ATCO NEWSLETTER

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ATCO HAM IN THE SPOTLIGHT

This time we travel west and visit Wynn Rollert, W6CDR, in Dayton. Winn is new to ATCO but most certainly not to amateur radio and ATV. His adventures are far and wide but most notably was his help in getting the South Vienna link repeater up and running. In addition to his ATCO involvement is his support of the DARA activities in Dayton. In fact, he was involved with the original construction of the Dayton ATV repeater many years ago. Welcome Wynn; we hope you feel at home here at ATCO too!

ACTIVITIES ... from my "workbench"

Well, here we are heading into Fall again. Where does the time go? I've not had as much time for Ham activities as I would have liked to but, hey, I didn't get the yard work finished either. However, I'll cut that one short and concentrate on ATV subject matter. A number of things have happened since last time so let's get started.

The ATCO/DARA link controls have been up and down…well, mostly down. We're making progress and most of the problems were associated with infant mortality component problems and the ability to react to them in a short period of time. It's about a 100 mile round trip for either of us to go out there to make repairs so quite frankly, we just didn't have the time. Eventually we got it up and running, partially. I constructed and installed an interdigital filter for the 1280 input and 1250 output to and from Columbus. The receiver needed the filter because of wideband pulse interference from aircraft flight control transmitters operating on or about 1350 MHz from the Springfield airport. The wide band input of the Comtech receive board would display radar like extremly annoying pulses on the screen.

In addition, the received signal strength was not what it used to be. At one time the signal was nearly P5. Now it was barely P2. We raised the 1280 antenna about 15 feet up on the tower so now it's just 5 feet down from the top. We also replaced the standard loop yagi with a 40 element loop yagi antenna donated by W8RVH. That should give us another 6 dB or so of received gain. So now, after all of that the signal from our repeater is P5 (with some sparkles). It could still use some tweeking but for now, it'll work just fine.

Adam found some problems with the control circuit which is now rectified. The DARA end of the link is now in operation with the 910 MHz amplifier at their end outputing about 100 watts. The received signal is absolutely P5 at this time. Good job! So the DARA to Jones road video link is fully functional. The audio still has some problems but that will be worked on later, not to mention the audio problems at our end. The audio to them is ok but the received audio on our side is not functional at this time. I believe there is a problem with our controller so it does not sequence the audio correctly. We will have to work on that.

Last but not least, the 439 input at Jones road is not functional. We tried to see what was wrong the other day but there was not enough time. So, for the time being, the Jones road video input remains in the disabled state. OK, now on to other stuff.

We have also had problems at our repeater. Almost at the same time the 427 and 1250 MHz transmitters ceased operation. I could not fix them on the spot so I took both home to the bench. The 427 Mirage amp had an open 35 amp fuse. Funny thing, the main fuse element was OK. The fuse element opend at one end cap. The end result was still an open fuse so it had to be replaced. No other problem was found. After 10 years of operation and thermal cycling I guess it just gave up. I re-adjusted the video levels and pedastal while I had it on the bench. The 1250 MHz transmitter problem was a broken center line in the reflectometer on the transmitter chassis. The fitting arced untill it became open and then stayed that way. While in defective mode the transmitter output was about 5 watts. Now it's back up to the usual 55 watts. Both units are now re-installed and working normally.

If the above wasn't enough, the 1280 repeater antenna became defective. The people that could get a P5 picture into the repeater could now barely get a P1 picture to it. I replaced the tri band antenna with a mono band 1280 antenna. That gives us about 3dB more gain on 1280 receive. Initial tests show the new antenna to be working great. Signals are back to normal. I still don't know what went wrong with the original antenna but I suspect lightning damage as the signals seemed to deterioriate shortly after a significant storm. Now that the 1280 antenna is a monoband unit, I had to move the 147.45 and 446.350 signals back to the original dual band antenna which had 146.76 interference problems. So far the interference seems minimal. I plan to re-work the 147.45 cavities in the near future so maybe that will make it go away forever.

I'm working on completing a 439 / 1280 analog / 1280 digital receive module for the repeater. The new 439 receiver is slightly more sensitive and the 1280 Comtech board is more sensitive than the receivers now in place. I hope to have the new modules in operation by Fall Event time but no guarantees. We'll see.

That is all for now. Don't forget to attend the Fall Event coming up Sunday November 6. See the bulletin later in this Newsletter for details.
…WA8RMC

ATCO/DARA LINK CONTROLLER, revisions and updates.

A number of revisions and improvements have been made to the Jones road control link. As we try to iron out the problems, more details become available so we want to pass them on to you. I know many of you have not been able to see the link in operation yet but we hope that will change. It has had its problems so much of the time it has been only in partial operation. Some of it is not the fault of the Jones road controls, however. We here at ATCO have seen our own share of problems with a bad 1250 transmitter and a defective 1280 antenna. As a result, the path between us has been marginal to say the least. We hope most of it is behind us so get used to the added operational capabilities of our new "toy by reading Adam's description below. ED.

Jones Road ATV Repeater Link - Linking Dayton to Columbus with Live ATV!

General Information

The concept of linking the Dayton (DARA) and Columbus (ATCO) amateur fast-scan television repeaters has been the subject of many lunch meetings dating back to at least 2002. The road to realizing this dream has had it's fair share of pot-holes, but as of this writing, we have finally installed an operating link at the Jones Road site located just North of Interstate 70 near South Vienna. A map of the actual location is here. The purpose of these web pages is to document the installation and operation of the repeater, and to serve as a body of corporate knowledge for operators at both the Dayton and Columbus ends. A side benefit of these pages is the inspiration it might serve to others who seek to link ATV sites between remote QTHs.

The general problem of sharing video between Dayton and Columbus is one of distance. Even with diffraction effects taken into account, ATV QSOs directly between Dayton and Columbus are rare, and depend on good propagation effects. The separation between the DARA and ATCO ATV repeater sites exceeds 80 NM. A suitable mid-point repeater site was chosen at a fairly elevated site (approximately 1300 MSL) that lies approximately midway between the ATV repeaters. Experimentation had shown that reliable paths on the UHF ATV bands could be realized with approximately 80 foot antenna elevation at the link site. Of course, the task was simplified by the outstanding elevation of the ATCO ATV repeater (atop the State Government building downtown Columbus, approximately 600 AGL) and the 165 foot AGL tower situated on the DARA 1000 MSL ATV site at Beyer's Road south of Dayton. The repeater is approximately 1/4 mile southwest of the intersection of I-75 and I-675.

Band-Plan

Due to band limitations imposed by the crowed 420-450 MHz band, UHF frequencies were selected to establish the 2-way links from the Jones Road site to the DARA and ATCO ATV repeater systems. The under-utilized 900-MHz amateur band was selected for 2-way transmission from DARA to Jones Road. Experimentation revealed high levels of fast-hopping spread-spectrum interference in the upper portion of the 902-928 MHz allocation. For this reason, an 8 MHz band centered on 910 MHz was selected to achieve the best interference immunity, yet stay clear of the weak-signal work down around 902 MHz. We found that 10 watts was not quite enough to overcome the spread-spectrum noise, which created brief but objectionable white flashes across the NTSC video picture. We noted that the interference lasted approximately 5-30 milliseconds, which, when compared to the 64 microsecond period of an NTSC scan-line, served to "white-out" many lines of video at once. DARA was able to find a pair of Ericsson 120 Watt UHF amplifiers designed for the Cell band service that operated at full output on the 910 MHz band. Suitable interference rejection was achieved at approximately 30-60 watts, depending on band conditions.

The 1200-1300 MHz band was selected for the link from ATCO to Jones road. This choice was driven mainly by the hardware currently in use at the ATCO site. ATCO ATV UHF operation on the 1200 MHz band is already well established, with input on 1280 MHz and output on 1250 MHz (both vertically polarized). Thus, the Jones road site transmits video to ATCO on 1280 MHz and receives video from ATCO on 1250. Each signal occupies approximately 8 MHz after bandpass filtering.

Springfield, Ohio Video Input

An additional feature of the central location of the Jones Road site is its proximity to the greater Springfield area. With this in mind, we have designed the ATV link repeater with the capability to receive video on 439.25 MHz (horizontal polarization, upper sideband VSB please, to avoid conflict with AMSAT operations) and transmit that video out to both ATCO and DARA repeaters simultaneously. Thus, if you live within 20-30 miles of the link site, you should make it into both repeater systems with minimal power. Please note that the link repeater *does not have the capability to transmit on 439.25 MHz to the Springfield area*. The higher power operation of the ATCO and DARA ATV repeaters offers better chance of reception at your QTH on any of several operating frequencies.

Audio Coordination

Audio coordination for the DARA ATV repeater is conducted on 2-meters simplex 144.34 MHz, vertical polarization, while 2-meter coordination for the ATCO site occurs on 147.45 MHz simplex vertical. The lack of a direct and reliable audio communication path between DARA and ATCO presents a challenge, and the audio subcarrier of the ATV channel provides a necessary solution. Although seldom used when operating within either ATV repeater area autonomously, the audio received on 144.34 or 147.45 MHz is received by the respective ATV repeater and retransmitted on the audio sub-carriers of the ATV frequencies. These sub-carriers are linked along with the video carriers at the Jones road site to allow clear voice communications between operators at either end of the link. Additionally, remote control of the Jones Road link may be achieved via DTMF on a yet to be determined control frequency. This control is established by way of a dedicated receiver located at the Jones Road site, fed by an omni vertical antenna at approximately 50 feet AGL on the tower.

Link Repeater Operation

In most circumstances, the operation of the link repeater is automatic and unattended. Several additional features augment the operation of the repeater, and aid in testing the integrity of the link. These additional features are described in detail in the Theory of Operation Section below.

In most circumstances, a user will transmit into his respective ATV repeater in Columbus or Dayton, or directly into the Jones Road site on 439.25 MHz VSB. If the user comes through the DARA ATV repeater, the link site receives video on 910 MHz FM and retransmits on 1280 MHz towards ATCO. The signal is then broadcast from the ATCO repeater to Columbus area users. The reverse occurs if a user keys the ATCO repeater: FM ATV video is transmitted to Jones Road on 1250 MHz, and then delivered to the DARA ATV repeater on 910 MHz, then to be re-broadcast via the DARA ATV repeater to Dayton Area users. It is important that ATV users have the capability to receive subcarrier audio from their local ATV repeater. It is unlikely that users will be able to achieve direct simplex 2-Meter coordination communication on either 144.34 or 147.45 MHz. Finally, users in the Springfield area are encouraged to enter the system by direct input to the Jones Road site on 439.25 MHz USB VSB. However, these users will need a separate antenna directed to either the ATCO or DARA ATV repeaters in order to receive video from the link users. Another option might be to attempt reception via side lobes from the 910 MHz or 1280 MHz link antennas. However, these antennas have very good directivity and side lobe levels are fairly low. Note also that either of these antennas will only provide "one side" of the link. That is, reception via 910 MHz side lobe will allow viewing only of ATCO traffic, and vice versa.

Hardware Design and Theory of Operation

Users are encouraged to read the hardware theory of operation, but a thorough understanding is not required for operation of the link. The link repeater is comprised of 2 transmitters, 3 receivers, a video switcher, a color bar video generator, and a main CPU control module. All components are mounted in a single equipment rack within the Jones Road blockhouse. At any given time, only one of the three receivers is actively receiving a signal, and either one or two transmitters serve to repeat the received signal. The outputs of the three receivers are routed to the 8x2 matrix video switcher. Additionally, the color bar generator and other external video signals (tower cameras, for example) are fed as inputs to the matrix switcher. The video switcher has the capability to switch, under computer control, up to 8 inputs into 2 outputs. Output 1 is fed to the DARA 910 MHz ATV transmitter, while output 2 is fed to the ATCO 1280 MHz transmitter. In normal operation, video received on the ATCO channel is piped to the DARA transmitter, and vice versa. However, in the case where the sync detector of the Springfield 439.25 MHz receiver is activated, the Springfield video input is routed to both the ATCO and DARA outputs simultaneously. Additionally, software control of the switcher and transmitters allows color bars or other video inputs to be transmitted to ATCO, DARA or both. For example, by bringing up the 910 MHz transmitter and commanding the switcher to enable an input which is connected to an optional tower-mounted camera, the tower-cam video may be broadcast to the Dayton repeater system.

The UHF 900 and 1200 MHz band FM ATV transceivers were constructed using modules produced by Comtech for the wireless security market. No pre or de-emphasis circuits are used between the repeaters. The audio circuit is significantly different than the video portion. No switching is performed between audio inputs. Instead, all of the receiver voice channel outputs are tied together in an audio buss arrangement. Receivers that do not detect an active video sync squelch their audio output. In this way, only the active receiver places audio on the buss. This audio is ported to both transmitters and transmitted when activated. Power to the FM receiver modules is disconnected on transmit of the respective transmit module by way of a switching relay in order to prevent audio feedback.

The CPU is a PIC Microchip Based 16F877 micro-controller programmed using a standard C compiler. Operation of the software is described below.

Control Software Theory of Operation

The following discussion is presented to clarify operation of the software used to program the controller installed at Jones Road. The controller is a PIC Microchip 16F877 based computer that allows great flexibility of operation. Users are

encouraged to read the software theory of operation, but a thorough understanding is not required for operation of the link. The basic function of the control program is to provide simplex video and audio repeat functionality between Dayton (DARA) and Columbus (ATCO). As an added function, the system allows receive only capability at the repeater site to collect ATV signals from the greater Springfield area. However, no transmit capability is included to the Springfield area. As of the creation of this code, the frequencies in use are:

1250 MHz: Transmit from Columbus to Jones Road
1280 MHz: Transmit from Jones Road to Columbus
910 MHz: Transmit from Dayton to Jones Road and Transmit from Jones Road to Dayton
439.25 MHz: Receive only at Jones Road from surrounding area

Basic Functionality:
The Main loop of the code scans the sync enable lines of the three receive frequencies (1250 MHz, 910 MHz, 439.25 MHz) and turns on the opposing transmitter as long as a received signal remains present. There is a capability to disable sync lines, in the case that spurious signals are erroneously triggering the repeater. However, the sync enable circuits are designed only to become active after detecting valid NTSC signals, and not common RF interference. For example, if the sync detect from Columbus goes high on the 1250 MHz input, then the code will configure the switcher to monitor video input from Columbus, and output this video to the 910 MHz transmitter aimed at Dayton. The transmitter will remain active as long as the sync enable is active, or TIMEOUT (15 minutes), whichever occurs first. At this point, the transmitter will drop and begin the search for other active sync lines and begin the process again. At the end of each transmission, the link ID and color bars are transmitted for a 5 second duration (default). This appended ID can be disabled using keypad or DTMF A80 if desired.

Other functionality:
There are a series of DTMF codes that can be transmitted that allow diagnostic transmissions or alternate video source selection. For example, the system may be temporarily set up to transmit the color bar ID video that is connected to video input #4. This signal can be transmitted to Dayton, Columbus or both, depending on the configuration of the switcher.

Switcher:
The video 8x2 MUX switcher can be configured to switch any of the eight (8) video inputs to either of the two (2) output banks. The output of Bank 1 is fed to the 910 MHz Dayton transmitter, while the output of Bank 2 is fed to the 1280 MHz transmitter to Columbus.

The inputs are as follows:

Input #	Video Source
1	Dayton (910 Receive)
2	Columbus (1250 Receive)
3	Springfield Area (439.25 Receive)
4	Color bar / Video signal generator
5	Stationary Blockhouse Camera (Future Upgrade)
6	Tower Mounted Rotating Camera (Future Upgrade)
7	Open
8	Open

Note that audio is not switched. Both the voice audio channel is connected in a common buss arrangement. If a sync line for a particular channel is not active, its audio is squelched and does not contribute to the buss. Note that the audio channel is fed by received remote control audio from a separate receiver tuned to the control frequency. This allows control of the repeater remotely.

DTMF Character Decoding Routine:
All DTMF codes follow the same template. The first two characters must be "#" codes to "wake up" the repeater. The next character is alpha (A,B,C or D). The next two characters are numeric (0-9). The final termination character is a "*". If characters are entered in a sequence other than the above format, the code will emit an audible error on the voice buss and exit the DTMF capture sequence. As an example, the code: ##A41* is a valid code and will be processed by the program. However, #D34* will return an error tone since the first two characters need to both be "#" characters. Additionally, a five (5) second "shot clock" timer is incorporated. If the user begins to enter digits, he has up to 5 seconds between keystrokes to complete the entered code sequence. If this timer expires, the DTMF subroutine will exit with an audible error code on the audio buss. You must be able to receive transmitted audio via the voice subcarrier to hear these tones (i.e., an active transmitter must be "pointed your way"). Note that status of the sync detect, transmitter enable and video ID append can be queried by the A90 command, and heard via an active transmission channel.
Note: The local keypad mimics the functionality of DTMF tones.

DTMF Command List:
All DTMF codes follow the same template. The first two characters must be "#" codes to "wake up" the repeater. The next character is alpha (A,B,C or D). The next two characters are numeric (0-9). The final termination character is a "*". If characters are entered in a sequence other than the above format, the code will emit an audible error on the voice buss and exit the DTMF capture sequence. As an example, the code: ##A41* is a valid code and will be processed by the program. However, #D34* will return an error tone since the first two characters need to both be "#" characters. Additionally, a five (5) second "shot clock" timer is incorporated. If the user begins to enter digits, he has up to 5 seconds between keystrokes to complete the entered code sequence. If this timer expires, the DTMF subroutine will exit with an audible error code on the audio buss. You must be able to receive transmitted audio via the voice subcarrier to hear these tones (i.e., an active transmitter must be "pointed your way"). Note that status of the sync detect, transmitter enable and video ID append can be queried by the A90 command, and heard via an active transmission channel.

Format: # # A 0 0 *
DTMF Codes (Excluding initiator(s) and termination characters):

Code	Function
A00	**Reset to defaults (power on reset)**
A11	**910 MHz Sync Enable (Dayton)**
A10	**910 MHz Sync Disable**
A21	**1250 MHz Sync Enable (Columbus)**
A20	**1250 MHz Sync Disable**
A31	**439.25 MHz Sync Enable (Springfield)**
A30	**439.25 MHz Sync Disable**
A41	**910 MHz Transmitter Enable**
A40	**910 MHz Transmitter Disable**
A51	**1280 MHz Transmitter Enable**
A50	**1280 MHz Transmitter Disable**
A61	**All Sync Detects Enabled**
A60	**All Sync Detects Disabled**
A71	**Both Transmitters Enabled**
A70	**Both Transmitters Disabled**
A81	**Append Colorbar/ID to end of transmissions**
A80	**No Colorbar/ID at end of transmission**
A90	**Query Sync Detect and Transmitter Status**
A99	**Break the link (disable all sync and TX)**

Bxy - Transmit colorbars to "x" for duration "y"

x: Dayton = 1, Columbus = 2, Both = 3
y: 0 = 30 sec, 1-9 = Minutes
Example: B28 -> Transmit bars to Columbus for 8 min
Note 1: software responds to A00 (CPU reset) from within this routine in case of lock-up
Note 2: software responds to B99 (routine EXIT) to end transmission earlier than timeout
Note 3: the active video input may be switched from the default (channel 4 - colorbars) to any of the valid inputs by using the switcher command outlined below.

Cxy - Switcher x: Bank 1 (to DARA), y: Bank 2 (to ATCO)
Eg. C34: Bank 1 = Input #3 (Springfield->DARA) , Bank 2 = Input #4 (Colorbars->ATCO)

Dxx - Serial Control Decoder (future upgrade)
xx is a two digit number ranging from 00 to 99 that is directly sent to the serial line output (DB9 connector). D99 is a special command that momentarily enables a control line that will perform a hard reset for a personal computer. The intent of this upgrade is to allow connection of a personal computer via standard 9600 baud serial communication cable. The remote commands can be programmed to allow a range of functions (weather stations, remote cameras, etc) to be controlled via DTMF from remote users.
Eg. D51 - sends the ASCII characters 51 followed by a carriage return and a line feed to the PC. D99 performs a hard reboot in case of CPU lockup on the PC.

Troubleshooting FAQs

The following FAQs attempt to remedy some of the expected problems encountered by link users and administrators.

Q. *How do I remotely control the Jones Road Link?*

A. First of all, ask yourself "do I really need to control the link?" In most circumstances, the answer is no, since normal operation is automatic and unattended. If you have a valid need, you can send a link command by pressing # twice, then the alpha numeric code, (eg: B12) followed by the terminator character *. A common "non-administrator" type of command might be the immediate deactivation of a sync detect line, which might be inadvertently triggering due to interference.

Q. *Why can't I contact the link repeater using DTMF on the established control frequency?*

A. There are several causes that might cause the controller to appear non-responsive. First, be sure that you can make it into the link repeater with your antenna. If you have a directional beam, ensure that it is pointed at Jones Road, for example. It is possible that a power failure has occurred at Jones Road. If the backup battery connected to the DTMF control receiver has failed, it is probable that the receiver has recovered to its default frequency of 146.01. If required, contact should be attempted on this frequency (for example, to break the link in a required situation). Sending B10 (Dayton users) or B20 (Columbus users) will bring up the ID (colorbars) from the link repeater for 30 seconds to check link operation.

Q. *The link doesn't seem to be working. What is going on?*

A. Several failures may occur that might cause the entire link to appear dead. For example, the 910 MHz transmitter might fail, causing an apparent total link failure to DARA users. Thus, overall link operation should be confirmed with Columbus users. More likely, however, is that the link is simply "broken". The software is programmed to "break the link" (same as sending an A99 command) in cases where one of the inputs has stayed on for longer than the timeout period (currently 15 minutes). In this case, the software disables sync detect on that channel to prevent continuous keying of the entire repeater system. In such cases, the sync detects can be re-enabled by using the A11, A21, A31 or A61 commands. It is also possible that someone disabled one of the two transmitters with the A40 or A50 commands. These can be enabled using A41, A51 or A71.

Q. *I can't hear audio from the current opposite end link user, what can I do?*

A. First, ensure that you are equipped to receive the audio subcarrier of the ATV repeater you are working. If you are receiving on the UHF VSB channel, chances are good that you are using a down-converted TV set or similar, and all you need to do is turn up your volume. If you are using one of the UHF FM channels (for example DARAs 1258 MHz output), you need to ensure that you are properly equipped to decode the 6.0 MHz subcarrier. Note that you will *not* be able to hear the audio on your local 2-meter simplex system, since these systems are not audio repeaters.

Q. *How do I query the status of the sync detect lines, along with the other status signals?*

A. The A90 command executes the system status query routine. In order to hear the returned Morse code characters (O = on, F = off), you must first establish an active communication path to your repeater. Turn up your audio volume, and then send the command B10 (for DARA users) or B20 (for ATCO users). This will bring link colorbars up for 30 seconds. Then, key in A90. You should then hear the following sequence of Morse code characters: xxx yy z, where xxx are the three sync detects, DARA, ATCO and Springfield. yy are the transmitters, DARA then ATCO. Finally, z is the video colorbar append. As an example, OOF OO F decodes to mean: all of the sync detects are enabled except for Springfield, both transmitters are enabled, and the 5 second colorbars are not appended to the end of each transmission.

Q. *The repeater seems to be coming on repeatedly via the link video channel. What can I do?*

A. It depends on weather you can isolate the source of the transmitter that is activating the link. If you suspect that interference on 439.25 MHz is triggering the Springfield input and activating both the ATCO and DARA systems repeatedly, it might make sense to disable the Springfield sync detect temporarily using A30. Of course, this will not allow Springfield area users to access the input, so this should be used with discretion. The same procedure may be used to isolate the other two offending channels. Note that the link can be broken (all sync detects and transmitters disabled) quickly by using A99. The A00 command is handy to then bring the system back to default (all sync detects and transmitters on, 5-second video colorbars appended).

…Adam, N1GX

REPLACEMENT 1280 MHZ ANTENNA GOES UP!

The 1280 MHz receive antenna at our repeater has not been operating right, so a replacement was in order. As mentioned in my "Workbench" column, the existing tri band antenna was just was not performing very well so I bought a new single band 1280 MHz antenna from Diamond. The existing one has 10.3 dB gain and the new one is 13.3 dB gain so, with everything else equal, about twice as much signal should now be received. (13.3 – 10.3 = 3 dB and 3 dB more gain means twice as much signal). The new antenna has shown to be about 15 dB better so there was DEFINITELY something wrong with the existing one. I couldn't resist the urge to disassemble the old one to see what was wrong and to my surprise, I see nothing obvious. It's getting too late in the season to start antenna work so it'll probably sit in the corner till next year but I still want to set it up in the back yard and do pattern and gain measurement checks to find out if it's ok.. If anyone else has the urge, let me know and I'll bring the antenna over. ('DMR, hint, hint).

The day was perfect for antenna work so Tom, KA8ZNY and Tom, KC8WRI, both helped with the exercise. KA8ZNY is shown in the photos doing the swapping while KC8WRI and I watch from the roof about 20 feet below …WA8RMC.

At the left, Tom sits on a cross girder as he works to remove the defective tri-band antenna. Notice the long radials needed for the 146 MHz portion of the band. (The 2.4 GHz receive and transmit antennas are directly behind him). To the right of the removed antenna is the 920 MHz receive antenna.

Directly below Tom smiles as he completes the new antenna installation. The new antenna is a dark red color. (The color and detailed picture can be viewed by looking at the online version of this Newsletter).

Directly left is the new antenna sandwiched between the 2.4GHz and 920MHz antennas.

SAT. MORNING BREAKFAST…a good way to start the weekend!

It has been the "tradition" for quite some time now that a few of us get together at a different restaurant each Saturday to start the weekend. Usually the discussion starts on 147.45 MHz on Thursday as to where we shall meet on Saturday with a restaurant eventually chosen. The selected time is always 9:00 AM but, as I found out, that means show up at 8:30 to prevent being the topic of discussion! This particular time we chose Marshalls Restaurant in Grandview. I'm told that it is Jim's, WA8UZP, favorite because he can walk there and avoid the cost of backing the car out of the garage. We usually have about 6 to 10 participants each time and not always the same people so join in if you can. Spouses are most graciously welcome!

In the picture on the right we anxiously await the meal to be put before us.

This picture tries to capture the food cutting skill of Jim, WA8UZP. His wife looks on in amazement!

"IMPROVED" ANTENNA, Bill is upstaged by who?....."

OK, we all know about the circularly polarized antenna using CD's that Bill came up with as reported in the last Newsletter. Now it seems he has a better idea. Look closely folks, this one has more elements. Upon close examination, I think I found the secret. It looks like the driven "element" is an antenna plotting program CD which allows it to alter the pattern dynamically.

Bill reports the status of the research project as follows:

The picture at the right shows the XYL, Patty, N8LEP holding an antenna I made by using the aluminum "pull-top" covers from empty, honey-roasted peanut containers. It's for 1250 MHz. to 1280 MHz. ATV operation. The reflector disk element is next to her right hand.

The spacers between disks are pieces of 1/2 inch plastic PVC water pipe. The internal support boom consists of a four foot length of wooden dowel rod. The driven element is a full wavelength loop of brass stock, and is supported by the coaxial feedline itself.

No big deal, just thought you might like to see it, hi.
Again, it's aptly named a "Disk & Rod" style of antenna. It is very similar to the CD disk antenna I made prior.
…Bill, W8DMR

HAM ROSTER UPDATE

Total number of USA Licensed Amateurs by Class as of May 14, 2000:
Novice - 49,329
Tech/+ - 334,254
General - 112,677
Advanced - 99,782
Extra - 78,750
Total all classes - 674,792

As of July 31, 2005
Novice - 27,975 (-43.28%) (-21,354)
Tech/+ - 317,655 (-5.02%) (-16,800)
General - 136,435 (+20.81%) (+23,490)
Advanced - 75,812 (-24.28%) (-24,236)
Extra - 106,900 (+35.74%) (+28,150)
Total All Classes - 664,040 (-865 since the last reporting period)

Total all classes (5/14/00) - 674,792
Total all Classes (4/21/03) - 687,860
Total all classes (9/6/04) - 674,788
Total all classes (8/31/05) - 664,040

Total loss of 10,752 since 5/14/2000 (Was 674,792)
Total loss of 10,748 since 9/6/2004 (Was 674,788)
Total Loss of 23,820 since 4/2003 (all time high of 687,860)
We Lost: 176 Novice
203 Tech/+
268 General
266 Advanced

We Gained: 48 Extra
For the Month of July, 2005 there were 1,400 new licenses issued by the FCC.
1,197 Tech/+ (85.5%)
142 General (10.1%)
61 Extra (4.4%)
This is a drop of 31.4% from the total (2041) issued in June
These numbers come from the very interesting and comprehensive website of Joe Speroni, AH0A http://www.ah0a.org

Edit: I should have posted this as part of the report. It is historical data showing the growth rate by decade.

Numbers of US population and the number of hams at the start of each decade from 1930.

Year	Population	# Hams	Growth Rate
1930	123,202,624	19,000	
1940	132,164,569	56,000	194%
1950	151,325,798	87,000	55%
1960	179,323,175	230,000	164%
1970	203,211,926	263,918	15%
1980	226,545,805	393,353	49%
1990	248,709,873	502,677	28%
2000	281,421,906	682,240	36%
2005		664,040	-2.7%

The 2005 number was as of July 31, 2005.

Notes,
For the 13th straight reporting period, all classes except for Extra declined. There was a net loss of 865 licensees in this reporting period from the last reporting period. Numbers are now being posted monthly

The base totals are from implementation of the then new licensing changes in May 2000. September 6, 2004 is the date I started measuring the changes. The peak number was in April 2003.
…George K3UD

GRUNDIG UNVELIS 3D DIGITAL TV TECHNIQUE

Nicolas Mokhoff EE Times (09/07/2005 11:36 AM EDT)
Applied Nanotech Inc. said it has demonstrated a high-resolution, full color, 25-inch diagonal carbon nanotube TV.

A grainy demonstration video of the proof-of-concept TV in operation can be viewed on the company's Web site (http://www.nano-proprietary.com) under the Applied Nanotech Inc. tab, by selecting "demonstrations."

The video clip is devoid of "ghost images" generally observed in large LCD and plasma TVs as an image tail moving across the screen. The image and its characteristics are similar to a cathode-ray tube.

The proof-of-concept TV has 280 x 200 color lines or pixels and a 25-inch diagonal glass substrate with a 22-inch diagonal viewing area. It operates at a compatible voltage with CMOS drivers. The distance between subpixels, just over 0.5 mm, was selected so Applied Nanotech's printing techniques will be compatible with current format digital TV standards.

The demonstration stems from Applied Nanotech's collaboration with six Japanese display component manufacturers. Applied Nanotech is a subsidiary of Nano-Proprietary (Austin, Texas).

WALKING YIELDS WATTAGE

It's no good if you can't hook an ATV rig to it. ED.

Researchers have found yet another benefit of walking -- it can be used to generate power for portable electronics. A new backpack can generate electricity by harnessing the mechanical energy created by walking. The walker's up-and-down hip motion makes the backpack's suspended load bounce up and down, generating up to 7.4 W. A typical cell phone consumes roughly 1 W.

A team of biologists at the University of Pennsylvania developed the backpack's generator with funding from the U.S. Office of
Naval Research. The original goal was to eliminate the need for soldiers to carry weighty spare batteries to power critical equipment such as communication devices and night-vision goggles. However, the developers hope the backpack also will be useful to
field scientists, explorers, and disaster relief workers in remote locations.

A sack carrying the load is suspended from the backpack's rigid frame by vertically oriented springs. Normal forward walking
causes the hip, and the backpack load, to move up and down by 5 to 7 cm with each step. The vertical movement of the backpack
contents provides the mechanical energy to drive a small generator mounted on the frame, creating a current that can either run a portable device or charge a battery (view video of backpack operation at http://nls.planetee.com/t?ctl=137F4:FC42C).

Prototype testing showed that the backpack's power output increased with walking speed and with the weight of the load in the pack. University of Pennsylvania researcher Larry Rome has set up a company called Lightning Packs to commercialize the
idea.
…University of Pennsylvania http://nls.planetee.com/t?ctl=137F7:FC42C

FALLING PRICES, GOVERNMENT MANDATES PROPEL HDTV

David Benjamin EE Times (09/14/2005 9:19 AM EDT)
The annual chorus of promises that high-definition television “has arrived” to sweep the viewing public off its feet was sung again at International Broadcast Conference (IBC) here, but came supported this time by two convincing forces — falling prices and government meddling.

Keynote speaker David Hill, chairman of Fox Sports Inc. and president of the DirecTV Entertainment Group, said that because an array of HDTV equipment, especially flat-screen 16:9 displays are finally becoming “mainstream affordable,” there will occur a “massive uptake at Christmas [2005] for HD” by consumers.

But an even stronger catalyst for HD adoption worldwide is that governments from the U.S. to Japan to Australia and Germany are mandating the phase-out of analog television broadcast, to be replaced by digital broadcast, which is increasingly high-definition capable.

Stating the case bluntly, panelist Peter Wilson of High Definition & Digital Cinema Ltd. (U.K.) said, “Regardless of what the market says, the government says that sales are going to increase.”

Perhaps most striking about the perennial HD report-card at IBC is how much nostalgia can be generated by a technology barely 15 years old. Most of the panelists slipped into fond reminiscence about a course of HD development that has never run smooth. Yukihiro Nishida of NHK-Japan, the broadcaster that started HD with its Hi-Vision effort in the late 1980’s, recalled the excitement of developing the cumbersome analog MUSE HD system.

For his part, keynoter Hill waxed sentimental about the first “HD” Super Bowl halftime show in 2002, when U2 performed in “wide-screen digital enhanced-definition” at a not-quite-HD resolution of 480 progressive-scan pixels per line.

But all the technical improvements in HD have so far failed to generate spending among consumers, largely because HDTV equipment costs too much compared to analog televisions, which most viewers still deem tolerably vivid. That problem, said Wilson, is disappearing. The average price of an HDTV receiver has declined, he said, from $3,147 in 1998 to $1,216 in 2005.

The trend will continue downward to $1,134 in 2006, close to the magic $1,000 threshold. Wilson cited two HD receivers now on the market at under $500. Chinese manufacturers are also trying to produce low-cost HDTV sets.

What's next? 3D TV
The lowering of prices has generated a dramatic uptick in sales, according to Wilson. Since 1998, 17 million HD-capable televisions have been sold, but 3.8 million of that total has occurred just between January and June 2005. Total consumer spending on HD technology is close to $5 billion.

In terms of market penetration, Wilson said HD televisions were present in only 17 percent of U.S. households last year, a number that will grow to 22 percent this year and will exceed 55 percent in 2008.

The year 2008 is crucial, because it is the year, according to panelist Byran Burns of ESPN, that sales of digital 16:9 TVs will exceed sales of analog 4:3 aspect TVs by a 12-to-1 ratio.

By then, analog television sales will be virtually illegal in many countries. Nishida of NHK noted that by 2007, the Japanese government has mandated the cutoff of analog-to-digital broadcast signal conversion. In 2011, Japan will cease entirely all analog broadcast, both terrestrial and satellite. Similarly, said Wilson, all TV sets in the U.S. larger than 13 inches will be required to include a digital tuner.

ESPN's Burns was among the panelists who hailed the seemingly inevitable transition from analog to digital TV in epochal terms. "The perfect storm is about to hit the United States," he said. He predicted that 100 million HDTV sets would be sold by the end of 2008, forcing broadcasters to follow the example of ESPN in offering virtually all TV content in HD.

He said, "Within a few short years, those with HD programming will win the ratings race."

Hill was even more bullish, insisting that price and government mandates are helpful, but there are no more significant to the triumph of high-definition than the consumer's desire for a more complete viewing experience. "People will buy HD sets because of a major difference in the perception of what TV is," he said.

Hill went further, saying that, "There is no doubt that HDTV will revitalize the television audience. But as great as HD is, the true excitement is when every set in the world is capable of receiving 3D television. And we are capable of providing 3-D TV!"
…*David Benjamin is a Paris-based freelance writer.*

BRILLIAN LAUNCHES 6-MEGAPIXEL LCOS HDTV

EE Times (09/08/2005 10:31 AM EDT)
Liquid Crystal On Silicon (LCOS) display supplier Brillian Corp. has introduced a 65-inch high-definition TV the company said provides a contrast ratio of 4000:1 and the highest fidelity images presently available in an LCOS rear-projection TV.

Designated the 6580iFB, the TV uses three two-megapixel microdisplays to achieve a resolution of 1920 x 1080 pixels. Each of the microdisplays in the three-panel light engine is dedicated to a single color, resulting what Brillian says is a true six-megapixel image.

The display provides 12-bit grayscale and supports a full range of video and media center/PC resolutions. Response time is 7 ms. Other features include advanced motion-adaptive de-interlacing and scaling, 3:2 pull-down detection, and digital noise reduction.

Brillian expects to ship the TV beginning the fourth quarter, with a list price of $7,999.

IN KATRINA'S WAKE, HAM RADIO TRIUMPHS

September 19, 2005
A few months ago, NBC's Tonight Show staged a race between a pair of ham-radio operators with Morse-code keys and a couple of kids with text-messaging cellphones to see who could communicate faster. The hams won hands down, proving, in the minds of some, that old technology could hold its own against new. In recent days, ham radio was put to the test again by Hurricane Katrina. This time, however, lives were at stake.

In the world of design engineers and electronics in general, change is essential. Designers work diligently to make the fruits of their labors obsolete almost before they see daylight. The turnover in technology is sometimes like a flood, with old being washed away by new over and over. Often, the new beats the heck out of the old. But there are times when old isn't necessarily bad; in fact, sometimes old works when new doesn't. And then we're glad that old is still around, or at least we should be.

Wireless technology, while relatively new to many consumers, is of course not new at all. A few (very) old-timers remember the original "wireless" of radio. The revolution wrought by the pioneers of wireless changed the world then, and the technology behind that revolution has been re-invented and re-applied time and again. Its pre-eminent incarnation today is our near-ubiquitous wireless communications infrastructure, which has freed us from the shackles of landlines and made our mobile lifestyles possible. Technology truly is great stuff.

Until, of course, a monster hurricane comes along to render it nearly useless. Here we see a scenario in which a flood literally swept away the new. As Hurricane Katrina's fury hammered the Gulf states on August 29, the communications infrastructure

took a devastating hit. Telephone service, including wireless, became at first intermittent and then unusable in many localities. Where there was phone service, 911 switchboards were often unreachable due to the massive volume of calls. The response of local authorities, now termed "confused" by deposed FEMA chief Michael Brown, wasn't helping much. The Gulf Coast was about to descend into darkness, chaos, and, worst of all for many, silence.

But proponents of the old were at the ready. The "old," in this case, is ham radio. In the eyes of the "man on the street," ham radio has a pretty stodgy reputation. Aren't hams still using Morse code? Don't some of them use radios with tubes, for goodness sake? What the "man in the street" probably doesn't know is that it was amateurs who advanced the radio arts early in the 20th century. Down through the decades, amateurs have embraced (and often driven) all of the innovations in wireless technology, up to and including all digital modes and the Internet. But many have stayed in touch with their roots, which is good old-fashioned analog HF operation. And while amateurs have a longstanding tradition as innovators and experimenters, they also have a mandate that comes with their licenses: to be ready, willing, and able to provide emergency communications whenever and wherever they're needed.

As Katrina bore down on the Gulf region, amateur radio operators, under the aegis of the American Radio Relay League's (ARRL's) Amateur Radio Emergency Service (ARES), prepared to swing into action with emergency networks that would run health-and-welfare traffic into and out of the disaster zone. As early as the Monday following the storm, hams throughout the hurricane zone were putting emergency stations on the air. In one instance, hams were instrumental in the rescue of 15 people clinging for life to a New Orleans rooftop. Meanwhile, in Alabama, amateur SKYWARN weather nets kept the National Weather Service apprised of conditions throughout the state. In hard-hit sections of Mississippi, hams running off generators and with makeshift antennas were the only means of communication, getting word to out-of-state friends and relatives concerning their loved ones.

There were numerous other instances of hams helping those who were not simply inconvenienced by the storm, but whose lives were in imminent danger. Now that things have calmed down in the Gulf region, many of the emergency nets have stood down. But hams continue to serve the public in the many areas that are still without power or phone service.

As our nation collects itself in the aftermath of the Katrina disaster, President Bush has promised federal reviews of what went right and what went wrong. One of the findings of those inquiries should be that the federally-instituted Amateur Radio Service, which functions under the licensing authority of the FCC, stood tall when the country needed it.

Amateur radio currently faces various threats to its existence. Chief among those is the advent of broadband-over-powerline (BPL) technology, which, if broadly adopted, has the potential to cause widespread interference to HF communications, not just for amateurs but for other services that use the HF spectrum.

Amateurs and the ARRL have made a lot of noise about BPL, asserting that it could seriously hamper their efforts and those of relief agencies such as the Red Cross and Salvation Army, in the event of a disaster such as Katrina. It's rumored, though, that the same FCC commissioners who have given their blessing to BPL field trials will now take a much harder look at the technical issues concerning BPL and its interference potential in the HF spectrum. Let's face it: The federal government didn't handle the emergency in the Gulf very well; it'd be prudent for it not to sanction a technology that could impede one of the few things that actually worked.

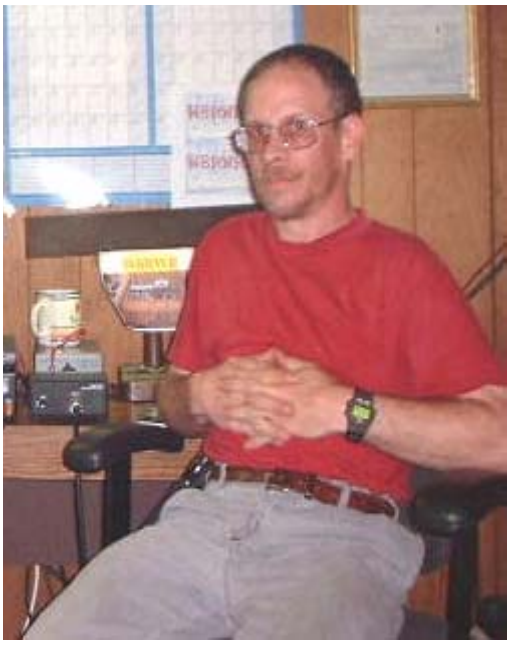
Many readers of this newsletter are amateur radio enthusiasts. If you are, and if you haven't already done so, consider writing your congressman to express your concern about the future of the Amateur Radio Service, especially in light of its outstanding efforts in recent days. Remind your elected representatives that a vibrant and unimpeded Amateur service can and will be a lifesaver when disaster strikes. Also, consider how you yourself might help. What if a hurricane, tornado, or earthquake ravages your area? Are you prepared to get on the air without relying on the mains to handle emergency traffic? Get in touch with your local amateur-radio club and find out how you can pitch in.

Your cell phones and wireless routers are indeed great stuff, but so is a good old HF transceiver. We shouldn't always be in such a hurry to let the flood of new technology wash away the old. The geek down the block with all the antennas on his property could turn out to be your best friend someday. Because sometimes, old trumps new.

…David Maliniak, AD2A You can e-mail David Maliniak at dmaliniak@penton.com. (Reprinted by permission from Dave)

BOB BUILDS A J-POLE…antenna, that is!

Ok guys! Bob, W8RWR, is among the few I've seen lately that is into home construction. Let's see more of the projects you're building. Bob, keep up the good work! He plans to use the antenna for portable emergency applications. Good choice!



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 him or her with information. New members are our group's lifeblood. It's important that we actively recruit new faces aggressively.

W8GUC Reuben Meeks, Vandalia, OH
WB8PJZ Dave Morris, Wapakoneta, Oh

…WA8RMC

SENATE MANDATES DIGITAL TV BROADCASTS BY 2009

A Senate panel yesterday set a deadline of April 7, 2009 to require television stations to switch to all-digital broadcasts, and requiring that the airwaves be returned to the government, according to the Reuters news agency. The government would sell off some of the wireless spectrum for $10 billion or more, while the remainder would be used for emergency responders.

The legislation, approved by the Senate Commerce Committee, still has to clear the full Senate, be merged with a bill in the House, and signed into law before it would take effect.

In order for existing analog television sets to work, a converter box, costing about $50 would be required. The Senate panel approved subsidies of up to $3 billion to help low-income people buy them.

ATCO

2005 FALL EVENT

1:00 PM - SUNDAY
NOVEMBER 6, 2005
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 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.

HAMFEST CALENDAR

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. WA8RMC.

30 Oct 2005 + Hamfest & Auction Massillon Amateur Radio Club http://www.marcradio.org Talk-In: 147.18+ (PL 110.9) Contact:, Terry Russ, N8ATZ 3420 Briardale Circle NW Massillon, OH 44646 Phone: 330-837-3091 Email: truss@sssnet.com
Massillon, OH Massillon Boys and Girls Club Complex 730 Duncan Street SW

12 Nov 2005+ Grant Amateur Radio Club http://www.garcohio.net **Talk-In:** 146.730+ Georgetown, OH ABCAP Building 200 South Green Street

14 Jan 2006* 20th Annual Southwest Ohio Digital Symposium Dial Amateur Radio Club http://www.swohdigi.org/ **Talk-In:** 146.61, 224.96, & 444.825 Middletown, OH Miami University, Middletown Campus 4200 North University Blvd.

15 Jan 2006+ Scarfest 2006 Sunday Creek Amateur Radio Federation http://www.scarfclub.org **Talk-In:** 147.225; 147.150 Nelsonville, OH Tri-County Joint Vocational School 15676 State Route 691

29 Jan 2006+ Tusco Amateur Radio Club http://noard.com/tuscoarc.htm **Talk-In:** 146.730 - (PL 71.9) Strasburg, OH Wallick Auction House 965 North Wooster Avenue **Div:** Great Lakes

12 Feb 2006+ Mansfield Mid*Winter Hamfest and Computer Show InterCity Amateur Radio Club http://www.iarc.ws **Talk-In:** 146.94 - (PL 71.9) Mansfield, OH Richland County Fairgrounds 750 North Home Road

26 Mar 2006+ Lake County Amateur Radio Association http://www.lcara.org **Talk-In:** 147.21 (PL 110.9) Madison, OH Madison High School 3100 Burns Road

2 Apr 2006+ 52nd Annual Hamfest/Electronics & Computer Show Cuyahoga Falls Amateur Radio Club http://www.cfarc.org/hamfest2006.htm **Talk-In:** 147.27 Cuyahoga Falls, OH Emidio & Sons Party Center 48 East Bath Road

LOCAL HAM CLUB LISTING

Central Ohio ARES (COARES)
Rich Jordan, AA8DN – President
e-mail: aa8dn@arrl.net
Web Site: http://www.qsl.net/coares/

Hocking Valley ARC
Mel Myers AA8BJ – President
Sunday Creek Amateur Radio Federation
Russel Ellis N8MWK – President

Rusty Zipper HF & DX Contest Club
Contact Name: Mark Harvill
e-mail: na8kd@qsl.net or kg8dp@aarl.net
Web Site: http://www.qsl.net/na8kd

Delaware Amateur Radio Association (DELARA)
Bob Brown, W8BOB, President
160 Curly Smart Circle, Delaware, OH 43015
e-mail: bobb@midohio.net

Capital City Repeater Association (CCRA)
Ned Raybould, N8OIF, Secretary
e-mail: ccra@qsl.net
Web Site: http://www.qsl.net/ccra

Central Ohio Radio Club (CORC)
Joe Hahn, W8NBA, Membership Chairman
e-mail: membership@corc.us
Wed Site: http://www.qsl.net/corc

Lancaster & Fairfield County ARC
Charlie Snoke – President
(740) 653-9092 e-mail: k8qik@qsl.net
Web Site: http://www.qsl.net/k8qik

Columbus QRP Club (CQRP)
Web Site: **http://www.qsl.net/cqrp**

Central Ohio Severe Weather Network
John Montgomery, N8PVC, President (614-231-0590)
e-mail N8WX@severe-weather.org
Web Site: www.severe-weather.org

INTERNET ATV HOME PAGES (list verified10/21/05)

If you have access to the INTERNET, you may be interested to know of some of the HAM related information that is available. Most addresses listed below are case sensitive, so type exactly as shown. **Note: The listings below without URL's have disappeared! If any of you know otherwise, let me know.**

Domestic homepages

http://www.atco.tv	Ohio, Columbus, homepage (ATCO)
http://www.hamvention.org/dara/atv/atvresources.html	Ohio, Dayton ATV group (DARA)
http://www.citynight.com/atv	California, San Francisco ATV
http://www.qsl.net/atn	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
http://www.kcatv.org	Kansas, Kansas City Amateur TV Group (KCATVG**)**
www.bratsatv.org.	Maryland, Baltimore Radio Amateur Television Soc. (BRATS)
http://www.dxzone.com/cgi-bin/dir/jump2.cgi?ID=10991	Michigan, Detroit Amateur Television System (DATS)
http://come.to/amateurtv.mn	Minnesota Fast Scan Amateur Television (MNFAT)
http://www.qsl.net/kd2bd/atv.html	New Jersey, Brookdale ARC in Lincroft
http://www.ipass.net/~teara/menu3.html	North Carolina, Triangle Radio Club (TEARA)
http://www.oregonatv.org	Oregon, Portland OATVA Oregon Amateur TV Association
http://www.jones-	Oregon, Southern Oregon ATV
http://www.nettekservices.com/ATV/	Pennsylvania, Pittsburg Amateur Television
http://members.bellatlantic.net/~theojkat	Pennsylvania, Phila. Area ATV
http://www.hats.stevens.com	Texas, Houston ATV (HATS)
http://www.hotarc.org/atv.html	Texas, WACO Amateur TV Society (WATS)
http://www.hamtv.org/	Texas, North Texas ATV
http://www.ussc.com/~uarc/utah_atv/utah_atv.html	Utah ATV
http://www.qsl.net/w7twu	Washington, Western Washington Television Soc. (WWATS)
http://www.shopstop.net/bats/	Wisconsin, Badgerland Amateur Television Society (BATS)

Foreign homepages

http://lea.hamradio.si/~s51kq/	Slovenia ATV **(BEST OF FOREIGN ATV HOMEPAGES)**
http://www.batc.org.uk/index.htm	British ATV club (BATC)
http://www.gpfn.sk.ca/hobbies/rara/atv3.html	Regina, Canada ATV
http://www.cq-tv.com	British ATV Club and CQ-TV Magazine
http://oh3tr.ele.tut.fi/english/atvindex.html	Finland ATV, OH3TR repeater.
http://www.darc.de/distrikte/g/T_ATV/atv.htm	German ATV

TUESDAY NITE NET ON 147.45 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. Then a second round follows with periodic checks for late check-ins. We rarely chat for more than an hour so please join us if you can.

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)
Transmitters: 427.25 MHz AM modulation, 1250 MHz FM modulation, 1260 MHz QPSK digital, 2433 MHz FM modulation and 10.350 GHz FM modulation
Interdigital filters in output line of 427.25, 1250 & 2433 transmitters
Output Power - 427.25 MHz:40 watts average 80 watts sync tip
1250 MHz: 50 watts continuous (Analog ATV)
1260 MHz 2 watts continuous (DVB-S digital ATV)
2433 MHz: 15 watts continuous
10.350 GHz 1 watt continuous
Link transmitter - 446.350 MHz 5 watts NBFM 5 kHz audio
Identification: 427, 1250, 1260, 2433, 10.35 GHz xmitters video identify every 30 min. with ATCO & WR8ATV on 4 different screens
1260 MHz - 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
1250 MHz - Diamond vertically polarized 12 dBd gain omni (Analog ATV)
1260 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: 147.45 MHz - F1 audio input control of touch tones
439.25 MHz - A5 video input with FM subcarrier audio (**lower sideband**)
915 MHz - F5 video link data from remote sites
1280 MHz - F5 video input or DTV-S digital selectable (C1* selects digital & C1# selects analog)
2398 MHz - F5 video input
10.350 GHz - F5 video input (future – not installed yet)
Receive antennas: 147.45 MHz - Vert. polar. Hi Gain 12 dBd dual band (also used for 446.350 MHz output)
439.25 MHz - Horiz. polar. dual slot 7 dBd gain major lobe west
915 MHz - Diamond vertically polarized 12 dBd gain omni
1280 MHz - Diamond vertically polarized 13.3 dBd gain omni
2398 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni
10.450 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni (not installed yet)

Input control:	Touch Tone	Result (if third digit is * function turns ON, if it is # function turns OFF)
	00#	turn transmitters **off** (exit manual mode and return to auto scan mode)
	00*	turn transmitters **on** (enter manual mode-keeps xmitters on till 00# sequence is pressed)
	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.

Manual mode functions:		
	00* then 1 Ch. 1	Select 439.25 receiver - manual mode (hit 00* then 1 to view 439.25 signal only)
	00* then 2 Ch. 2	Select 915 receiver - manual mode
	00* then 3 Ch. 3	Select 1280 receiver - manual mode
	00* then 4 Ch. 4	Select 2411 receiver - manual mode
	00* then 5 Ch. 5	Select video ID - manual mode (the 4 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 2 915 MHz scan enable
	03* or 03#	Channel 3 1280 MHz scan enable
	04* or 04#	Channel 4 2398 MHz & camera video scan enable
	A1* or A1#	Manual mode select of 439.25 receiver audio
	A2* or A2#	Manual mode select of 915 receiver audio
	A3* or A3#	Manual mode select of 1280 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#	1280 analog/ digital select. Hit C1* for digital. Hit C1# for analog.
	C2* or C2#	2433 transmitter for on/off. (C2* enables transmitter and C2# disables it)

Auto scan mode functions:		
	001	2398 receiver (normal mode - returns to auto scan)
	002	Roof camera (select 001 when finished viewing camera so repeater will shut down)
	003	Equipt. room camera (select 001 when finished so repeater will shut down**)**

ATCO MEMBERS AS OF OCTOBER 21, 2005

Call	Name	Address	City	St	Zip	Phone	URL
KD8ACU	Robert Vieth	3180 North Star Rd	Upper Arlington	OH	43221	614-457-9511	rfvieth@yahoo.com
K8AEH	Wilbur Wollerman	1672 Rosehill Road	Reynoldsburg	OH	43068	614-866-1399	wilbur.w@juno.com
KC3AM	David Stepnowski	735 Birchtree Lane	Claymont	DE	19703-1604		kc3am@comcast.net
KC8ASD	Bud Nichols	3200 Walker Rd	Hilliard	OH	43026	614-876-6135	kc8asd1@netzero.com
KC8ASF	Tom Pallone	3437 Dresden St.	Columbus	OH	43224	614-268-4873	
W6CDR	Wynn Rollert	1141 Pursell Ave	Dayton	OH	45420	937-256-1772	w6cdr@hotmail.com
WB8CJW	Dale & Sharon Elshoff	8904 Winoak Pl	Powell	OH	43065	614-210-0551	delshoff@columbus.rr.com
N3DC	William Thompson	6327 Kilmer St	Cheverly	MD	20785		
WA8DNI	John Busic	2700 Bixby Road	Groveport	OH	43125	614-491-8198	jabusic@yahoo.com
K8DW	Dave Wagner	2045 Maginnis Rd	Oregon	OH	42616	419-691-1625	
WA3DTO	Rick White	308 Orial Ct	Evans City	PA	16033	614-595-4966	wa3dto@aol.com
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	OH	43026	614-876-6033	wb8dzw@aol.com
KC8EVR	Lester Broadie	108 N Burgess	Columbus	OH	43204		
KB8FLY	Rod Shaner	124 West Walnut St.	Lancaster	OH	43130-4344	740-654-5694	rshaner@copper.net
W8FZ	Fred Stutske	8737 Ashford Lane	Pickerington	OH	43147		w8fz@arrl.net
WA8HFK,KC8HIP	Frank, Pat Amore	3630 Dayspring Dr	Hilliard	OH	43026	614-777-4621	famore@wowway.com
WG8I	Chris Vojsak Sr,	3536 W Henderson Rd	Columbus	OH	43220-2232		
W8GUC	Reuben Meeks	1345 Helke Rd	Vandalia	OH	45377	937-454-0968	Rcmeeks2@direcway.com
N8IJ	Dick Knowles	1915 Tamarack Circle S.	Columbus	OH	43229		
K8KDR,KC8NKB	Matt & Nancy Gilbert	5167 Drumcliff Ct.	Columbus	OH	43221-5207	614-771-7259	k8kdr@arrl.net
W8KHW	Kevin Walsh	2396 Anson St	Columbus	OH	43220		
K4KLT, KD4ODQ	Bob & JoAnnSchmauss	P.O. Box 1547	Land O' Lakes	FL	34639-1547	813-996-2744	schmauss@att.net
N8KQN	Ted Post	1267 Richter Rd	Columbus	OH	43223	614-276-1820	n8kqn@juno.com
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	OH	45331	513-548-2492	walkingcross@mail.bright.net
N3KYR	Harry DeVerter Jr	303 Shultz Road	Lancaster	PA	17603-9563		n3kyr@comcast.net
N8LRG	Phillip Humphries	3226 Deerpath Drive	Grove City	OH	43123	614-871-0751	phumphries@columbus.rr.com
WB8LGA	Charles Beener	2540 State Route 61	Marengo	OH	43334		cbeener@columbus.rr.com
WB2LTS	Manny Diaz	74 Lincoln Rd	Medford	NY	11763		wb2lts@optonline.net
WU8O	Tom Walter	15704 St Rt 161 West	Plain City	OH	43064	614-733-0722	twalter@emec.us
W8MA	Phil Morrison	154 Llewellyn Ave	Westerville	OH	43081		
WD8MDI	Dave Mathews	2404 Hoose Drive	Grove City	OH	43123		wd8mdi@qsl.net
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	OH	45660		ka8mid@qsl.net
WB8MMR	Mike Knies	1715 Winding Hollow Dr.	Columbus	OH	43223	614-875-4236	
K4NQV	Dean Maggard	1612 Benson Ave	Bowling Green	KY	42104		k4nqv@insightbb.com
N8NT	Bob Tournoux	3569 Oarlock Ct	Hilliard	OH	43026	614-876-2127	n8nt@atco.tv
WD8OBT	Tom Camm	63 Goings Lane	Reynoldsburg	OH	43068	740-964-6881	firefoxtom11@netzero.com
N8OCQ	Bob Hodge Sr.	3584Bluff Gap Dr.	Grove City	OH	43123		
KB8OFF	Jess Nicely	742 Carlisle Ave	Dayton	OH	45410		kb8off@prosurvisp.com
N8OPB	Chris Huhn	1667 Pickering Court	Reynoldsburg	OH	43068		cjhuhn@hotmail.com
W6ORG,WB6YSS	Tom & Maryann O'Hara	2522 Paxson Lane	Arcadia	CA	91007-8537	626-447-4565	tom6ORG@hamtv.com
W2OTA,WA2DTZ	Michael Chirillo	942 Bruce Drive	Wantagh	NY	11793	516-785-8045	
KC8OZV	George Biundo	3675 Inverary Drive	Columbus	OH	43228	614-274-7261	kilowatt@biundo.org
KE8PN	James Easley	1507 Michigan Ave	Columbus	OH	43201	614-421-1492	jeasley11@hotmail.com
W8PGP,WD8BGG	Richard, Roger Burggraf	5701 Winchester So. Rd	Stoutsville	OH	43154	614-474-3884	rgburggraf@juno.com
WB8PJZ	Dave Morris	12025 Wapak-Buckland Rd	Wapakoneta	OH	45895		
WA8RMC	Art Towslee	180 Fairdale Ave	Westerville	OH	43081	614-891-9273	towslee1@ee.net
W8RRF	Paul Zangmeister	10365 Salem Church Rd	Canal Winchester	OH	43110		w8rrf@copper.net
W8RRJ	John Hull	580 E. Walnut St.	Westerville	OH	43081	614-882-6527	
W8RUT,N8KCB	Ken & Chris Morris	3181 Gerbert Rd	Columbus	OH	43224	614-261-8583	wa8rut@aol.com
W8RVH	Richard Goode	9391 Ballentine Rd	New Carlisle	OH	45334	937-964-1185	w8rvh@glasscity.net
W8RQI	Ray Zeh	2263 Heysler Rd	Toledo	OH	43617		zehrw@glasscity.net
KB8RVI	David Jenkins	1941 Red Forest Lane	Galloway	OH	43119	614-878-0575	kb8rvi@hotmail.com
W8RWR	Bob Rector	135 S. Algonquin Ave	Columbus	OH	43204-1904	614-276-1689	w8rwr@sbcglobal.net
W8RXX,KA8IWB	John & Laura Perone	3477 Africa Road	Galena	OH	43021	740-548-7707	
N8SFC	Larry Campbell	316 Eastcreek Dr	Galloway	OH	43119		
W8SJV, KA8LTG	John & Linda Beal	5001 State Rt. 37 East	Delaware	OH	43015	740-369-5856	w8sjv@brightchoice.net
W8SMK	Ken Bird	244 N Parkway Dr	Delaware	OH	43015	740-548-4669	ken@midohio.net
N8SNG	Terry Rankin	414 Walnut Street	Findlay	OH	45840		
KB8SSH	Mike Cotts	3424 Homecroft Dr	Columbus	OH	43224	614-268-8497	mcotts@wideopenwest.com
W3SST	John Shaffer	1635 Haft Dr.	Reynoldsburg	OH	43068	614-751-0029	w3sst@juno.com
K8TPY, K8FRB	Jeff & Dianna Patton	3886 Agler Road	Columbus	OH	43219		cqcqk8tpy@juno.com
KC8UQS	David Dominy	7017 Taway Road	Radnor	OH	43066		
NR8TV	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123	937-981-4007	s.crew@dragonbbs.com
WB8URI	William Heiden	5898 Township Rd #103	Mount Gilead	OH	43338	419-947-1121	
KB8UU	Bill Rose	9250 Roberts Road	West Jefferson	OH	43162	614-879-7482	
KB8UWI	Milton McFarland	115 N. Walnut St.	New Castle	PA	16101		kb8uwi@yahoo.com
WA8UZP	James R. Reed	818 Northwest Blvd	Columbus	OH	43212	614-297-1328	wa8uzp@qsl.net
KB8WBK	David Hunter	45 Sheppard Dr	Pataskala	OH	43062	740-927-3883	hiramhunter@aol.com
KC8WRI	Tom Bloomer	PO Box 595	Grove City	OH	43123		ohiomec@aol.com
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	OH	43224-3011		sdiggs4590@aol.com
N8XYZ	Dan Baughman	4269 Hanging Rock Ct.	Gahanna	OH	43230		dbaughma@insight.rr.com

Call	Name	Address	City	St	Zip	Phone	URL
N5XZS	Tim Johnson	1629 Speakman Dr SE	Albuquerque	NM	87123		
KB8YMN	Mark Griggs	2160 Autumn Place	Columbus	OH	43223	614-272-8266	mmgriggs@aol.com
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	OH	43064		
KC8YPD	Joe Ebright	3497 Ontario St	Columbus	OH	43224		
N8YHY	Chris Scott	11981 Maple Trail	Hillsboro	OH	45133		
N8YZ	DaveTkach	2063 Torchwood Loop S	Columbus	OH	43229	614-882-0771	
KA8ZNY,N8OOY	Tom & Cheryl Taft	386 Cherry Street	Groveport	OH	43125	614-202-9042	ka8zny@copper.net

ATCO MEMBERSHIP INFORMATION

Membership in ATCO (Amateur Television in Central Ohio) is open to any licensed radio amateur who has an interest in amateur television. The annual dues are $10.00 per person payable on January 1 of each year. Additional members within an immediate family 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.

The membership period is from January 1ST to December 31ST. New Members will receive all ATCO newsletters published during the current year prior to the date they join ATCO. For example, a new member joining in June will receive the January and April issues in addition to the July and October issues. As an option for those joining after mid July, they can elect to receive a complementary October issue with the membership commencing the following year Your support of ATCO is welcomed and encouraged.

ATCO CLUB OFFICERS

President: Art Towslee WA8RMC
V. President: Ken Morris W8RUT
Treasurer: Bob Tournoux N8NT
Secretary: Frank Amore WA8HFK
Corporate trustees: Same as officers

Repeater trustees: Art Towslee WA8RMC
Ken Morris W8RUT
Dale Elshoff WB8CJW
Statutory agent: Frank Amore WA8HFK
Newsletter editor: Art Towslee WA8RMC

ATCO MEMBERSHIP APPLICATION

RENEWAL O NEW MEMBER O DATE _____
CALL _____
OK TO PUBLISH PHONE # IN NEWSLETTER YES O NO O
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 O MONEY ORDER O
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/paydues** and fill out the form. 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 TREASURER'S REPORT - de N8NT

OPENING BALANCE (07/26/05)..... $2027.27
RECEIPTS(dues)..... $ 40.00
Newsletter postage for July..... $ (48.00)
Pizza ….party food..... $(101.27)
Paypal charges..... $ (0.59)
CLOSING BALANCE (10/21/05)..... $ 1917.41

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

FIRST CLASS MAIL

REMEMBER...CLUB DUES ARE NEEDED.
CHECK THE RIGHT CORNER OF THE MAILING LABEL FOR THE EXPIRATION DATE.
SEND N8NT A CHECK IF EXPIRED.