
W8SJV, KA8LTG	John & Linda Beal	5001 State Rt. 37 East	Delaware	OH	43015	740-369-5856
KB8SSH	Mike Cotts	3424 Homecroft Dr	Columbus	OH	43224	614-371-7380
W3SST	John Shaffer	6706 Gilette Dr	Reynoldsburg	OH	43068	614-751-0029
WA6SVT	Mike Collis	PO Box 1594	Crestline	CA	92325	
W8TIP	Gene Hawkins	1720 Liberty Street	Toledo	OH	43605	
KD8TIZ	Bob Holden	5161 Goose Lane Rd	Alexandria	OH	43001-9730	614-562-8441
K8TPY, K8FRB	Jeff & Dianna Patton	3886 Agler Road	Columbus	OH	43219	
NR8TV	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123	937-981-1392
W8URI	William Heiden	5898 Township Rd #103	Mount Gilead	OH	43338	419-947-1121
KB8UWI	Milton McFarland	115 N. Walnut St.	New Castle	PA	16101	
WA8UZP	James R. Reed	818 Northwest Blvd	Columbus	OH	43212	614-297-1328
KB8WBK	David Hunter	45 Sheppard Dr	Pataskala	OH	43062	740-927-3883
KC8WRI	Tom Bloomer	PO Box 595	Grove City	OH	43123	
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	OH	43224-3011	

Call	Name	Address	City	St	Zip	Phone
N8XYJ	Dan Baughman	4269 Hanging Rock Ct.	Gahanna	OH	43230	
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	OH	43064	
KC8YPD	Joe Ebright	3497 Ontario St	Columbus	OH	43224	
N8YZ	Dave Tkach	2063 Torchwood Loop S	Columbus	OH	43229	614-882-0771
W8ZCF	Ferrel Winder	6686 Hitching Post Ln.	Cincinnati	OH	45230	
K3ZKO	Ron Cohen	915 Rowland Ave	Cheltenham	PA	19012	215-828-1263
KA8ZNY,N800Y	Tom & Cheryl Taft	386 Cherry Street	Groveport	OH	43125	614-202-9042

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 payable on January 1 of each year. 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.

The membership period is from January 1ST to December 31ST. New members joining before August 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. For those joining after August 1ST, they can elect to receive a complementary October issue with the membership commencing the following year or get the previous (3) Newsletters. Your support of ATCO is welcomed and encouraged.

Membership expiration notices will be sent out in January in lieu of Newsletters for those with an expired membership.

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. The actual expiration is on January of the following year so we can keep the dues clock consistent with the beginning of each year.

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: Tom Bloomer KC8WRI
Corporate trustees: Same as officers	Newsletter editor: Art Towslee WA8RMC

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 Newsletter
c/o Art Towslee -WA8RMC
438 Maplebrooke Dr. W
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 EXPIRED.**
